ABSTRACT

Examining the Influence of Internalizing and Externalizing Maladjustment on Holland-Based

Vocational Interest Score Differentiation and Profile Elevation Among African American

Mothers Receiving Welfare

by

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According to John L. Holland's (1985, 1997) theory of vocational interest types and work environments, counselors can learn whether a client is experiencing psychological maladjustment by attending to secondary constructs in vocational interest assessment. More specifically, Holland posited that low *differentiation* (i.e., degree of interest scale score variation) and low *profile elevation* (i.e., total number of endorsed items, or *like* responses, across all interest scales combined) are indicative of psychological maladjustment that warrants more intensive treatment or assessment. Counselors, too, are known to infer psychological maladjustment from low interest score differentiation and profile elevation (Gottfredson & Jones, 1993). However, findings are equivocal. Consequently, these interest assessment constructs are without a validated interpretation with respect to psychological maladjustment. This lack of an empirically substantiated interpretation for differentiation and profile elevation is potentially a product of methodological flaws or gaps in research that the current study aimed to address.

The purpose of the current study was to examine the influence of the two primary disorder dimensions of psychological maladjustment (i.e., internalizing, externalizing) on

vocational interest score differentiation and profile elevation among African American mothers receiving welfare. Towards this end, a quantitative, *ex post facto* research design was employed to analyze archival data on the vocational evaluation (VE) results of adult welfare recipients in North Carolina. More specifically, the sample consisted of African American mothers receiving welfare who were referred to the Navigate Counseling Clinic between 2012 and 2017. This population was targeted, in large part, because these mothers have been without the benefit of research that examines their vocational complexities through the prism of a career theory. Furthermore, psychological maladjustment is identified as being among the more prevalent barriers to employment that African American mothers receiving welfare experience (Danziger et al., 2000). Thus, findings from the current study served to enhance the interpretability of Holland's theoretical constructs, but also served to improve counseling-based services for a client group in need of proper career and mental health assistance.

In this study, six research questions were developed for examining main and interaction effects of internalizing and externalizing maladjustment on interest score differentiation and profile elevation among the sample ($N = 122$). Research questions were addressed with a series of 2 X 2 analyses of variance (ANOVA) in which internalizing maladjustment and externalizing maladjustment were the independent grouping variables. These variables each had two levels for indicating the presence or absence of a probable disorder within the corresponding maladjustment dimension as measured by the Global Appraisal of Individual Needs- Short Screener (GAIN-SS; Dennis, Feeney, & Titus, 2013). In contrast, the continuous dependent variables were vocational interest score differentiation and profile elevation as measured using the O*NET Computerized Interest Profiler (CIP; Rounds et al., 1999). Consistent with standards

in social science research, statistical significance was established with an alpha level of .05 (Heppner et al., 2008), and assumptions of the 2 X 2 ANOVA were tested.

Results from addressing research questions indicated a statistically significant finding in a post hoc analysis wherein internalizing maladjustment had a direct main effect on vocational interest score differentiation. Exclusively non-significant findings were observed for the remaining research questions. In addition to addressing research questions, the study included an examination of O*NET CIP scale scores and primary RIASEC types. Furthermore, psychometric properties were investigated among the sample. All results from this study are discussed, including limitations, implications, and recommendations for future research.

EXAMINING THE INFLUENCE OF INTERNALIZING AND EXTERNALIZING

MALADJUSTMENT ON HOLLAND-BASED VOCATIONAL INTEREST SCORE

DIFFERENTIATION AND PROFILE ELEVATION AMONG AFRICAN AMERICAN

MOTHERS RECEIVING WELFARE

A Dissertation

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Matthew L. McClanahan

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CHAPTER I: INTRODUCTION

Introduction

In 1993, William J. Clinton was campaigning for U.S. presidency when he famously

pledged to "end welfare as we know it" (Carcasson, 2006). This pledge came amid public

criticism of the state-federal welfare system for being too lenient in providing cash assistance to

impoverished families. Ultimately, Clinton honored his campaign promise, enacting legislation

that instituted the Temporary Assistance for Needy Families (TANF) program in 1996 (Russell,

2005). The welfare system underwent drastic policy reform through TANF that de-emphasized

cash assistance and imposed more stringent work requirements on recipients (Wu, 2010).

Furthermore, state governments were given increased responsibility in determining how long

parents can receive benefits. Consequently, parents in North Carolina are allowed to receive

welfare assistance for a lifetime maximum of only two years (Cheng, 2010). During this time,

TANF parents must also gain employment or participate in *welfare-to-work* programs, which

often involves a referral to counselors for career assessment and vocational guidance. Despite

decades of these referrals, however, a lone dissertation (Russell, 2005) comprises the entirety of

literature in which the vocational complexities of African American mothers receiving welfare

have been examined in context of Holland's (1959, 1966, 1973, 1985, 1997) career theory.

A majority of the 13 million vocational interest inventories that are completed annually in

the U.S. are anchored conceptually with Holland's (1997) theory of six interest types and work

environments (Prediger, 1998), which are labelled: Realistic, Investigative, Artistic, Social,

Enterprising, and Conventional (abbreviated with the RIASEC acronym; Nauta, 2010). Indeed,

Holland's theory and related tools are ubiquitous to career counseling and assessment. More

specifically, measuring RIASEC type helps the counselor and client (examinee) identify

occupations most apt for producing job satisfaction, stability, and achievement (Holland, 1997).

In addition to matching interest type to optimal work environments, Holland (1985) posited that

counselors can use RIASEC-based inventories to glean substantial information about the client's

personality and, in some instances, be used to infer psychological maladjustment.

The purpose of the current study is to examine Holland's theoretical assumption that

psychological maladjustment is related to interest score differentiation and profile elevation

among African American mothers receiving welfare. More specifically, Holland has posited that

these two vocational interest constructs (differentiation, profile elevation) are inversely related,

or negatively associated, with psychological maladjustment (Holland & Gottfredson, 1976). As

discussed and defined in later sections of this chapter, psychological maladjustment is among the

more pervasive barriers to employment success that African American mothers receiving welfare

encounter (Danziger, Kalil, & Anderson, 2000). Thus, findings from the current study not only

serve to enhance the interpretability of Holland's theoretical constructs, but also serve to help

improve counseling-based services delivered to a client population, African American mothers

receiving welfare, who are in need of proper career and mental health assistance.

Provided in this chapter is an overview of the empirical and theoretical linkages between

the constructs in question as well as their relevance to African American mothers enrolled in

state-federal welfare services. Topics outlined are expounded in Chapter 2. The primary purpose

of the current chapter is to introduce (a) the theoretical orientation of the study; (b) the

background of the problem this study aims to address; (c) the statement of the problem; (d) the

purpose of the study; (e) significance of the study; (f) research questions; (g) justification for the

study; (h) definition of important terms. The chapter concludes with a summary.

Background to the Problem

Early in his career, John L. Holland promoted the idea that personality can be measured covertly, or at least indirectly, using interest inventories comprised strictly of occupational content (Nauta, 2010). For example, in the article accompanying the print debut of his Vocational Preference Inventory in the *Journal for Applied Psychology*, Holland (1958) stated, "Interest inventories are personality inventories. [They] are identical in principle and provide similar information about the person, although their content is quite diverse" (p. 337). This belief, though contentious among scholars, remained with Holland throughout his career (Reardon & Lenz, 2015). Regardless of the arguments for or against vocational interest inventories as measures of personality, multiple meta-analyses demonstrate significant overlap between RIASEC typology and the renowned Five-Factor Model (FFM) of personality (e.g., Barrick, Mount, & Gupta, 2003; Larson, Rottinghaus, & Borgen, 2002). The FFM is reportedly "the most accepted personality taxonomy in the study of organizational behavior" (Wille, De Fruyt, and Feys, 2013, p. 549). Findings showing substantial overlap between the RIASEC and FFM models have, to a significant degree, supported Holland's assertion that interest inventories are measures of personality. A primary focus of the current study is Holland's claim that RIASEC-based inventories can also be used to infer aspects of psychological maladjustment.

According to Holland, counselors can learn if clients need more intensive mental health treatment by attending to secondary constructs and interpretive concepts that are embedded within his RIASEC theory and related tools (Holland, 1997; Loughead & Reardon, 1989). In particular, Holland posited that vocational interest score *differentiation* and *profile elevation* are inversely related (i.e., negatively associated) with psychological maladjustment. Interest differentiation, which is a secondary construct in Holland's (1997) theory, is defined as the

degree of variation between the respondent's RIASEC scale scores (Reardon & Lenz, 2015). There are several operational methods for computing differentiation, but Holland recommended using the absolute score difference between the respondent's highest and lowest RIASEC scales (e.g., Holland, Fritzsche, & Powell, 1994). Whereas well-differentiated profiles are visually depicted with a *spike* in scores across one or more RIASEC scales, undifferentiated profiles are recognized by a *flat* line across all interest scales (see Figure 1; Reardon & Lenz, 2015).

Figure 1

Examples of Vocational Interest Score Patterns Based on Profile Elevation and Differentiation
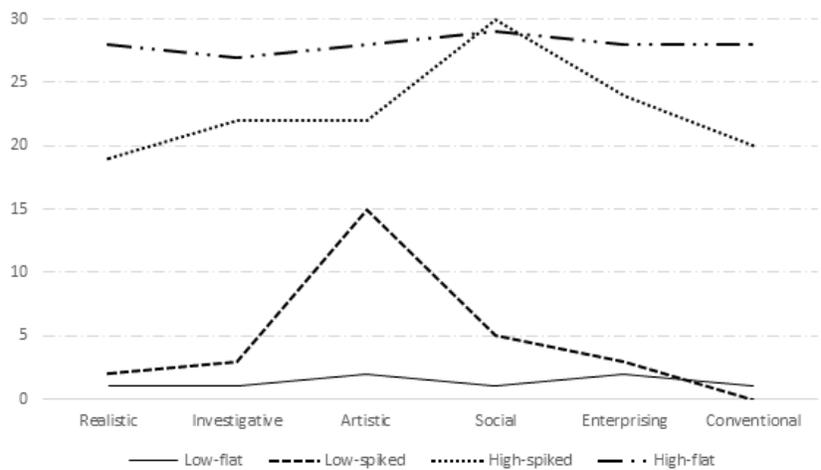
Note. The degree of differentiation (i.e., difference between the highest and lowest RIASEC scale scores for a given profile) for the above examples of low-flat, low-spiked, high-spiked, and high-flat patterns is 1, 15, 11, and 2, respectively. The degree of profile elevation (i.e., sum total of "Like" responses) for the above examples is 8, 28, 137, and 168, respectively.

In contrast to differentiation, profile elevation refers to the overall degree of score inflation. Profile elevation is operationally defined as the total number of endorsed items (i.e., "like" responses) across all RIASEC scales combined (Holland, Johnston, & Asama, 1994). Counselors or assessment professionals often use profile elevation and differentiation scores in combination to describe the overall shape of a client's vocational interest score pattern, which is typically categorized as either low-flat, low-spiked, high-flat, or high-spiked (see Figure 1; e.g., Reardon & Lenz, 2015).

Holland hypothesized that a low score for either differentiation or profile elevation is indicative of psychological maladjustment (Buboltz & Woller, 1998; Loughead & Reardon, 1989). Career counseling and assessment practitioners are also known to interpret low scores for these constructs as indicating psychological maladjustment (Gottfredson & Jones, 1993), regardless of the specific vocational interest inventory that is used (e.g., O*NET Interest Profiler, Self-Directed Search, Vocational Preference Inventory). These interpretations are particularly salient in the instance of low-flat interest patterns, wherein *low* refers to profile elevation and *flat* refers to undifferentiated scores. For example, according to the instructional manual for the Strong Interest Inventory (SII; Campbell & Hansen, 1981), a low-flat pattern indicates "at worst, considerable personal distress or apathy, perhaps a sense of hopelessness and even desperation, one of the most difficult situations the counselor will confront" (p. 95). Within this context, the phrase *considerable personal distress* refers to psychological maladjustment. However, the empirical support for such an interpretation as made in the SII instructional manual is equivocal. Prior to discussing relevant findings with respect to differentiation and profile elevation, a detailed explanation of psychological maladjustment is warranted.

Psychological maladjustment describes the "unsuccessful or unsatisfactory adaptation to one's social environment" (Stevenson, 2007, p. 1685), and refers to the multitude of diagnoses found in the Diagnostic and Statistical Manual of Mental Disorders (DSM). Psychological maladjustment is an overarching construct that is mostly comprised of two dimensions along which common mental health disorders are known to vary in terms of etiology, consequences, and treatment needs (Bergman & Magnusson, 1983). These two dimensions are internalizing maladjustment and externalizing maladjustment. Internalizing maladjustment is defined as mental disorders involving symptoms of distress that are directed inward (Thackery & Harris,

2003). This sort of maladjustment is characterized by negative affectivity or a depressive disposition and is commonly associated with poor self-esteem, social withdrawal, unexplained physical complications, self-harming behaviors, and suicidal ideation. Accordingly, common disorders along this dimension include depression, anxiety, traumatic stress, obsessive-compulsiveness, psychosomatic complaints, and dissociative disorders (Dennis, Feeney, & Titus, 2013).

In contrast to internalizing maladjustment, externalizing maladjustment is defined as mental disorders involving symptoms of distress that are directed outward (Thackery & Harris, 2003). Externalizing maladjustment consists of behaviors directed toward the environment, usually in a manner that interferes with the individual's functioning in at least one major life domain (e.g., school, work, recreation). Behaviors can be characterized as antisocial, aggressive (e.g., verbal, physical), and oppositional, especially toward authority figures, societal norms, and the rights of others. Externalizing maladjustment consists of common disorders such as attention-deficit hyperactivity, oppositional defiance, conduct disorders, antisocial personality, pyromania, kleptomania, and intermittent explosive disorder (Dennis, Feeney, & Titus, 2013).

Indeed, Holland-based differentiation and profile elevation have been compared to disorders belonging to the internalizing and externalizing dimensions of maladjustment, respectively. Although the vocational psychology research has yet to make the distinction between internalizing and externalizing maladjustment when investigating Holland-based differentiation and profile elevation, conceptualizing the literature in this manner helps to organize findings and explain the interpretability of these two interest constructs. Following is a discussion of the theoretical and empirical linkages between Holland-based differentiation and profile elevation in relation to the dimensions of psychological maladjustment.

Conceptual and Empirical Linkage: Differentiation and Maladjustment

Researchers in vocational psychology have long attempted to unearth the clinical meaningfulness of interest score differentiation. Hypotheses concerning this vocational construct have been tested for roughly 80 years (e.g., Darley, 1941), but attempts to capture a completely validated interpretation of differentiation has eluded scholars (Bullock & Reardon, 2008). Currently, the interest differentiation literature can be distinguished into two major lines of inquiry: (a) studies on the relationship between differentiation and career development variables; (b) studies on the relationship between differentiation and psychological traits or disorders. A majority of literature is subsumed within the first line of inquiry, as differentiation has been compared to numerous career development variables. For example, Holland (1968) originally hypothesized that differentiation is significantly and directly related to occupational choice stability, vocational identity, vocational maturity, decision-making ability, occupational knowledge, and self-knowledge. However, hypothesis testing with these and similar variables by Holland and other researchers (e.g., Bergmann, 1993; Leung, Conoley, Scheel, & Sonnenberg, 1992; Lowe, 1981; Holland, Gottfredson, & Nafziger, 1975; Meir, Esformes, & Friedland, 1994; Miner, Osborne, & Jaeger, 1997; Sackett & Hansen, 1995) have mostly resulted in weak, menial, or inconsistent findings (Hirschi, 2009). In more recent years, the literature on interest differentiation has become increasingly populated with studies along the second major line of scholarly inquiry, or studies exploring the relationship between differentiation and psychological maladjustment.

To fully illustrate the theoretical link between interest differentiation and psychological maladjustment, recall Holland's view that RIASEC typology represents a set of distinct personality traits, each defined by a clear set of characteristics, predilections, values,

competencies, and self-estimates (Holland, 1997). Therefore, an undifferentiated profile does not merely indicate a person with equal interest in all RIASEC dimensions, but rather suggests someone who has a diffuse or divergent personality. Holland spoke of such a diffuse or divergent personality in terms of poor personality integration (e.g., Holland & Gottfredson, 1976). To be clear, fostering a well-integrated personality is a focus of therapy and is largely synonymous with processes of individuation and self-discovery (Allport 1937; Jung 1939; Maslow 1970; Rogers 1951). More specifically defined, personality integration represents the extent to which various aspects and motives of an individual's psyche (e.g., interests, values, goals, competencies, self-estimates) become aligned to *function as an integrated whole* (Hirsh, 2014, p. 144). Compared to individuals with a well-integrated personality, those with a poorly integrated personality are typified as having less effective coping strategies for handling stressors, which ultimately precipitates symptoms of psychological maladjustment. In this manner, an undifferentiated interest pattern is theoretically linked to less effective coping strategies, leaving the person more vulnerable to psychological maladjustment (Holland & Gottfredson, 1976, p. 24).

An undifferentiated interest profile is more theoretically linked to internalizing maladjustment than externalizing maladjustment. As previously mentioned, an undifferentiated profile suggests that various components of the individual's psyche are at conflict (Holland & Gottfredson, 1976). In other words, the undifferentiated person embodies disparate predilections, motivations, values, goals, competencies, and self-estimates that seem irreconcilable. In this manner, undifferentiated profiles are related to internalizing maladjustment (e.g., anxiety, depression), as disorders within this dimension occur in part from the disparities "between the individual's needs, motives, and evaluations" (Bergman & Magnusson, 1983, p. 1). Accordingly,

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undifferentiated profiles are more strongly related, at least theoretically, to internalizing maladjustment as compared to externalizing maladjustment.

The notion that interest differentiation is more strongly associated with the internalizing dimension of maladjustment is reflected in the literature. A majority of relevant studies on differentiation have linked the interest construct to forms of internalizing as opposed to externalizing maladjustment. More specifically, indices of differentiation have been compared to scale scores for depression (i.e., Davis, 2007) and anxiety (i.e., Chason, 2010; Davis, 2007; Hartley, 2009). Still, other studies have either compared differentiation to the overarching construct of psychological maladjustment (i.e., Buboltz & Woller, 1998; Loughead & Reardon, 1989), or to aspects of externalizing maladjustment such as rebellious behavior and delinquency (i.e., Gottfredson & Jones, 1993). Regardless, findings across each of the above-mentioned studies suggest weak or non-significant relationships. However, as detailed in the *Statement of the Problem* section of this chapter, these studies have major methodological issues that have inhibited a proper examination of differentiation with respect to psychological maladjustment.

Conceptual and Empirical Linkage: Profile Elevation and Maladjustment

Profile elevation is a longstanding vocational interest construct that is computed by summing the total of number of endorsed items (i.e., "like" responses) across all six RIASEC scales from a vocational interest inventory. Research on profile elevation has been ongoing since the 1940s (e.g., Berdie, 1943). However, profile elevation has never been fully validated in terms of its clinical interpretability, nor has it been adopted as an explicit construct in Holland's theory (Bullock, 2006). Instead, profile elevation is used as an interpretive concept and diagnostic indicator within Holland's theory and related tools, such as the Self-Directed Search (SDS; Holland, Fritzsche, & Powell, 1994). Within the empirical literature, profile elevation has been

linked to academic achievement (e.g., Swanson & Hansen, 1986), response bias (e.g., Prediger, 1998), career planning (Hirschi & Läge, 2007), FFM personality traits (e.g., Fuller, Holland, & Johnston, 1999), and numerous psychiatric disorders or symptoms (e.g., Loughead & Reardon, 1989). Regardless, the meaningfulness of profile elevation is generally interpreted within the purview of the counselor's intuition or clinical judgment (Bullock & Reardon, 2008). Indeed, researchers and practitioners typically interpret *low* profile elevation scores as meaning the client is experiencing psychological maladjustment.

Among scholars and practitioners, low profile elevation scores are commonly interpreted as being associated with internalizing maladjustment, particularly depression. As noted by researchers Spokane, Luchetta, and Richwine (2002), "the possibility of a relationship between depression and interest profile elevation has been discussed for years" (p. 402). Not only has this relationship been discussed, but several researchers have examined it. The premise for examining profile elevation in relation to depression is based on the notion that individuals with this disorder generally express minimal interest in everyday tasks. Accordingly, people with depression are posited to be less inclined to engage fully in the vocational assessment process, and less likely to endorse (i.e., *like*) many items on vocational interest inventories (Holland, Johnston, & Asama, 1994). Indeed, two peer-reviewed studies have observed significant, negative associations (in the low-to moderate range) between profile elevation and indices for depression (i.e., Holland, Johnston, & Asama, 1994; Fuller, Holland, & Johnston, 1999). However, a dissertation by Smisson (2009) suggested no such relationship. Therefore, findings related to low profile elevation scores and internalizing maladjustment, specifically depression, are equivocal.

In addition to the two peer-reviewed studies that observed significance between profile elevation and depression (i.e., Holland, Johnston, & Asama, 1994; Fuller, Holland, & Johnston, 1999), the best evidence for low profile elevation scores being indicative of internalizing maladjustment is found in studies comparing this interest construct to the FFM personality trait of Neuroticism. Of the five FFM traits, Neuroticism is most strongly related to common mental health disorders (Khan, Jacobson, Gardner, Prescott, & Kendler, 2005). At least four studies have reported significant, negative correlations between profile elevation and FFM Neuroticism (i.e., De Fruyt & Mervielde, 1997; Gottfredson and Jones, 1993; Holland, Johnston, et al., 1994; Fuller et al., 1999). Alternatively, authors in three other studies observed only non-significant correlations between profile elevation and FFM Neuroticism (i.e., Bullock & Reardon, 2008; Chadick, 2018; Hirschi, 2009). Although these inconsistent findings have befuddled scholars, a closer inspection of the FFM Neuroticism scale indicates it is comprised of lower-order facets measuring symptoms of internalizing maladjustment (e.g., depression, anxiety) as well as externalizing maladjustment (e.g., hostility, impulsivity). Therefore, the previously observed non-significant findings *could* result from profile elevation having inverse relationships (i.e., negative associations) with internalizing facets of Neuroticism that are counteracted by *direct* relationships (i.e., positive associations) with the externalizing facets.

Indeed, researchers have consistently observed that profile elevation scores are directly related to disorders and symptoms belonging to the externalizing dimension of maladjustment. For example, significant and exclusively positive associations have been observed between profile elevation and impulsivity (e.g., Holland, Johnston, & Asama, 1994), hysteria among women (Fuller, Holland, & Johnston, 1999), psychopathic deviance (Holland, 1965), misconduct among middle school males (Gottfredson & Jones, 1993), and oppositional personality among

college students (Chadick, 2018). These findings were not examined to test *a priori* hypotheses, but instead were reported as a byproduct of examining profile elevation with other variables from instruments consisting of multiple scales. Holland and other scholars provide little theoretical basis for why profile elevation is directly related to externalizing maladjustment. Regardless, the empirical evidence for inferring psychological maladjustment (especially externalizing maladjustment) is more convincing for *higher* rather than *lower* scores of profile elevation. Perhaps this interpretation for profile elevation has not translated to practice because the relevant literature has yet to be distinguished in terms of internalizing and externalizing maladjustment.

Overall, results for the relationship between profile elevation and the internalizing dimension remain equivocal. More empirical evidence is needed to substantiate that low profile elevation scores are suggestive of internalizing maladjustment. Less equivocal are the results for the relationship between profile elevation and externalizing maladjustment. Nonetheless, more evidence is needed in this latter regard, too. Specifically, more studies are needed to explore whether the relational patterns between profile elevation and the dimensions of psychological maladjustment exist beyond correlation analyses. In addition, more studies are needed in which samples consist of persons for whom the relevant research would be most beneficial, such as clients of vocational rehabilitation counseling and career assessment (e.g., African American mothers receiving welfare).

Relevance of Career Theory and Maladjustment to African American TANF Mothers

Among those receiving TANF services is a disproportionately large number of African American families (Banerjee, 2003; B. J. Lee, Slack, & Lewis, 2004; Williamson et al., 2011). Though representing only 13% of the total U.S. population (U.S. Census Bureau, 2018), African Americans comprise 30.2% of adult TANF enrollees (U.S. Dept. of Health & Human Services

[USDHHS], 2018). With respect to gender distribution, approximately 85% of adults on welfare identify as female and a majority of these mothers are single. In other words, many these mothers are without a spouse who could assist in attributing to income and share child-rearing duties. Consequently, African American mothers must rely more heavily on government-sponsored services for help in overcoming barriers to financial independence and employment. These circumstances underscore the importance of effective service provision on behalf counselors to whom mothers on welfare are often referred. However, despite decades of these referrals for career assessment and vocational guidance, a lone dissertation (i.e., Russell, 2005) comprises the entirety of literature in which African American mothers receiving welfare are examined in context of an explicit career theory.

Though almost entirely without the use of career theory, scholars in TANF literature often focus on concepts or problems that are central to vocational psychology and associating frameworks. For example, TANF scholars identify career barriers, job instability, and minimal upward mobility (e.g., promotion, raise) as being among the major problems that mothers on welfare encounter in their journey towards financial independence (Dworsky & Courtney, 2007). These issues are a few of the exact problems that career theories and related instruments are designed to address (e.g., Holland's [1997] theory; Lent, Brown & Hackett's [1994] Social Cognitive Career Theory). Thus, mothers on welfare could benefit from research in which their vocational circumstances are examined in context of career theory. Concurrently, career theories could be validated or modified from research into the vocational and psychological complexities of TANF mothers, particularly with respect to employment barriers.

Barriers to stable employment and economic self-sufficiency are considered multiple and complex for TANF mothers (Danziger & Seefeldt, 2003; Loprest & Nichols, 2011; Banerjee,

2011). Societal factors that constrain career efforts on behalf African American mothers receiving welfare include racism, sexism, and classism (Russell, 2005). More practical barriers to employment that are commonly associated with TANF recipients pertain to issues associated with generational poverty, such as child care concerns, lack of transportation, low educational attainment, domestic violence, medical impairment, limited access to quality healthcare, and psychological maladjustment (Danziger & Seefeldt, 2003; Dworsky & Courtney, 2007). This latter barrier to employment success is detailed in the following section.

Psychological maladjustment and mothers on welfare. Indeed, Psychological maladjustment is among the more pervasive employment barriers for TANF mothers (e.g., Dworsky & Courtney, 2007). Researchers have found that TANF mothers are approximately two times more likely to experience psychological maladjustment than non-welfare populations (Danziger et al., 2000; Ensminger, 1995; Jayakody, Danziger, & Pollack, 2000; Klein, Amundson, & Borgen, 1992; Rank, 1994). Estimates for the frequency of diagnosed psychiatric disorders ranges from roughly 35% to more than 40% (Danziger, Kalil, & Anderson, 2000; U.S. Department of Health and Human Services, 1995; Zedlewski, 1999).

The various psychiatric disorders and symptoms TANF mothers experience are associated with both dimensions of psychological maladjustment. Regarding internalizing maladjustment, TANF mothers most commonly experience depression and anxiety (Danziger et al., 2000; Jayakody et al., 2000). Impoverished African American mothers are also more susceptible to experience externalizing maladjustment than peers from other racial backgrounds (e.g., Caucasians; Anton, Jones, & Youngstrom, 2015). Research suggests externalizing disorders are more prevalent among African American women, particularly those raised in single-parent, economically disadvantaged homes wherein the mother served as the head-of-

household at some point during the child's early development (The Annie E. Casey Foundation, 2012; Anton, Jones, & Youngstrom, 2015; Barrett & Turner, 2005). Indeed, African American mothers receiving welfare are commonly raised in such conditions. In addition to a disproportionately high vulnerability to externalizing maladjustment, those on TANF often experience other significant barriers to employment that are closely related to externalizing problems among adults, such as substance use disorders, crime, and domestic violence (Dworsky, & Courtney, 2007).

The high rate of psychological maladjustment and associating problems among TANF recipients is primarily explained in the literature as being a function of economic hardship (Ensminger, 1995; Jarret, 1996; Rank, 1994; Rogers-Dillon, 1995; Yaniv, 1998). This perspective is supported by the voluminous research demonstrating that impoverished individuals, regardless of whether they are welfare recipients, more often present with symptoms of depression, anxiety, and other forms of psychological maladjustment (Bennet, 1987; Brown, Ni Bhrolchain, & Harris, 1975; Brown, Adams, & Kellam, 1981; Gyami, Brooks-Gunn, & Jackson, 2001; Pearlin & Johnson, 1977; Reading & Reynolds, 2001; Ross & Huber, 1985; Thompson & Ensminger, 1989). Poor economic conditions are heavily associated with a host of life stressors that are known to impair psychological functioning, such as unemployment, inadequate healthcare, and heightened exposure to violence. For example, a meta-analysis conducted by Murphy and Athanasou (1999) revealed that an individual's psychological functioning often endures some degree of impairment during prolonged bouts of unemployment, which is a major issue among African American TANF mothers. Though psychological functioning generally improves once employment is achieved or re-achieved (Murphy & Athanasou, 1999), most people in extreme economic hardship such as TANF recipients

experience a constellation of occupational barriers (e.g., lack of reliable transportation, limited education) that make gaining or maintaining employment particularly difficult.

African Americans and mental health: A legacy of mistrust. Further compounding the issue of psychiatric disorders among TANF mothers is that economically disadvantaged African Americans are apprehensive towards seeking mental health treatment (Suite, La Bril, Primm, & Harrison-Ross, 2007). This phenomenon holds true even when such treatment is made financially accessible through government-sponsored programs. According to Harris, Gorleick, Samuels, and Bempong (1996), this apprehension towards seeking treatment is rooted in a *legacy of mistrust* that the African American community has experienced towards the mental health system (p. 196), which is largely the byproduct of a troubling history this population has endured with respect to medicine and experimental research during, and since, the antebellum South (as further detailed in Chapter 2). In addition to the fields of medical research and practice, there is a documented legacy of racism and discrimination within the mental health system.

Mental health practitioners have historically over pathologized or misdiagnosed African Americans (Suite, La Bril, Primm, & Harrison-Ross, 2007). Examples of this phenomenon are evident throughout the literature since the 1970s. For instance, scholars in numerous studies have demonstrated that African Americans are over-diagnosed with severe mental health disorders and underdiagnosed with less serious mental health disorders (Baker & Bell, 1999; Coleman & Barker, 1994; Friedman & Cheryl, 2002; Friedman & Paradis, 1991; Schultz, 2004). Scholars suggest that this tendency to either over-pathologize or misdiagnose African Americans is a result of prejudices on behalf the clinician as well as a *lack of contextual diagnostic analysis* (Suite, La Bril, Primm, & Harrison-Ross, 2007, p. 881).

To attenuate this problem of bias within the mental health system, more assessment instruments and their theoretical assumptions should be examined and validated among disadvantaged minority populations. In particular, assumptions which posit a relationship between common career assessment constructs and psychological maladjustment should be examined and validated across groups varying in terms of race, gender, and socioeconomic status. However, to date, assessment instruments and the assumptions which underpin them have rarely, if ever, been examined among African American mothers receiving welfare.

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Statement of the Problem

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There are several problems that the current study is meant to address, or at least mitigate. These problems are conceptualized at three levels: (1) in society; (2) in counseling and assessment practices; and (3) in theory and research. The purpose of this section is to outline and discuss these problems which are nested at the core of the current study.

The Problem in Society

The state-federal welfare system has been in effect since 1935, providing cash assistance to help mothers and families in extreme poverty pay for food, shelter, and other necessities (Russell, 2005). Amid criticism for being too lenient in providing cash assistance, the welfare system was overhauled and the Temporary Assistance for Needy Families (TANF) program was initiated in 1996. Payouts are still provided (roughly $200 per month for a North Carolina TANF family with one child), but federal policies mandate a 5-year lifetime maximum on welfare services while allowing state governments to reduce this maximum to a 2-year cap on receipt of services (NCDHHS, 2019). Soon after TANF was established, the number of individuals on welfare caseloads was dramatically reduced (Russell, 2005). While this reduction was partly due to welfare recipients gaining stable employment, as many as 87% of enrollees were forced to exit

TANF despite being unemployed at the time their benefits were elapsed (TANF: Update on Program Performance, 2012). Consequently, there is a significant and growing number of African American mothers who are neither employed nor on welfare (Wu, 2010).

The supposed mission of TANF is to help economically disadvantaged families achieve financial self-sufficiency through gainful employment (Carcasson, 2006), but outcome studies suggest that welfare-to-work programs are failing to actualize this mission as poor employment outcomes continue to plague the welfare population. Currently, the number of TANF recipients considered *hard-to-employ* is rising and some state TANF programs are described as ill-equipped to address their needs (Butler et al., 2012*;* Danziger & Seefeldt, 2003). For recipients who do make the *successful* transition from TANF to the world of work, studies indicate that they are likely to continue experiencing financial hardship and unstable employment conditions (Cancian, Haveman, Meyer, & Wolfe, 2002; Cheng, 2010; Heflin, 2006). For example, according to Wu (2010), less than 40% of mothers in poverty were able to keep their job within a year following receipt of TANF services. For many of those who were able to sustain employment, earnings often remained stagnant or decreased (Wu, 2010).

These poor outcomes for African American mothers receiving welfare are, in large part, a result of the pervasive barriers to employment this population experiences such as psychological maladjustment. Considering that African American TANF mothers are particularly susceptible to internalizing and externalizing maladjustment, population-specific research into their differentiation and profile elevation scores is needed. However, the vocational literature is without research that examines welfare recipients and issues of psychological maladjustment within the context of a career theory. This lack of such research is problematic, as career theories help guide effective interventions for helping individuals achieve the very goals that African

American mothers receiving welfare struggle to attain (e.g., job stability). At best, the lack of empirical research on African American TANF mothers within the context of a career theory is perplexing. At worst, this lack of scholarship signals neglect of African American TANF mothers on behalf researchers in the fields of vocational psychology and rehabilitation counseling.

The Problem in Counseling and Assessment Practices

Gottfredson and Jones (1993) assert that counselors have long been known to infer psychological maladjustment in instances wherein clients (examinees) have either low vocational interest score differentiation, low profile elevation, or both. Although these vocational interest constructs are theoretically linked to psychological maladjustment (Holland, 1985), there is insufficient data from the literature to support such interpretations among the general population, much less African American mothers receiving welfare. This problem of making unsubstantiated yet clinically meaningful interpretations presents a series of ethical and practical problems.

Counselors are ethically obligated to interpret assessment results in a manner that is consistent with research evidence (American Counseling Association [ACA], 2014). Therefore, counseling practitioners who infer psychological maladjustment from undifferentiated interest scores are in violation of this ethical standard. In other words, when counseling practitioners infer psychological maladjustment from undifferentiated interest scores, they are interpreting assessment results in a manner that is empirically unfounded and unsupported, as researchers have yet to demonstrate that psychological maladjustment has a clinically significant relationship with interest score differentiation.

In addition to this ethical concern, there are practical problems with making unfounded conclusions from interest assessment results. For example, interpreting psychological

maladjustment from interest score differentiation and profile elevation could result in the counselor over-pathologizing the client and misallocating scarce clinical resources. The tendency to infer psychological maladjustment from vocational interest scores implies that practitioners are inclined to engage clients with low differentiation and profile elevation in additional, more intensive assessment or treatment methods. Without supporting evidence to justify such courses of action, this practice is more likely to precipitate misallocated resources and burdens the client with unwarranted services, which can affect mental health and future service provision.

Considering the voluminous literature suggesting that clinicians over-pathologize or misdiagnose African Americans, a reasonable assumption is that African American mothers receiving welfare could be at a greater risk of being pathologized from their vocational interest assessment results. Such practices could perpetuate or reaffirm the mistrust this population has with the mental health system. As previously discussed, scholars have identified *mistrust* as a primary barrier to this population seeking and receiving mental health treatment (Suite, La Bril, Primm, & Harrison-Ross, 2007). This mistrust is traced back to a troubling history experienced by African Americans with respect to mental health services. More exactly, numerous studies have demonstrated that African Americans are over-diagnosed with severe mental health disorders and underdiagnosed with less serious mental health disorders (Baker & Bell, 1999; Coleman & Barker, 1994; Friedman & Cheryl, 2002; Friedman & Paradis, 1991; Schultz, 2004). Scholars suggest that this tendency to either over-pathologize or misdiagnose African Americans is a result of prejudice on behalf the clinician as well as a *lack of contextual diagnostic analysis* (Suite, La Bril, Primm, & Harrison-Ross, 2007, p. 881).

In acknowledging issues of counselor bias and lack of contextual diagnostic analysis as a problem for African Americans and other minorities seeking treatment, the ACA 2014 Code of

Ethics strongly emphasizes that counselors exhibit multicultural competence and diversity awareness. Multicultural competence, more exactly, refers to the application of diversity awareness and knowledge of effective service delivery to clients and client groups that vary in terms of demographics (ACA, 2014, p. 20). Towards this end, counselors are ethically obligated to "recognize the effects of… gender, race… and socioeconomic status on test administration and interpretation" (ACA, 2014, p. 11). To date, however, assessment strategies, instruments, and tools have rarely, if ever, been validated among samples of African American mothers receiving welfare. Consequently, counselors are without the empirical evidence needed in order to understand how to interpret appropriately secondary interest constructs for this population. Simply put, counselors cannot be expected to have multicultural competence regarding African American mothers receiving welfare if they are without population-specific research and evidence.

Research along the lines of the current study are needed to combat biases within mental health setting and to build trust among minority populations so that these individuals can receive proper help. In order for counselors within rehabilitation, mental health, and vocational psychology to help African American mothers receiving welfare improve their employment outcomes, more research is needed that specifically examines the influence of barriers (e.g., psychological maladjustment) on career assessment results (e.g., vocational interest scores). Furthermore, theoretical hypotheses linking psychological maladjustment to common career assessment constructs (e.g., interest score differentiation, profile elevation) should be tested among African American mothers receiving welfare to avoid the traditional pitfalls associated with pathologizing or misdiagnosing this population.

The Problem in Theory and Research

Indeed, there is a lack of empirical evidence to support unequivocally an interpretation of psychological maladjustment from low interest score differentiation or profile elevation (Loughead & Reardon, 1989). Therefore, the tendency on behalf counselors to make interpretations of maladjustment from these interest constructs suggest that counselors are relying on Holland's (1997) unsupported assumptions or resorting to their own clinical intuition. In this latter regard, perhaps counselors are observing a connection between psychological maladjustment and vocational interest constructs that has yet to be observed properly and substantiated within the empirical literature, particularly with respect to differentiation. This lack of substantiated evidence for what counselors are potentially observing in practice could be the result of methodological flaws that are present in studies wherein the relationships between psychological maladjustment and interest score differentiation are examined.

Research in which scholars have compared interest score differentiation to psychological maladjustment consists of six studies (i.e., Buboltz & Woller, 1998; Chason, 2010; Davis, 2007; Gottfredson & Jones, 1993; Hartley, 2009; Loughead & Reardon, 1989). Across these studies, reported findings are either weak (i.e., Chason, 2010) or non-significant. However, except for one study that examined differentiation with behaviors associated with externalizing maladjustment (Gottfredson & Jones, 1993), researchers have exclusively operationalized differentiation in a manner that is inconsistent with Holland's recommendation of taking the difference between the respondent's highest and lowest RIASEC scale scores. The use of differentiation indices that are alternative to Holland's recommended method is problematic, as counselors are instructed in major vocational interest inventory manuals to compute differentiation using Holland's (1968, 1994) high-low index (e.g., SDS, Holland, Fritzsche, &

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Powell, 1994). In other words, researchers within the relevant literature have rarely examined differentiation in the context in which it is operationalized in instructional manuals and interpreted in professional settings.

In addition to concerns of how differentiation is operationalized in the literature, there is a problem with how two of the relevant peer-reviewed studies (Buboltz & Woller, 1998; Loughead & Reardon, 1989) were conceptualized. More exactly, researchers confounded internalizing and externalizing scales into a unified composite score that represented the overarching construct of *psychological maladjustment*. As previously discussed, however, differentiation is theoretically linked to internalizing maladjustment more so than externalizing maladjustment. Therefore, any potentially significant finding for differentiation and internalizing maladjustment in these two studies was perhaps confounded by a non-significant relationship between differentiation and the externalizing scales that were used to produce composite scores. As a result of these methodological issues and more (as expounded in Chapter 2), a validated interpretation for the relationship between differentiation and internalizing maladjustment is missing but needed.

The literature is also absent of a fully validated interpretation for profile elevation as it relates to psychological maladjustment. Profile elevation has had significant findings with respect to disorders and symptoms along both the internalizing and externalizing spectra of maladjustment, respectively (e.g., Holland, Johnston, & Asama, 1994). However, findings are not exclusively significant. Furthermore, when significance is observed, the strength of association fluctuates, ranging from weak to moderate correlations. More evident, though, have been the nature of the associations (i.e., direct, inverse). Whereas profile elevation is usually inversely (i.e., negative) associated with symptoms of internalizing maladjustment, direct (i.e.,

positive) associations are observed with symptoms of externalizing maladjustment. However, such an interpretation for profile elevation has yet to translate to practice, as this distinction between internalizing and externalizing maladjustment has not been made explicit within the vocational literature prior to the current study.

Overall, more studies are needed for addressing the interpretability problems of differentiation and profile elevation as they relate to psychological maladjustment. Perhaps studies which contain the following six elements would be most helpful:

- studies that operationalize differentiation in accordance with Holland's recommended method;

- studies that use reliable and valid instruments to measure independently the internalizing and externalizing dimensions of maladjustment;

- studies which deploy statistical methods and procedures that are more sophisticated than correlation analysis;

- studies that examine both the individual and interaction effects of internalizing and externalizing maladjustment on differentiation and profile elevation;

- studies that recruit samples comprised of individuals for whom career counseling and assessment services are traditionally provided (e.g., TANF recipients);

- studies that recruit samples that are identified as experiencing high rates of both internalizing and externalizing maladjustment (e.g., African American TANF mothers).

Statement of the Purpose

The aim of the current quantitative, *ex post facto* study is to address research gaps pertaining to the interpretability of Holland-based interest score differentiation and profile elevation as they relate to psychological maladjustment. More specifically, the current study

contains an examination on the influence of internalizing and externalizing maladjustment on Holland-based interest differentiation and profile elevation among African American TANF mothers. Analyzed will be the amount of variance in the two Holland-based constructs (i.e., differentiation, profile elevation) that can be attributed to the presence or absence of a probable internalizing or externalizing diagnosis, respectively. In addition to examining the isolated effects of each maladjustment dimension on interest score differentiation and profile elevation, the study analyzes potential interaction effects, which have yet to be examined within the literature. Ultimately, the purpose of the current study is to enhance the interpretability of Holland-based interest constructs for a population, African American TANF mothers, who have traditionally been without the benefit of vocational psychology and rehabilitation research.

Significance of the Study

The current study will help establish a line of scholarly inquiry within TANF-based literature that is missing but needed. With the exception of a dissertation by Russell (2005), the literature is without research in which scholars have examined the vocational and psychosocial complexities of mothers on welfare through the conceptual prism of a career theory. Regardless, scholars in the TANF-based literature identify employment barriers, job instability, and lack of upward mobility (e.g., raise, promotion) as three major problem areas that TANF programs need to help recipients address (Danziger et al., 2000). These three concerns are primary issues that career theories help to explain and address. More specifically, Holland's theory and related tools are largely designed for the very purpose of helping clients identify jobs that lead to satisfaction, stability, and achievement (Holland, 1997). Thusly, the descriptive statistics related to interest scores and primary RIASEC types examined in the current study could provide TANF

administrators with an empirical foundation for designing training and employment placement programs that improve outcomes among African American mothers receiving welfare.

Findings from the current study will also promote counselors' understanding of how a common career barrier for African American mothers receiving welfare (psychological maladjustment) is related to vocational interest assessment constructs (differentiation, profile elevation). These results can help inform mental health counselors in determining the appropriateness of vocational interest assessment for TANF mothers dealing with psychological maladjustment. Conversely, these results can help career counselors determine whether mental health treatment is warranted for TANF mothers on the basis of their vocational interest scores.

Overall, this study will benefit counselors, counseling educators, and clients by enhancing the interpretability of vocational interest differentiation and profile elevation as they relate to psychological maladjustment. More specifically, mean differentiation and profile elevation patterns will be reported for the following four groups of African American mothers receiving welfare: (1) those with neither internalizing nor externalizing maladjustment; (2) those without internalizing maladjustment, but with externalizing maladjustment; (3) those with internalizing maladjustment, but without externalizing maladjustment; and (4) those with both internalizing and externalizing maladjustment. Findings will provide practitioners a more empirically grounded basis for determining whether a client's interest scores are indicative of psychological maladjustment that warrants more intensive treatment or assessment. Such an empirical basis could improve service delivery to African American mothers receiving welfare as well as help counselors allocate scarce clinical resources in a more efficient and effective manner.

In addition to improving population-specific services, study findings could help counselors adhere to ethical standards. Counselors are ethically obligated to exhibit multicultural competence with client groups who vary in terms of demographics (ACA, 2014). However, there is a general lack of scholarship pertaining to the career assessment results of African American mothers receiving welfare. This paucity of research inhibits the counselor's ability to have multicultural competence with respect to this population. The current study will enhance multicultural competence of counselors through examining the validity of Holland's theoretical assumptions among African American mothers receiving welfare. Furthermore, the psychometric properties of instruments used in the current study (i.e., O*NET CIP, GAIN-SS) will be examined and reported for the sample. Analyses of psychometric properties will help counselors determine whether selecting these instruments is appropriate when employing an assessment strategy for African American mothers receiving welfare.

Lastly, studies such as the one presented in the current dissertation are necessary in order for the counseling community to gain trust from the population of impoverished African Americans. As discussed throughout the preceding sections of this chapter, African Americans have long experienced abuse from the mental health community in the form of misguided research and counselor biases that result from a lack of contextual diagnostic analysis. Results from this study can provide some of the contextual diagnostic analysis needed in order to combat assessment bias against African Americans, at least with respect to the theory and instruments used among the current sample.

Research Questions

There are six primary research questions in the current study that examine the influence of internalizing and externalizing maladjustment on Holland-based interest score differentiation

and profile elevation among African American TANF mothers. For addressing research questions, internalizing disorder and externalizing disorder serve as independent, nominal variables. These variables each have two levels for indicating the presence or absence of a probable diagnosis as measured using the Global Appraisal of Individual Needs- Short Screener (GAIN-SS; Dennis, Feeney, & Titus, 2013). In contrast, the dependent variables are Holland-based interest differentiation and profile elevation. These scores are the continuous variables and are measured using the O*NET Computerized Interest Profiler (CIP; Rounds, Mazzeo, Smith, Hubert, Lewis, & Rivkin, 1999). More specifically, interest differentiation is operationalized using Holland's (1968, 1994) recommendation of using the absolute difference between the highest and lowest RIASEC scale scores. Profile elevation is operationalized as the total number of endorsed items (i.e., "Like" responses) across all RIASEC scale scores (Holland, Johnston, & Asama, 1994). The explicit research questions are as follows:

1. What is the effect of internalizing disorder level (i.e., presence, absence) on vocational interest score differentiation among African American mothers receiving welfare?

2. What is the effect of externalizing disorder level (i.e., presence, absence) on vocational interest score differentiation among African American mothers receiving welfare?

3. What is the interaction between levels of internalizing and externalizing disorder on vocational interest score differentiation among African American mothers receiving welfare?

4. What is the effect of internalizing disorder level (i.e., presence, absence) on vocational interest profile elevation among African American mothers receiving welfare?

5. What is the effect of externalizing disorder level (i.e., presence, absence) on vocational interest profile elevation among African American mothers receiving welfare?

6. What is the interaction between levels of internalizing and externalizing disorder on vocational interest profile elevation among African American mothers receiving welfare?

Addressing these research questions could potentially enhance the interpretability of differentiation and profile elevation as they relate to the two dimensions of psychological maladjustment. The first three research questions will help determine whether Holland-based differentiation is indeed related to internalizing maladjustment and unrelated to externalizing maladjustment. The third research question pertains to a possible interaction effect between the dimensions of maladjustment on differentiation scores. Addressing this question will inform whether the effects of one dimension of maladjustment on differentiation is reliant upon levels of the opposing dimension of maladjustment.

The latter three research questions pertain to the influence of the two dimensions of psychological maladjustment on profile elevation. Research questions 4 and 5 will help determine whether profile elevation scores are indeed negatively related to internalizing maladjustment and positively related to externalizing maladjustment. The opposing directional relationships between profile elevation and the two dimensions of maladjustment as observed in prior literature could suggest that an interaction effect is present. In other words, the effect of one maladjustment dimension on profile elevation might be, to a significant degree, dependent upon levels of the alternate maladjustment dimension. Regardless, interaction effects for the dimensions of psychological maladjustment have yet to be examined for profile elevation. Thus, the sixth and final research question will help address this gap in the literature.

Aside from addressing the six primary research questions, the current study will contain additional analyses that are to the benefit of African American mothers receiving welfare and the counselors who provide them with services. More specifically, the incidence of primary

RIASEC-based type will be reported along with measures of central tendency for interest scores across O*NET CIP scales. Furthermore, psychometric properties of the O*NET CIP and GAIN-SS will be examined and reported for the sample of African American mothers receiving welfare.

Justification for the Study

An empirically validated interpretation that explains the relationships between psychological maladjustment and Holland-based differentiation and profile elevation is needed, but missing (e.g., Bullock, 2006). Although these two vocational interest constructs are theoretically linked to psychological maladjustment (Holland, 1997), more empirical evidence is required for substantiating a clinically useful interpretation. Perhaps a major reason why such an interpretation has eluded researchers is because psychological maladjustment has yet to be conceptualized within relevant literature as being composed of two dimensions (i.e., internalizing maladjustment, externalizing maladjustment). Conceptualizing research studies in this manner helps to evaluate potential interpretations for both differentiation and profile elevation.

With respect to differentiation, a detailed inspection of Holland's theory suggests that the construct is more related to internalizing maladjustment as opposed to externalizing maladjustment. Such an interpretation might be valid, but the manner in which differentiation has been examined in prior research precludes this theoretical interpretation from being empirically supported. Indeed, differentiation has been examined in relation to aspects of psychological maladjustment, but criterion scales confounding the internalizing and externalizing dimensions has inhibited proper examination of this topic. Furthermore, differentiation has been operationalized in a manner that is inconsistent with how counselors interpret the construct and with how Holland recommended computing it (i.e., taking the absolute difference between the

highest and lowest RIASEC scale scores). Thus, the current study is justified in using Holland's (1968, 1994) high-low index of differentiation to explore relationships with internalizing and externalizing maladjustment.

Studies that are conceptually developed through the prism of internalizing and externalizing maladjustment could also help lend an empirically supported interpretation for profile elevation. Specifically, a review of the literature through the internalizing and externalizing framework suggests that profile elevation is negatively associated with forms of internalizing maladjustment (e.g., depression, paranoia), and positively associated with forms of externalizing maladjustment (e.g., impulsivity, oppositional defiance, hysteria). In order to substantiate this interpretation, though, studies using more rigorous statistical methods among varying populations are needed, as the current empirical evidence rests primarily on correlation analyses with predominantly Caucasian samples. Therefore, the current study, which examines African American mothers receiving welfare using sophisticated statistical methods beyond correlation analysis, is justified in this manner as well.

Definition of Important Terms

Client: This term refers to individuals who are direct recipients of counseling-based services. Such services include, but are not limited to, career counseling, mental health counseling, and assessment. For purposes of the current study, the term *client* often (but not exclusively) refers to African American mothers receiving welfare who are referred to counseling for career assessment and vocational guidance.

Counselor: This word is used in the current study as a catch-all term for counseling and assessment practitioners in the fields of vocational psychology, vocational rehabilitation, and mental health. Accordingly, the term includes, but is not limited to, career counselors,

rehabilitation counselors, mental health counselors, and vocational evaluators. These professionals, regardless of specific job title, each recognize career counseling as well as mental health counseling as being represented among the essential functions of their occupation (McClanahan & Sligar, 2015).

Interest Score Pattern: This term refers to the overall pattern of vocational interest scores as measured using Holland-based inventories. Interest score patterns are described using two secondary constructs in vocational interest assessment, which are differentiation and profile elevation (Hirschi, 2009). There are four primary interest score patterns, which are labelled how they are visually depicted. More specifically, interest score patterns can be low-flat, low-spiked, high-flat, and high-spiked. Whereas the terms *flat* and *spiked* refer to differentiation, the terms *low* and *high* refer to profile elevation.

Differentiation: This term refers to a secondary construct within Holland's (1997) RIASEC theory that is used to describe the clarity or distinctness of an interest score pattern (Reardon & Lenz, 2015). Within the literature, there are multiple ways to define or compute differentiation. The current study makes differentiation operational using Holland's (1968, 1994) high-low index. That is, differentiation is operationalized by taking the absolute difference between the respondent's highest and lowest RIASEC scale scores. Whereas higher scores indicate a profile that is well-differentiated, lower scores indicate a profile that is undifferentiated. This variable is measured in the current study using results from the O*NET CIP (Rounds, et al., 1999).

There is no *rule of thumb* for what defines an interest score pattern as well-differentiated or undifferentiated. Some scholars in prior investigations of this interest construct have used arbitrary cut-points for distinguishing between low, medium, and high differentiation scores.

However, differentiation in the current study is defined in its natural state, as a continuous variable, to avoid bias or error that might occur from using arbitrary cut-points.

Profile Elevation: This term refers to an interpretive concept or diagnostic indicator within Holland's theory and related tools. More specifically, profile elevation is a continuous variable in its unaltered form and is operationally defined using Holland, Johnston, and Asama's (1994) method of summing the total number of endorsed items (i.e., "like" responses) across all RIASEC scales combined. This variable is measured in the current study using results from the O*NET CIP (Rounds, et al., 1999).

Psychological Maladjustment: This term refers to the "unsuccessful or unsatisfactory adaptation to one's social environment" (Stevenson, 2007, p. 1685). Psychological maladjustment is an umbrella construct for the myriad of mental and behavioral health diagnoses and symptoms identified in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM- 5; American Psychiatric Association, 2013). In general, maladjustment can be characterized as either internalizing (i.e., intrinsic) or externalizing (i.e., extrinsic).

Internalizing Maladjustment: This term is generally defined as mental disorders involving symptoms of distress that are directed inward (Thackery & Harris, 2003). Internalizing maladjustment is characterized by disorders relating to high levels of negative affectivity and is commonly associated with poor self-esteem, social withdrawal, unexplained physical complications, self-harming behaviors, and suicidal ideation (Bergman & Magnusson, 1983). These problems can interfere with performance in one or more major life domains, such as school, work, and family functioning. In terms of DSM diagnoses, the internalizing dimension captures disorders and symptoms related to depression, anxiety, trauma induced stress, obsessive-compulsion, psychosomatic complaints, and dissociation (Dennis, Feeney, & Titus,

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2013). This dimension of maladjustment is measured in the current study using the Internalizing Disorder Subscreener of the GAIN-SS (Dennis, Feeney, & Titus, 2013).

Externalizing Maladjustment: This term is generally defined as mental disorders involving symptoms of distress that are directed outward, toward the environment (Thackery & Harris, 2003). More specifically, externalizing disorders are typified by behavioral problems associated with emotional dysregulation and impulsivity (Bergman & Magnusson, 1983). Behavioral manifestations can be characterized as antisocial, aggressive (i.e., verbal and physical), and oppositional, especially toward authority figures (e.g., workplace bosses), societal norms, and others' rights. Indeed, externalizing disorders among adults are often associated with substance use disorders, crime (e.g., theft), and interpersonal violence (e.g., domestic violence). In terms of DSM diagnoses, the externalizing dimension is mostly related to attention-deficit hyperactivity, oppositional defiance, misconduct, antisocial personality, pyromania, kleptomania, and intermittent explosive disorder (Dennis, Feeney, & Titus, 2013). This dimension of maladjustment is measured in the current study using the Externalizing Disorder Subscreener of the GAIN-SS (Dennis, Feeney, & Titus, 2013).

African American TANF Mothers: This descriptor alludes to adult mothers enrolled in the U.S. state-federal welfare system who self-identify as being "Black or African American." According to the American Psychological Association (APA) style guide (i.e., 6th edition), the term *African American* is acceptable for describing those who racially identify as Black and American. The acronym *TANF* stands for the Temporary Assistance for Needy Families program, which is synonymous with the state-federal welfare system. Lastly, the term *mothers* is used to describe women who are either pregnant or have already given birth.

Chapter Summary

The current study examines the influence of internalizing and externalizing maladjustment on two Holland-based constructs (i.e., differentiation, profile elevation) among African American mothers receiving welfare. This chapter provided relevant definitions, research questions, and an overview of the empirical and theoretical linkages between the constructs in question. Furthermore, the relevancy of Holland-based constructs and psychological maladjustment among African American TANF mothers was discussed. Also introduced in this chapter were research gaps and methodological issues that have traditionally plagued research efforts to validate empirically an interpretation for differentiation and profile elevation as they relate to psychological maladjustment. A more detail exploration into these research gaps and methodological issues follow in the subsequent chapter, which details Holland's theory, expounds the relevant literature, and discusses the unique life circumstances of African American TANF mothers.

CHAPTER II: REVIEW OF THE LITERATURE

Introduction

The current study examines the influence of psychological maladjustment (i.e., internalizing, externalizing) on Holland-based vocational interest score differentiation and profile elevation. Differentiation and profile elevation are examined in the context of Holland's theoretical framework, which assumes a relationship between the two interest constructs and psychological maladjustment (Holland, 1997). Psychological maladjustment is conceptualized as consisting of two primary dimensions (i.e., internalizing maladjustment, externalizing maladjustment) along which common psychiatric disorders and symptoms are statistically shown to vary in terms of etiology, treatment methods, consequences, and outcomes (Dennis, Feeney, & Titus, 2013). The purpose of the current chapter is to expound upon (a) vocational interest assessment and tools; (b) Holland's (1985, 1997) theory of vocational interests and work environments; (c) the history of differentiation and profile elevation as psychologically meaningful constructs; (d) the relationships of differentiation and profile elevation with neuroticism and other Five-Factor Model (FFM) personality traits; (e) the primary dimension of psychological maladjustment (i.e., internalizing, externalizing); (f) a review of the relevant literature; (g) and an overview of the Temporary Assistance for Needy Families (TANF) and welfare recipients. The chapter concludes with a summary.

An Overview of Vocational Interest Assessment and Tools

Clients present to career counseling and vocational evaluation with career decision-making difficulty. From the literature, career decision-making difficulties arise when at least one of three conditions are lacking: (1) knowledge of self; (2) knowledge of occupations; or (3) the use of sound reasoning between these two sets of facts to identify a career (Zunker, 2006).

Therefore, to help clients work through their career decision-making confusion, counselors are tasked with guiding clients through a process of understanding wherein the client gleans a clearer picture of who they are in relation to the world of work (Holland & Gottfredson, 1976). Traditionally, this process of understanding is best achieved through assessing the client's vocational assets and liabilities. More exactly, the client is typically administered a battery of assessment instruments that measure, for example, vocational interests, personality, values, skills, abilities, goals, and barriers. The assessment of vocational interest, in particular, is a cornerstone of career counseling practice (Hirschi, 2009).

Vocational interest assessment is useful for helping the client identify those occupations which are most apt for fostering job satisfaction, stability (e.g., tenure), and achievement (e.g., promotion, raise). Particularly influential for predicting these desirable employment outcomes has been Holland's (1959, 1966, 1973, 1985, 1997) theory of six vocational interest types and corresponding work environments, as the RIASEC model underpins many of the contemporary interest inventories (Nauta, 2010). However, vocational interest research has a long history that began prior to the formulation of Holland's theory.

Early study of interest assessment was largely forged by the staunch empiricism of E.K. Strong, Jr., who developed the initial Strong Vocational Interest Bank (SVIB) inventory in 1927. Strong's approach to SVIB development was rooted in the empirical tradition as opposed to the theoretical. Simply put, SVIB development, like other interest-based research at the time, was data-driven and devoid of a guiding theoretical blueprint. Based on a series of factor analyses that yielded multiple factors for representing interest scales, Strong produced the first organized scheme of vocational interest types through the 1938 revision of his SVIB. Similarly, Roe (1956) and Kuder (1960) incorporated classification schemes using fewer scales. Impressed with the

utility of having fewer interest scales or dimensions, Holland (1966) emphasized the factor-analytic findings of Guilford, Christensen, Bond, and Sutton (1954) in suggesting a framework of vocational types and work environments that are recognized as Holland's RIASEC framework. Following Holland's lead, Strong eventually incorporated these six dimensions into more recent versions of the SVIB, thusly adopting the RIASEC model as a theoretical anchor for his interest inventories.

Indeed, Strong adopted Holland's RIASEC model, but there currently exists several mainstream vocational interest inventories that are largely without a theory or are based on models of interest that are alternative to Holland's framework (Harrington & Long, 2013). For example, the Career Occupational Preference System- Interest Inventory (COPS-II; Knapp-Lee, Knapp, & Knapp, 1989) consists of 14 scales that represent the same number of occupational clusters identified through factor analysis (Knapp-Lee, 1995). Initial development of this interest inventory was also heavily influenced by Roe's (1956) theoretical framework. Other examples of common interest inventories that are not based on Holland's theory include the Kuder Occupational Interest Survey (KOIS), the Career Assessment Inventory- Vocational Version (CAI-VV), and the Jackson Vocational Interest Survey (JVIS), to name a few (Drummond, Sheperis, & Jones, 2016).

Although interest inventories are not unanimously underpinned by the RIASEC framework, the field of vocational interest assessment is currently dominated by Holland's theoretical contributions (Nauta, 2010). Holland's theory is a primary focus of counseling psychology research and provides the conceptual structure for many mainstream vocational interest inventories. These interest inventories include, but are not limited to, the Self-Directed Search (SDS), Vocational Preference Inventory (VPI), Strong-Campbell Interest Inventory

(SCII), and the Revised General Interest Structure Test (GIST; Bergmann & Eder, 2005). Furthermore, the O*NET Computerized Interest Profiler (CIP), which is used in the current study, is theoretically anchored with Holland's RIASEC typology. Accordingly, the O*NET CIP and related instruments can be used to operationalize many of Holland's theoretical constructs, including vocational interest differentiation and profile elevation. Prior to detailing the O*NET CIP, an overview of the O*NET platform in which the CIP is situated is warranted.

Occupational Information Network and Corresponding Set of Interest Profilers

The Occupational Information Network (O*NET) is a program developed under the sponsorship of the U.S. Department of Labor Employment and Training Administration (O*NET Resource Center, 2019). Generally speaking, O*NET was designed to help develop and sustain a skilled workforce. Towards this end, the O*NET online database provides a wealth of occupational information that is free to the public, including standardized descriptors of more than 900 occupations represented in the U.S. economy. In addition to this database, which is periodically updated to reflect the present-day world of work, the O*NET offers a set of career exploration tools for assessing vocational interests, values, and abilities. According to its website, the O*NET database and related career exploration tools are used by millions of people each year.

Central to the O*NET platform is the Content Model, which provides O*NET with its conceptual framework (O*NET Resource Center, 2019). The Content Model was developed using research of occupations and organizational analysis. More specifically, this framework is used to characterize people (worker-oriented descriptors) and work environments (job-oriented descriptors). These descriptors are categorized into six primary domains, which include worker characteristics, occupational requirements, worker requirements, workforce characteristics,

experience requirements, and occupation-specific information. This taxonomy allows users to understand or focus on the set of knowledge, skills, and abilities needed to execute the activities and tasks specific to a particular occupation. With respect to the O*NET Content Model, information pertaining to vocational interests fall into the domain of *worker characteristics*, and vocational interests can be measured through O*NET using the Interest Profiler.

The O*NET Interest Profiler (IP) is currently described as a *family* of career assessment tools that can be used to help clients discover occupations and work activities that are congruent with their vocational interests (Wood & Hays, 2013). Since 1999, the U.S. Dept. of Labor Employment and Training Administration has published three iterations of interest inventories, including the original O*NET IP, the O*NET IP- Short Form (Rounds, Su, Lewis, & Rivkin, 2010), and the O*NET Mini-IP (Rounds, Ming, Cao, Song, & Lewis, 2016). These inventories consist of multiple versions regarding either format (e.g., paper-pencil, software-based, web-based), language (i.e., English, Spanish), or both. For data collection purposes of the current study, the computerized (software-based) version of the original O*NET IP was used (also known as the O*NET Computerized Interest Profiler [CIP]). More recently, however, the CIP has been phased out of the O*NET Content Model and replaced with the O*NET IP- Short Form and O*NET Mini-IP (designed for mobile applications), which both consist of far fewer items than the original IP. Regardless, each of these inventories measure the RIASEC interest constructs and are used to operationalize other aspects of Holland's (1985, 1997) theory (Wood & Hays, 2013).

In addition to measuring Holland-based RIASEC scales, the O*NET Interest Profilers link the respondent's results to congruent occupations that are posited to be most optimal for producing desirable employment or career outcomes. More specifically, O*NET Interest Profiler

results are matched to the O*NET-SOC taxonomy (Wood & Hays, 2013). Whereas the Content

Model defines the structure of information for a *single* occupation, the O*NET-SOC taxonomy

defines the general grouping of occupations. The O*NET-SOC, more specifically, is based on

the Standard Occupational Classification (SOC) system (O*NET Resource Center, 2019). The

O*NET-SOC is rather comprehensive but is in part based on Holland-based RIASEC codes for

grouping occupations.

O*NET Computerized Interest Profiler

In recognizing the importance of vocational interest assessment, the U.S. Department of

Labor developed the O*NET CIP (Rounds et al., 1999). Unlike other competing inventories, the

O*NET CIP was published as a free, software-based (downloadable) measure of vocational

interest that was specifically tailored to accommodate people of varying socioeconomic and

educational backgrounds. Items for the O*NET CIP were intentionally developed to represent a

wider range of occupations and prestige levels than other interest inventories (Rounds et al.,

1999), making the instrument appropriate for assessing individuals for whom employment has

been traditionally more difficult, such as those enrolled in welfare programs. Furthermore, unlike

other instruments wherein college students were used for psychometric validation, the O*NET

CIP was normed using samples of employment-based program attendees that included welfare

recipients and displaced workers.

Although the O*NET CIP is unique in several respects, the instrument also exhibits many

characteristics of other mainstream vocational interest measures. Beyond sharing Holland's

RIASEC model, the O*NET CIP is similar to other inventories in terms of items, response

format, and scoring. More specifically, items are written descriptions of occupations, tasks,

activities, preferences, or skills that relate to one of the six primary interest domains (Rounds et

al., 1999). A three-point, Likert-type response format is used to indicate whether respondents like, dislike, or are indifferent (i.e., unsure) towards each item. For scoring, the number of endorsed items (i.e., "like" responses) in each RIASEC domain represents the person's interest scores, with the primary interest type indicated by the scale with the highest score. Items that are not endorsed (i.e., items earning "dislike" or "unsure" responses) each receive a score of 0 for the respective scale.

Scoring results from the O*NET CIP can be interpreted by counselors to help inform service provision, such as the identification of suitable careers. Additionally, CIP results can be used for identifying possible employment interventions that may, for example, enhance the client's career decision-making readiness (see Reardon & Lenz, 2015). Counselors can identify suitable careers and optimal interventions through the guidance of Holland's theoretical assumptions and constructs, many of which can be operationalized using O*NET CIP scores. The different assumptions and constructs of Holland's theory are detailed in the following section, which also includes a discussion of common criticisms related to the theory and associating tools.

Holland's Theory of Vocational Interests and Work Environments

Holland's (1997) theory, like other trait-oriented approaches, emphasizes knowledge of self (e.g., abilities, interests, values), knowledge of work environments (e.g., job requirements, tasks, rewards), and the use of sound reasoning between these two sets of facts to identify an ideal job match. In addition to enhancing career-decision making and promoting the client's self-knowledge and occupational knowledge, Holland's theory has been particularly beneficial for understanding the circumstances that lead to job satisfaction and long-term job stability (i.e., tenure). As early as the 1960s, researchers began testing Holland's constructs and assumptions

(Nauta, 2010). Findings from these studies and other earlier works yielded empirical support for the career theorist's ideas and helped guide subsequent revisions and refinements. Already by the late 1980s, Holland's model of vocational choices emerged as one of the most popular career theories in counseling psychology.

Lauded for its empirical support and practical simplicity, Holland's RIASEC theory is presently the most influential and extensively studied model of its kind, and it remains a dominant focus in counseling practice and research (Nauta, 2010). Relevant to the current study, Holland's RIASEC theory, more so than any other framework, has provided the conceptual basis upon which research into the career development of African American women has been conducted (Russell, 2005). As outlined by Reardon and Lenz (2015), Holland's (1997) theory consists of four primary assumptions and four secondary assumptions. Each of these assumptions are discussed, including constructs and interpretive concepts which pertain to the current study.

The Four Primary Assumptions

Holland's theoretical framework consists of four primary assumptions. These assumptions pertain to: (1) the classification of vocational interest types; (2) the classification of work environments; (3) the person-environment congruence hypothesis; and (4) behavior as a result of the person-environment interaction (Holland, 1997). Indeed, these core assumptions drive the practice of vocational interest assessment (Nauta, 2010).

1. The RIASEC classification of vocational interest types. Holland's (1997) first assumption is that most people can accurately be classified into one of the following six interest types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (commonly referred to using the RIASEC acronym). Each of these RIASEC types are outlined in Table 1 as described in Reardon and Lenz (2015). For individuals, these RIASEC types represent more than

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vocational interest. According to Holland (1997), the RIASEC types reflect dominant personality types, each with a distinct set of preferences, predilections, values, attributes, and competencies.

Table 1

Description of Each RIASEC Type

Realistic (R)	These types typically enjoy working with things as opposed to people. Realistic types usually have mechanical and athletic skills and prefer to work outdoors, often with tools and machinery. These types often work in occupations or careers such as mechanic, electrician, farmer, and surveyor, to name a few. In terms of personality characteristics or attributes, the R type is often described as genuine, practical, conforming, honest, frank, humble, hard-headed, normal, thrifty, and shy (Reardon & Lenz, 2015).
Investigative (I)	These types are generally inclined toward the exploration of ideas and the understanding things or events, as opposed to working with things or persuading others. Investigative types typically prefer to work alone and often have skills pertaining to math, science, and problem solving. Common careers that attract Investigative types are physicist, biologist, anthropologist, chemist, and lab or medical technician. In terms of personality characteristics or attributes, the I type is often described as curious, independent, analytical, complex, cautious, critical, introverted, intellectual, pessimistic, rational, precise, methodical, and reserved (Reardon & Lenz, 2015).
Artistic (A)	These types are inclined toward creative ideas and pursuits, valuing self-expression as opposed to following rules and routines. Artistic types usually have artistic skills and enjoy exercising their imagination to create original work. Occupations that may attract Artistic people are musician, writer, actor, composer, dancer, and interior decorator. In terms of personality characteristics or attributes, the A type is often described as complicated, imaginative, emotional, disorderly, impractical, idealistic, impulsive, intuitive, independent, open, non-conforming, original, and introspective (Reardon & Lenz, 2015).
Social (S)	These types are typically inclined toward helping others and are drawn towards teaching or counseling as opposed to participating in technical or mechanical tasks. Social types usually enjoy working alongside others and helping people overcome their problems. The S types are usually attracted to careers such as counselor, teacher, speech therapist, nurse, social worker, clinical psychologist, and religious worker. In terms of personality characteristics or attributes, the S type is often described as friendly, cooperative, idealistic, kind, responsible, patient, warm, sympathetic, responsible, and social (Reardon & Lenz, 2015).

Enterprising (E)	These types typically enjoy persuading, influencing, and directing others as opposed to scientific or highly intellectual pursuits. Enterprising types often find themselves in leadership roles and have public speaking skills. Attractive careers for this type include business executive, salesperson, supervisor, manager, sports promoter, and television producer. This type is also drawn towards politics and producing personal wealth. In terms of personality characteristics or attributes, the E type is often described as extraverted, energetic, ambitious, attention-seeking, adventurous, acquisitive, domineering, popular, impulsive, sociable, pleasure-seeking, and self-confident (Reardon & Lenz, 2015).
Conventional (C)	These types typically prefer to follow rules and routines to meet clear, explicit goals as opposed to working towards unclear goals. Conventional types often have clerical, organizational, and math skills and usually prefer to work inside. These types often work in occupations or careers such as secretary, bookkeeper, banker, tax expert, financial analyst, and radio dispatcher. In terms of personality characteristics or attributes, the C type is often described as conforming, rigid, obedient, conscientious, inhibited, efficient, orderly, practical, careful, persistent, unimaginative, and thrifty (Reardon & Lenz, 2015).

The six RIASEC interest or personality types provide a conceptual framework against which people can be measured and compared (Reardon & Lenz, 2015). Although Holland's first theoretical assumption presumes that most people can be categorized by a single RIASEC type, the theorist acknowledge that persons may not completely embody the entire constellation of preferences, characteristics, and tendencies of any one type. Instead, people are more likely to share attributes from a combination of a two or three RIASEC types. Thusly, in practice, career counselors generally use the respondent's top two or three Holland-based codes to infer aspects about the client's personality and potential occupational pursuits.

2. The RIASEC classification of work environments. The second primary assumption of Holland's (1997) theory posits that there are six primary work environments in which occupations can be accurately classified. As with the six interest types or personalities, work environments are also labelled Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (i.e., RIASEC). Each type of work environment is said to be largely comprised of

individuals sharing the corresponding RIASEC interest type (Reardon & Lenz, 2015). For example, an Artistic work environment is dominated by individuals with Artistic interests or personalities. Furthermore, the work environment itself is characterized as consisting of the equipment and tools associated with the corresponding interest type. For example, an Artistic work environment is likely to feature a studio-like setting with musical instruments and independent workers. Simply put, the specific type of RIASEC work environment reinforces the interests, abilities, preferences, and attitudes of those who choose to work in that setting.

 3. Person-environment congruence. The third primary assumption is referred to by Holland (1997) as his *congruency hypothesis*. More specifically, the congruency hypothesis posits that individuals seek work environments that will enable them to "exercise their skills and abilities, express their attitudes and values, and take on agreeable problems and roles" (Reardon & Lenz, 2015, p. 14). This assumption is more colloquially known as the *birds of a feather flock together* assumption, as it promotes the idea that *likes will attract likes* (Reardon & Lenz, 2015, p. 14).

 4. Behavior as a result of the person-environment interaction. The fourth primary assumption of Holland's theory is that behavior is largely determined by an "interaction between personality and characteristics of the environment" (Reardon & Lenz, 2015, p. 15). This assumption is directly related to the third assumption, and it suggests that accurate predictions can be made about a person's performance in a given environment based on the person's RIASEC type as well as the RIASEC type of the work environment. According to Holland (1997), individuals in work environments that are congruent with their own RIASEC interest type are more likely to achieve job satisfaction (and less anxiety), increased stability (e.g., tenure), and higher work achievement (e.g., promotion) than those working in environments that

are incongruent with their RIASEC type. For example, a person with a primary three-letter code of SEC working in an SEC occupation would be more likely to find common interests with others in that environment, and their values and attitudes would be more likely to be reinforced, leading to higher job satisfaction, lower work-related anxiety, better on-the-job performance, and more likelihood of remaining within that type of work environment. In contrast, an SEC individual working in an RIA occupation would likely have fewer shared interests with other workers and supervisors, resulting in less desirable work outcomes and experiences.

Secondary Assumptions and Constructs

As previously alluded, Holland's theory is comprised of four primary assumptions (as detailed above) as well as four secondary assumptions. The first secondary assumption or construct pertains to Holland's iconic hexagon, which provides the theory's structural hypothesis (Reardon & Lenz, 2015). The remaining secondary constructs are consistency, vocational identity, and differentiation. These latter three constructs are each related to the clarity or focus of the previously mentioned primary assumptions and are used to verify the stability of the RIASEC type, whether matching can happen, and that predicted outcomes can occur (Reardon & Lenz, 2015). Secondary constructs are used to modify predictions and outcomes based on the person's RIASEC interest scores. In other words, higher scores for consistency, vocational identity, and differentiation are said to be positive indicators of career development and lend more predictable outcomes. Each of these constructs as well as additional interpretive concepts related to Holland's theory (e.g., profile elevation) are discussed below, with particular attention given to differentiation and profile elevation.

1. The hexagonal structure and ordering of RIASEC types. The first secondary assumption pertains to the *calculus* assumption, or the theory's structural hypothesis. The

calculus construct evolved into Holland's (1973) theory and is visually depicted by the familiar

Holland hexagon (see Figure 2). More specifically, Holland's (1997) *calculus assumption*

maintains that the six interest types are related in a hexagonal structure, wherein the spatial

distance between types represents their degree of similarity or dissimilarity (e.g., adjacent types

of Realistic and Investigative types are more strongly related and *congruent* than the opposing

types of Realistic and Social). Research findings have mostly supported the RIASEC ordering of

the types across gender, race, and socioeconomic status, which is examined by observing the

intercorrelations between RIASEC scores within different subpopulations (Nauta, 2010). Today,

scholars (e.g., Prediger, 1982; Rounds & Tracey, 1993) note that types are more accurately

described in terms of a circular arrangement, or *circumplex*, as opposed to a hexagon with equal

sides (see Figure 2). Nonetheless, the two-dimensional structure is helpful for estimating the

degree of congruence between types as well as understanding Holland's next secondary

assumption of consistency.

Figure 2

The Holland Hexagon: Calculus Assumption (Structural Hypothesis)
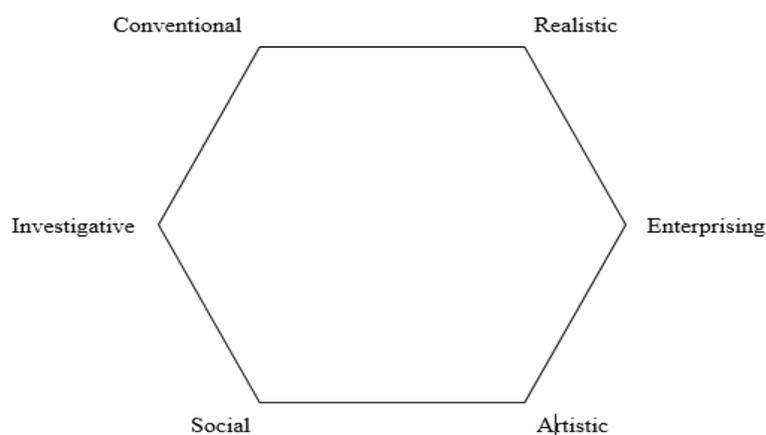
2. The consistency assumption or construct. Whereas congruence pertains to the

degree of similarity between a person's RIASEC code and a chosen work environment,

consistency pertains to the degree of similarity between the first two or three RIASEC letters within a person's interest score profile (Reardon & Lenz, 2015). Like congruence, consistency is determined using the hexagonal ordering of RIASEC typology. Consistency is represented by the degree of proximity between two interest types on the hexagon. According to Holland, interest or occupational Holland codes that are closer to each other on the hexagon are more similar or consistent than those on opposite sides of the hexagon. For example, a person whose 2-letter Holland code is SE is said to be consistent, where as a person with a Holland code of SR is considered inconsistent, or otherwise uncommon.

Consistency can be measured from any Holland-based interest inventory. This construct is usually referenced as being high, moderate, or low for a participant's RIASEC interest scores (Reardon & Lenz, 2015). A high level is represented when the highest-scored RIASEC letters are adjacent on the hexagon (e.g., RI, AS, SE). Moderate consistency occurs when a respondent's two highest-scored RIASEC letters alternate on the hexagon (e.g., RA, AE, ER). Low consistency occurs when the two highest-scored RIASEC letters are opposite on the hexagon (e.g., RS, AC, IE). Regarding the practical importance of Holland-based consistency, interest scores or codes are generally said to have increased stability and predictability when consistency is higher. Simply put, Holland's theory and typology is more applicable to the person under the condition of high consistency. Consistency is also posited to predict job stability and occupations or careers that are more likely to be pursued in the future.

In addition to directly relating to vocational outcomes, Holland asserted that consistency is directly related to the person's level of personality integration (Holland & Gottfredson, 1976). This idea of personality integration is discussed in more detail in this section's depiction of Holland's secondary assumption pertaining to differentiation. However, a subsequent lack of

empirical support for similar hypotheses related to consistency have led the theorist to deemphasize this construct in later versions of his theory (Holland, 1985, 1997).

3. The vocational identity assumption and construct. Vocational identity is a newer construct within Holland's theoretical framework. Vocational identity is defined as "the possession of a clear and stable picture of one's goals, interests, and talents" (Holland, 1997, p. 5). Like the other secondary constructs, when vocational identity is high, the person is posited as being more likely to find a congruent work environment and thusly more likely to experience more desirable career outcomes (e.g., satisfaction, tenure, promotion). Holland (1997) also asserted that high vocational identity is directly associated with conscientiousness, responsibility, interpersonal competence, hopefulness, and negatively associated with psychological distress (Reardon & Lenz, 2015, p. 17). According to earlier versions of Holland's theory, differentiation was meant to represent or indicate the degree of an individual's vocational identity. However, subsequent examination of the relationship between differentiation and vocational identity criterion variables suggested either weak or non-significant correlations. Thusly, Holland adopted vocational identity as its own secondary construct, which is measured using the Identity Scale from My Vocational Situation (Holland, Daiger, & Power, 1990).

4. The differentiation assumption and construct. Differentiation is related to the variation in RIASEC scale scores within a given interest profile and is meant to suggest the strength or distinctness of a type. There are numerous ways to operationalize differentiation (as discussed in later sections of this chapter). However, Holland (1968; Holland et al., 1994) recommends computing this construct by taking the absolute difference between the respondent's highest and lowest RIASEC scale scores. Visually depicted, interest score profiles are viewed as being either *spiked* or *flat* (Reardon & Lenz, 2015). Spiked interest scores are

suggestive of someone who is highly differentiated. Alternatively, a flat interest pattern indicates the person has undifferentiated interests (see Figure 1).

Differentiation also pertains to the clarity or focus of a given interest score profile (Reardon & Lenz, 2015). A person with a highly differentiated profile will likely exhibit many of the interests or personality characteristics that correspond with that code. For example, a person who is highly differentiated, and whose interest type is Social, is likely to fit many of the characteristics of a Social Type as described in Holland's RIASEC theory. In contrast, a person with an undifferentiated profile may exhibit fewer traits or characteristics that correspond with their highest code, meaning the individual is less likely to be a clear representation of any one type. According to Reardon and Lenz (2015), "a code that is differentiated can be more reliably used, assuming other positive indicators (e.g., high congruence, high coherence) than a code low in differentiation" (pp. 107-108). In other words, someone who is a *big* Social Type (i.e., highly differentiated Social profile) is more likely to fit Holland-based assumptions of a Social type than someone whose highest score is in Social, but whose scores are undifferentiated.

As Holland hypothesized, those with more differentiated interest scores have clearer or more distinct likes and dislikes. Consequently, individuals with highly differentiated scores are posited to have more ease with respect to career decision-making and are more likely to achieve desirable employment outcomes (e.g., satisfaction, tenure). Alternatively, those with an undifferentiated interest profile are said to present practitioners with complex counseling issues, "such as high anxiety and decision-making confusion" (Reardon & Lenz, 2015, p. 108).

Theoretical Link between Interest Differentiation and Psychopathology. In part, this dissertation explores the influence of internalizing and externalizing maladjustment on vocational interest score differentiation. To illustrate fully the theoretical link between interest

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differentiation and psychological maladjustment, recall Holland's view that his RIASEC typology represents a set of distinct personality traits, each defined by a clear set of predilections, values, competencies, and self-estimates. Thus, an undifferentiated profile does not merely indicate a person with equal interest in all RIASEC dimensions, but rather suggests someone who has a diffuse or divergent personality. Holland spoke of such a diffuse or divergent personality in terms of poor personality integration (e.g., Holland & Gottfredson, 1976). Fostering a well-integrated personality is a focus of therapy and is largely synonymous with processes of individuation and self-discovery (Allport 1937; Jung 1939; Maslow 1970; Rogers 1951). More specifically defined, personality integration represents the extent to which various aspects and motives of an individual's psyche (e.g., predilections, values, goals, competencies, self-estimates) become aligned to *function as an integrated whole* (Hirsh, 2014, p. 144). Compared to individuals with a well-integrated personality, those with a poorly integrated personality are typified as having less effective coping strategies for handling stressors, which ultimately precipitates symptoms of psychological maladjustment. In this manner, an undifferentiated profile is theoretically linked to less effective coping strategies, making the individual more vulnerable to psychological maladjustment (Holland & Gottfredson, 1976, p. 24).

With respect to the two primary dimensions of psychological maladjustment, an undifferentiated interest profile is theoretically linked to the internalizing dimension as opposed to the externalizing dimension. As previously referenced, an undifferentiated profile suggests that various components of the individual's psyche are at conflict. In other words, the undifferentiated person embodies disparate predilections, motivations, values, goals, competencies, and self-estimates that, at face value, are irreconcilable. In this manner,

undifferentiated profiles are related to internalizing maladjustment as disorders within this dimension occur from disparities "between the individual's needs, motives, and evaluations" (Bergman & Magnusson, 1983, p. 1). Accordingly, undifferentiated profiles are more strongly related, at least theoretically, to internalizing maladjustment as compared to externalizing maladjustment.

Furthermore, differentiation represents, to a large degree, the individual's ability to discriminate between potentially beneficial work environments from potentially unhealthy or dissatisfying work environments. This ability to discriminate is imperative for psychological health. As asserted by Holland (1958):

> The inability to make discriminations among occupations is indicative of conflict and disorganized self-understanding. Just as the inability to make everyday decisions is a result of conflicting motivations, so the inability to make positive or negative choices of occupations (environments) within the inventory is a sign of conflict. In this sense, conflict is defined as divergent, inaccurate, or irreconcilable views about one's abilities, needs, and sources of gratification; and is accompanied by the chronic emotional upset which results from such conflict. (p. 337)

Accordingly, well-differentiated profiles suggest adequate adjustment techniques wherein the individual is able to discriminate between occupations that are preferred (as indicated by the highest scale score) and occupations that should be avoided (as indicated by the lowest scale score). Alternatively, undifferentiated profiles indicate a low degree of discrimination between beneficial and non-beneficial environments, potentially resulting in *chronic emotional upset* (Holland, 1958, p. 337).

The Holland-based Interpretive Concept of Profile Elevation

In addition to the primary and secondary assumptions, Holland adopted additional interpretive concepts into his instruments and tools (e.g., Holland et al., 1994). Among these additional interpretive concepts is profile elevation. As previously mentioned, profile elevation is the sum of endorsed items (i.e., "like" responses) across all six RIASEC scales. Higher scores are considered a positive indicator of career development and psychological adjustment. Profile elevation is posited to reveal psychologically significant information about the client, such as aspects of personality and psychopathology (findings of which are detailed in subsequent sections of this chapter). However, profile elevation has traditionally been interpreted within the purview of the counselor's intuition (Reardon & Lenz, 2015). Counselors typically interpret low profile elevation scores to infer aspects of the client's psychological functioning, including attitude, mood, degree of engagement in the assessment process, and potential psychological maladjustment (Gottfredson & Jones, 1993; Bullock & Reardon, 2008).

Relevant to the current study, Holland speculated that profile elevation could be a useful index for purposes of mental health evaluation (Holland, Johnston, & Asama, 1994). Like Holland, researchers have long presumed an inverse relationship between profile elevation and depression among clients (Spokane, Luchetta, & Richwine, 2002). Further interpretations of low profile elevation with respect to psychological maladjustment can be gleaned from earlier studies by Holland, and studies by Berdie, Weir, and others. Holland (1958) summarized these works by stating:

Specifically, the total number of preferred occupations is a function of dependency, aggressiveness, mood, degree of cultural introception, self-control, sociability, and defensiveness. Over-responsiveness suggests... dependence, aggression, euphoria, over-

intraception of the culture, impulsivity, sociability, frankness. In contrast, under

responsiveness appears indicative of greater independence, passivity, depression,

rejection of the culture, over-control, withdrawal, and defensiveness. (p. 338)

Indeed, these latter two components of Holland's model, differentiation and profile

elevation, are theorized as having important clinical implications. Both differentiation and profile

elevation are hypothesized to indicate various aspects of the client's personality and

psychological adjustment. The empirical history and development of these interest assessment

constructs are detailed following the next section, which discusses criticisms of Holland's theory

and other such trait-oriented frameworks of career development.

Criticisms of Holland's Theory and Other Trait-Oriented Frameworks

If number of competing theoretical perspectives on the issue is any indication, the process

of career development is complex, rigorously studied, and controversial among vocational

psychologists (Lent, Brown, & Hackett, 1994). Within counseling literature, career theories are

organized into one of several broad categories: (a) trait-oriented theories, (b) social learning

theories, (c) developmental theories, and (d) postmodern theories (Zunker, 2006). Though these

frameworks differ in certain aspects, each type of theory emphasizes, to a varying degree, the

influence of personal and environmental factors to explain vocational behavior (e.g., career

decision-making processes, performance outcomes). This section first discusses the trait-oriented

approach and common criticisms made from scholars who align more with the social learning or

developmental perspectives of vocational behavior. Then, major criticisms specific to Holland's

(1985, 1997) theory are outlined.

Criticisms of trait-oriented theories. Among the broad camps of career theories, trait-

oriented approaches such as Holland's (1997) theory have dominated the arenas of vocational

research and assessment (Zunker, 2006). In terms of research, trait-oriented theories have been particularly beneficial for understanding the circumstances that lead to job satisfaction, long-term job stability (i.e., tenure), and work performance (Nauta, 2010). As previously alluded, these career frameworks emphasize knowledge of self (e.g., abilities, interests, values), knowledge of work environments (e.g., job requirements, tasks, rewards), and the use of sound reasoning between these two sets of facts to identify an ideal job match (Zunker, 2006). For example, similar to Holland's (1985, 1997) congruence hypothesis, authors of another prominent trait-oriented model called the Theory of Work Adjustment (TWA) posit that job satisfaction and satisfactoriness are a function of the degree to which the individual's abilities and values fulfill the requirements of the work environment, and, in turn, the degree to which the work environment reinforces the individual's preferred rewards (e.g., monetary compensation, prestige, relationships; Dawis & Lofquist, 1984).

Although providing a clear framework for achieving desirable vocational outcomes, scholars steeped in the social learning and developmental traditions have stressed several limitations with respect to trait-oriented approaches. For example, trait-oriented approaches are criticized for inadequately explaining: (a) the influence of gender and ethnicity in career development; (b) the influence of contextual factors (e.g., environmental barriers) on career behavior and decision-making; and (c) the specific developmental processes that lead to the formation of vocational interests and choices (Hackett & Lent, 1992). Each of these points of criticism are discussed, beginning with the influence of gender and ethnicity on career development and vocational outcomes.

Researchers have long focused on vocational outcome differences based on gender and race (Nauta, 2010). However, fewer scholarly efforts have been made to understand the

cognitive, psychological, or social processes through which race and gender may influence career development (Lent, Brown, & Hackett, 1994). As such, race and gender are described as asserting only a perfunctory role, if at all, in many trait-oriented frameworks of vocational behavior (Osipow, 1990). Thus, there is controversy whether a universal model of vocational behavior is adequate or if more population-specific models are needed (Hackett & Lent, 1992). Contrastingly, Holland and Gottfredson (1976) argued that because each race and gender group comprise the same species, "the psychological principles underlying vocational behavior are presumably the same for all groups" (p. 25). Holland admitted that groups differ in terms of type distribution, but he argued these differences do not support the assumption that different groups have significant variance with respect to fundamental psychological processes (Holland & Gottfredson, 1976).

Another point of controversy with respect to trait-oriented models of vocational behavior involves the matter of contextual factors. More specifically, scholars argue that trait-oriented models fail to address or explain the influence of environmental supports and barriers in career development and vocational behavior (Lent, Brown, & Hackett, 1994). Generally, these claims perpetuate the notion that trait-oriented models portray the individual as completely self-deterministic and independent of environmental factors that either may help career pursuits (supports) or hinder them (barriers). Or, as Lent, Brown, and Hackett (1994) assert,

> Theories of career choice… typically prefer to envision hypothetical scenarios in which persons operate as free agents in the selection of their career paths, though they generally acknowledge, at least in broad terms, circumstances that may fetter personal choice. Career… research, likewise, tends to emphasize person-psychological variables, and to underplay the potent role of contextual factors in shaping career paths. (p. 107)

As a consequence of these perceived limitations of trait-oriented models, a relatively new conceptualization of vocational behavior has emerged, called the Social Cognitive Career Theory (SCCT; Lent, Brown, & Hackett, 1994). Rooted in Bandura's (1986) theory, SCCT falls under the category of social learning models of vocational development and behavior. According to Zunker (2012), the SCCT model helps "to explain how variables such as interests, abilities, and values interrelate and, most important, how all variables influence individual growth and the contextual factors (environmental influences) that lead to career outcomes" (p. 42). As a whole, the SCCT model hypothesizes, in detail, the reciprocal pathways through which personal and environmental mechanisms directly and indirectly influence career values, interests, goals, and vocational performance outcomes (Lent, Brown, & Hackett, 1994).

Indeed, social learning or developmental models such as the SCCT are superior to trait-oriented models in making explicit the role of contextual factors in the formation of vocational interests, choices, and behaviors. This does not mean, however, that authors of trait-oriented models fail to recognize the importance of social learning factors and environmental influences. For example, Holland and Gottfredson (1975) acknowledged that genetic, psychosocial, and environmental factors are precursors of interest formation and career decision-making. Similar to assumptions of SCCT, Holland (1973) asserted that social and environmental factors encourage individuals to engage in specific activities in their early development that lead to particular interests, skills, and self-estimates. Additionally, modeling from parents and peers are said to reinforce certain behaviors, contributing to the formation of characteristics and dispositions that ultimately develop *a characteristic cluster of personal traits* that predispose individuals toward preferring certain work environments (Holland & Gottfredson, 1976, p. 21). More specifically, Holland (1973) asserted the following with respect to trait and type development:

Each type is the product of characteristic interaction among a variety of cultural and personal forces, including peers, biological heredity, parents, social class, culture, and the physical environment. Out of this experience, a person learns first to prefer some activities as opposed to others. Later, these activities become stronger interests; such interests lead to a special group of competencies. Finally, a person's interests and competencies create a particular personal disposition that leads him or her to think, perceive and act in special ways. (p. 2)

Although Holland and colleagues recognize social learning and developmental frameworks as *beneficial for purposes of interpreting career-related data* (Holland & Gottfredson, 1976) the trait-oriented theorist argued that the "typology of persons and environments is more useful than any of the life stage strategies for coping with career problems" (Holland & Gottfredson, 1976, p. 22). In support of the argument for trait-oriented approaches, Holland and Gottfredson (1976) stated:

The [typologies of persons and environments] provide an explicit structure for assessing a person and his/her current situation at any age. This structure… can be applied from adolescence to retirement, can be readily understood by the person, incorporates the differential tradition, incorporates many developmental speculations, and has a comprehensive and strong research and theoretical base. (p. 23)

Similarly, Holland and Gottfredson (1976) outlined how trait-oriented interest constructs can be integrated into existing social learning or developmental frameworks of vocational behavior. For example, in recent decades, Holland's RIASEC typology has been used to operationalize the construct of vocational interest within the SCCT framework (e.g., Scheuermann, Tokar, & Hall, 2014). Also, more relevant to the current study, Holland and

Gottfredson (1976) discussed how trait-oriented constructs such as vocational interest differentiation could be interpreted as a career development variable. More specifically, authors discussed that an individual's vocational interest scores may become increasingly differentiated over time as the person gains social learning experiences (e.g., employment, education) that more clearly illuminate the person's likes and dislikes regarding the world of work (Holland & Gottfredson, 1976).

In summary, scholars have criticized trait-oriented models for inadequately explaining the role of demographic differences, contextual factors, and developmental processes in forming vocational choices and behaviors. Although such criticism is fair and frequent, trait-oriented models have dominated vocational psychology research and practice for a reason. Namely, such frameworks are easily integrated into practical settings (e.g., career counseling and assessment) and have greatly attributed to our understanding of the factors that lead to the desirable outcomes of job satisfaction, stability, and achievement (Nauta, 2010).

Criticism specific to Holland's theory. As the most extensively studied theory of its type, Holland's (1985, 1997) RIASEC framework has garnered much in the way of both praise and criticism. This section outlines common rebukes of Holland's theory that are most relevant to the current study. These criticisms pertain to: (a) the applicability of Holland's RIASEC typology across subpopulations; (b) the validity of Holland's calculus assumption for various demographic groups; (c) the notion that RIASEC types are synonymous with personalities; and (d) research problems associated with Holland's constructs of congruence, consistency, and differentiation.

Criticisms of RIASEC typology. For decades, scholars have dutifully questioned the applicability of Holland's RIASEC typology with diverse groups (Nauta, 2010). However,

research has consistently supported the presence of the RIASEC types across a variety of populations, including high school students (Holland, 1962), college students (Edwards & Whitney, 1972), and adults participating in the workforce (Rachman, Amernic, & Aranya, 1981). Holland (1973, 1985, 1997) also considered the types as being applicable to the broader population, but recognized the influence of race, gender, age, and socioeconomic status on career-related development (Nauta, 2010). Indeed, scholars have noted differences in RIASEC scale scores for different demographic groups, particularly with respect to gender (Betz & Gwilliam, 2002; Fouad, 2002). Whereas men typically score higher than women on the Realistic scale, women generally score higher than men on the Social scale (e.g., Tracey & Robbins, 2005). However, the effect sizes for differences in race and age are typically small (Fouad, 2002).

In addition to Holland's RIASEC classification system, there exists other models or frameworks for characterizing people and environments. Prediger's (1982) model of two bipolar dimensions of Data-Ideas and People-Things has garnered considerable empirical support as well as Gati's (1991) hierarchical model (Nauta, 2010). Additionally, studies involving factor analytic methods to examine interest structure often yield more than six interest factors or types (Rounds, 1995), as represented, for example, with the 14 scales of the COPS-II (Knapp-Lee et al., 1989). Although Holland (1997) recognized factor-analytic findings demonstrating more than six interest dimensions, he favored a six-factor model for its utility and practicality, which is perhaps one reason why the RIASEC typology has translated so effectively in counseling settings.

Criticisms of calculus assumption. Holland's calculus assumption has undergone much scrutiny in terms of applicability across demographic groups (Nauta, 2010). In general, findings have supported the hexagonal arrangement of RIASEC types across different populations.

Indeed, adjacent RIASEC types have consistently been observed as being more strongly correlated than opposing RIASEC types (e.g., Armstrong, Hubert, & Rounds, 2003; Darcy & Tracey, 2007). However, there is less support for the RIASEC model in terms of representing six equidistant sides, as the spatial proximity of types rarely indicates a perfect hexagon (e.g., Armstrong et al., 2003). Nonetheless, a wealth of literature has accumulated from researchers examining whether the calculus assumption holds for various demographic groups (e.g., Armstrong, Rounds, & Hubert, 2008; Hedrih, 2008; Tracey & Robbins, 2005), and there is considerable support for suggesting that the RIASEC hexagonal structure is valid across race (e.g., Armstrong et al., 2003; Gupta et al., 2008; Swanson & Gore, 2000), sex (e.g., Armstrong et al., 2003; Darcy & Tracey, 2007), and socioeconomic status (Ryan et al., 1996).

Criticisms of RIASEC types as personality types. As previously alluded, Holland (1985, 1997) presented RIASEC types as being synonymous with personality types. Indeed, researchers have conduced numerous studies wherein Holland-based RIASEC scale scores were compared to those of more traditional measures of personality (e.g., Gottfredson, Jones, & Holland, 1993; Spokane et al., 2000). From such scholarship, significant correlations have often observed between Holland's RIASEC scores and, for example, the Five Factor Model (FFM) of personality as operationalized by Costa and McCrae. However, some scholars argue that correlations from these studies are not high enough to suggest construct equivalence (Schinka, Dye, & Curtiss, 1997; Tokar & Swanson, 1995). Furthermore, findings observed from some studies suggest that the FFM personality dimensions (particularly conscientiousness) are better predictors of job satisfaction and performance than RIASEC scales (De Fruyt & Mervielde, 1999). Measures of self-efficacy, too, have out-predicted variance in employment outcomes above and beyond that of Holland-based measures in other studies (Donnay & Borgen, 1999).

These findings potentially mean that FFM constructs are perhaps even more comprehensive and relevant to vocational outcomes than Holland's theoretical constructs and tools (Arnold, 2004). Nonetheless, meta-analyses (Barrick, Mount, & Gupta, 2003; Larson, Rottinghaus, & Borgen, 2002) demonstrate significant overlap between the RIASEC typology and FFM framework, providing support for Holland's claim that his interest types reflect personality types.

Criticisms of the congruence construct. Despite Holland's theory being the dominant framework in vocational psychology, scholars have noted several limitations or criticisms of core constructs embedded within the RIASEC framework. For example, Arnold (2004) emphasized that Holland's key construct of congruence has failed to gain empirical support that demonstrates a strong relationship between person-environment match and the hypothesized outcomes of job satisfaction and performance. Because the congruence hypotheses are central to practices in vocational interest assessment, weak associations between congruence and posited outcomes "present a major challenge to the theory" (Arnold, 2004, p. 95).

Two meta-analytic studies (Assouline & Meir, 1987; Tranberg, Slane, & Ekeberg, 1993) underscored what Arnold (2004) later described as the *congruence problem* in Holland's theory (p. 97). More specifically, Assouline and Meir (1987) aggregated the results of more than 50 correlations reported across multiple studies consisting of 9,041 total participants. The mean correlation between congruence and job satisfaction from the meta-analysis yielded a coefficient of .21. These findings were replicated in Tranberg et al.'s (1993) study in which 17 correlations between congruence and satisfaction had a mean coefficient of .20 across studies consisting of 8,608 total participants. Although Spokane (1985) noted that many psychological theories and related instruments are founded upon correlations less than .20, Arnold (2004) explained that such a correlation suggests that only 4% of the variance in one variable is predicted by the other,

and that "we might reasonably hope for considerably more" (p. 97). Based on the findings for the congruence hypotheses from these meta-analytic studies and others (e.g., Young et al., 1998), some scholars (e.g., Tinsley, 2000) have concluded that Holland's theory is altogether invalid.

Regardless of these counterclaims to Holland's congruence hypotheses, several meta-analytic studies have substantiated Holland's claim that greater congruence is associated with desirable outcomes such as job satisfaction (Assouline & Meir, 1987; Spokane, Meir, & Catalano, 2000) and work performance (Spokane et al., 2000). However, Holland (1997) indeed recognized that the predictive power of the congruence construct was modest. Furthermore, several scholars have explained the *congruence problem* as primarily being a result of study limitations, inconsistent methods for operationalizing congruence, and the absence of key variables that are likely to mediate or moderate the congruence-outcome relations (De Fruyt, 2002; Gore & Brown, 2006).

Criticism of additional secondary constructs. Lastly, Holland's theory has gained a considerable amount of criticism with respect to the differentiation and consistency constructs and associating assumptions (see Carson & Mowsesian, 1993). As previously alluded, researchers have found support for these interest constructs in some studies, and contradictory findings in others. As a result, Holland (1985) acknowledged that the resultant literature on differentiation and consistency is checkered, leading the career theorist to deemphasize the consistency construct in later versions of his theory (Nauta, 2010), and to admit that his differentiation hypothesis has produced *weak* results (Holland, 1997, p. 148). However, as discussed throughout this dissertation, methodological limitations as well as inconsistencies in operational definitions have plagued research of the differentiation construct.

History of Differentiation and Profile Elevation as Psychologically Meaningful Constructs

In part, the current study examines the influence of psychological maladjustment on vocational interest score differentiation and profile elevation. Interest differentiation and profile elevation have a long history of scholarship. Outlined below is the history and development of these two interest assessment constructs, as well as current research trends. First, differentiation is discussed, followed by profile elevation.

Early Interest Differentiation Hypotheses and Findings

Interest differentiation research is traced back in the literature to Strong's Vocational Interest Blank (SVIB) created in 1927, which predates the emergence of Holland's theory and RIASEC instruments. Although the SVIB was developed without explicated theoretical assumptions pertaining to differentiation, the instrument provided the basis upon which early discussion and examination of differentiation was produced (Campbell & Hansen, 1981). Researchers from the 1940s to the 1960s speculated widely upon the underlying meaningfulness of differentiation. More specifically, researchers were intrigued with the phenomenon of "flat profiles," or undifferentiated interest scores.

For example, Darley (1941) posited that unvaried interests (i.e. undifferentiated scores) were related to poor educational outcomes such as underachievement, academic difficulties, and a higher dropout rate. Undifferentiated interests were also hypothesized to indicate vocational maladjustment (e.g., Athelstan, 1966; Darley, 1941), career indecision (e.g., Ashby, Wall, & Osipow, 1966; Athelstan, 1966), and career immaturity (e.g., Zytowski, 1965). However, lackluster findings led SVIB developer E. K. Strong, Jr. (1959) to conclude that, in such instances as undifferentiated interest scores, his instrument "cannot be very helpful in suggesting occupational choices" (p. 13).

During the time Strong made this assertion, Holland (1959) was establishing his theory and related RIASEC-based tools within the field of vocational interest assessment. Interest differentiation was introduced as a secondary construct in Holland's (1966) theory. Initially termed *homogeneity* (well-differentiated profiles) and heterogeneity (undifferentiated profiles), the differentiation construct was hypothesized by Holland as an indicator of the client's career development and future vocational success. More specifically, Holland originally hypothesize that well-differentiated profiles were positively related to (a) stability of occupational choice; (b) decision-making ability; (c) interpersonal competency; and (d) maturity of vocational attitude (1968). Conversely, undifferentiated profiles were suggested to indicate vocational choice instability, career decision-making difficulty, poor vocational maturity, and low interpersonal competency. In addition, Holland posited that differentiation scores were inversely related to psychological maladjustment.

In the decade which followed, these assumptions were tested (e.g., Holland, 1968; Holland, Gottfredson, & Nafziger, 1975; Villwock, 1975). In addition, other hypotheses were generated and examined, such as the relationship between differentiation and self-knowledge (Holland, Gottfredson, & Nafziger, 1975), occupational knowledge (Holland, Gottfredson, & Nafziger, 1975), vocational identity (e.g., Leung, Conoley, Scheel, & Sonnenberg, 1992), career decidedness (e.g., Lowe, 1981), and job stability (e.g., Meir, Esformes, & Friedland, 1994). However, only weak or non-significant correlations were once again observed between differentiation and these originally hypothesized variables. These findings mirrored the earlier research outcomes from the 1940s when the meaningfulness of interest differentiation was first examined. Thusly, more than 30 years after Strong's initial assertion that his SVIB instrument was not helpful in the circumstance of flat or undifferentiated scores, Holland similarly

concluded from decades of research findings that "differentiation continues to be a weak construct" (Holland, 1997, p. 148).

Nonetheless, there are some studies that suggest that highly differentiated interests are indeed indicative of a more adaptive personality and better vocational adjustment (Hirschi, 2009, p. 385). For example, some research indicates that well-differentiated interest scores are associated with more stable interests and career aspirations (e.g., Bergmann, 1993; Holland, 1968), career maturity among women (Miner et al., 1997), occupational choice readiness among adolescents (Hirschi & Läge, 2007), career certainty (Sackett & Hansen, 1995), and advanced identity status with college students (Nauta & Kahn, 2007). With respect to demographic variables, studies indicate that female college students and clients of career workshops typically have more highly differentiated interests than males (e.g., Miner et al. 1997). Furthermore, there is some evidence to suggest that differentiation increases over time, as 11th grade students were shown to have more differentiated interest scores than 8th grade students (Hall, Kelly, & Van Buren, 1995). However, either minimal or no difference is typically found among or between ethnic groups (e.g., Fouad & Mohler, 2004).

Overall, though, findings with respect to differentiation and vocationally related variables have been ambiguous. In more recent years, differentiation has been compared to FFM personality traits as well as psychological maladjustment, which are detailed in subsequent sections of this chapter. However, research of the differentiation construct has been plagued by two primary problems. The first problem is that undifferentiated profiles, particularly at higher levels of profile elevation, could be related to multipotentiality (Hirschi, 2009). More specifically, for multipotential individuals (i.e., those with the ability to excel in all RIASEC work environments), undifferentiated scores might be a positive indicator of career development

as opposed to a diffuse personality or psychological maladjustment. However, there is a dearth of research in this area, and more studies are needed to substantiate the notion that unvaried interest scores are indeed related to multipotentiality. A second problem that plagues differentiation research relates to the numerous operational definitions that are used in the literature.

A variety of differentiation indices. Researchers note that the poor performance of differentiation as a theoretical construct may partly be explained by the inconsistent manner in which it is operationally defined across the research literature. The research on vocational interest differentiation is plagued by numerous indices of vocation interest differentiation that are in contrast to Holland's suggestion of taking the difference between the highest and lowest RIASEC scales scores. To date, more than six different methods are used for computing interest differentiation (see Table 2). However, these alternative indices represent a significant departure from Holland's (1968, 1994) index, which suggests taking the absolute difference between the respondent's highest and lowest RIASEC scale scores. Researchers have compared multiple indices of differentiation using correlation analyses. For example, Bullock (2006) observed that Holland's (1968, 1994) index and Iachan's (1984) index are moderately correlated. Furthermore, whereas Holland's (1968, 1994) index typically has a positive correlation with profile elevation, Iachan's (1984) index is often inversely related to profile elevation (e.g., Bullock & Reardon, 2008). Consequently, the relationships between differentiation and criterion-related variables lead to findings that vary greatly depending on the specific index used, which has led to confusion about the meaningfulness of this Holland-based interest construct.

Table 2

Examples of Operational Definitions for Differentiation

Index of Interest Differentiation	Method of Computation
Frantz & Walsh's (1972) index	Equals the difference between the highest and second highest rank-ordered scores (i.e., $X_{[1]} - X_{[2]}$)
Holland's (1968, 1994) index	Equals the difference between the highest and lowest rank-ordered scores (i.e., $X_{[1]} - X_{[6]}$)
Spokane & Walsh's (1978) index	Equals the difference between the highest and third-highest rank-ordered scores (i.e., $X_{[1]} - X_{[3]}$)
Iachan's (1984) index	$= \frac{1}{2}\left\{ X_{(1)} - \frac{X_{(2)} + X_{(4)}}{2} \right\}$
Swanson & Hansen's (1986) index	Equals the standard deviation of scores across all RIASEC dimensions

Authors of alternative differentiation indices argue that Holland's method of taking the difference between the highest and lowest interest scale scores does little to account for the overall degree of variation within a client's interest score pattern. Indeed, the alternative differentiation indices incorporate more RIASEC scales into their computations. Thusly, the alternative indices are considered more sensitive in detecting the shape of the overall interest score pattern (Bullock, 2006). However, Holland's (1968, 1994) index has a few advantages.

One advantage of Holland's (1968, 1994) high-low index is practicality. Computing this index is simple, requiring only that the lowest RIASEC scale score be subtracted from the highest RIASEC scale score. Compared to Holland's index, the alternative indices of differentiation have become increasingly complicated. The computations required for alternative indices are generally more complex, making them less practical for widespread usage in career and rehabilitation settings. Therefore, Holland's index translates more seamlessly into practical

settings. Indeed, Holland's high-low index is how counselors are instructed in multiple interest inventory manuals to compute differentiation (e.g., SDS, VPI).

Another advantage of Holland's Index is that it has outperformed alternative indices with respect to capturing significant relations with other meaningful variables, particularly those related to personality and psychological functioning. At least two studies (i.e., Bullock & Reardon, 2008; Gottfredson & Jones, 1993) have examined both Holland's (1968, 1994) index and Iachan's (1984) index in relation to the Five-Factor Model (FFM) of personality. Findings suggest that Holland's (1968, 1994) index is more significantly and consistently related to FFM traits than Iachan's (1984) index. For example, whereas Gottfredson and Jones (1993) noted significant correlations among males between Holland's (1968, 1994) index and four of the FFM traits, only non-significant findings were observed using Iachan's (1984) index. Among women, Holland's (1968, 1994) index was significantly correlated with FFM Openness and Conscientiousness. However, Iachan's (1984) index among women was only correlated with Openness.

Perhaps one reason Holland's (1968, 1994) high-low index has outperformed alternative indices is because Holland's method more strongly emphasizes the degree of discrimination between the client's most beneficial work environments (as exhibited by the highest RIASEC scale score) and least beneficial work environments (as exhibited by the lowest RIASEC scale score). This degree of discrimination is an important indicator of psychological adjustment. However, when the variance of additional scale scores is included in the computation of differentiation (as is the case with alternative indices), the degree of discrimination between the most beneficial and least beneficial work environments is diluted. According to Holland (1958), the ability to discriminate between the most beneficial and least beneficial work environments is

critical for *creative health*, and the inability to do so is a function of a *disorganized self-understanding* and psychological conflict that results in *chronic emotional upset* (p. 337).

For the above reasons, Holland's (1968, 1994) index is the chosen method for making differentiation operational in the current study. Furthermore, using Holland's index will help address a considerable gap in the literature. More specifically, Holland's differentiation index has yet to be examined in relation to psychiatric disorders and symptoms. As discussed in later portions of this chapter, only alternative differentiation indices have been used to investigate the relationships between differentiation and psychopathology.

Recent trends in differentiation research. Despite decades of meager findings with respect to Holland's original differentiation hypotheses, studies attempting to unlock the meaningfulness of differentiation continue to populate the vocational interest literature. In addition to developing more complicated indices of differentiation, there are several recent trends in the literature. For example, researchers have proposed that the construct serves as a moderating variable for the congruence-outcome relationship (Holland, 1997), while other scholars have investigated differentiation in relation to the concept of multipotentiality (see Rysiew, Shore, & Leeb, 1999). More relevant to the current study are recent trends in which differentiation is increasingly linked to personality traits and forms of psychological maladjustment (e.g., depression, anxiety). Findings from these studies are detailed in subsequent sections of this chapter. First, the history and development of profile elevation as a meaningful construct is discussed.

Early Interest Profile Elevation Hypotheses and Findings

As previously alluded, profile elevation represents the sum total of endorsed items (i.e., "like" responses) across all six Holland-based interest scales (Holland, Johnston, & Asama,

1994). Fuller, Holland, and Johnston (1999) posited that low interest profile elevation is an indicator of psychological maladjustment issues that warrant the need for more intensive assessment or treatment (p. 122). However, the literature consists of competing interpretations for profile elevation. Whereas some scholars contend that profile elevation has substantive meaning with respect to personality, psychological functioning, and vocational interest research, other scholars argue that profile elevation is merely a measurement artifact that reflects response bias. This debate is more evident in recent research pertaining to profile elevation. First, an outline of the early history and development of profile elevation research within vocational psychology literature is provided with particular emphasis on relationships observed between the interest construct and other psychologically meaningful variables.

Prior to the initial version of Holland's (1959) theory, profile elevation was already being examined as a psychologically meaningful index within vocational interest literature. For example, M. M. Jacobsen (cited by Fryer, 1931) observed that, at least among college women, "good students" typically endorsed more items on the Strong Vocational Interest Blank (SVIB) than did "poorer students" (Gottfredson & Jones, 1993, p. 36). Berdie (1943) found a similar relationship between profile elevation and academic achievement for males, reporting positive correlations between the number of "like" responses on the SVIB and high school percentile rank (.15). This study was also among the first to examine interest profile elevation in relation to personality, finding that the number of "like" responses on the SVIB was significantly and positively correlated with the Minnesota Personality Scale (MPS) scores for Morale (.12) and Social Adjustment (.23).

Holland began to examine correlates for "like" responses upon development of his Vocational Preference Inventory (VPI; Holland, 1958). However, instead of investigating

correlates for the total number of endorsed responses (i.e., profile elevation), the theorist initially examined the number of endorsed responses for the first 30 items of the VPI. This tally of "like" responses for the first 30 items of the VPI comprised the instrument's Acquiescence (Ac) scale. The Ac scale, more exactly, was meant to "detect dissimulation and extreme response biases which may go undetected in forced-choice and true-false formats" (Holland, 1985, p. 9). Holland (1965) found significant correlations between the VPI Ac scale and the California Psychological Inventory (CPI; Gough, 1956) among a sample of male and female Peace Corps applicants (N = 96). For men, the Ac scale was significantly correlated with CPI scores of Sociability (.28), Well Being (-.32), Self-Control (-.28), Tolerance (-.31), and Flexibility (-.28). For women, significance was only found with the Good Impression (.38) scale. In addition to the CPI, the sample was administered the Minnesota Multiphasic Personality Inventory (MMPI), for which the Ac scale significantly correlated to the Psychopathic Deviate (Pd) scale (.26) for men and the Lie (L) scale (.38) for women. Holland (1965) also reported Adjective Check List items that National Merit Finalists high on the Ac scale were more likely to check than those with lower scores. While the men (N = 360) checked adjectives such as power seeking, adventurous, rebellious, and versatile, the women (N = 278), for example, checked enthusiastic, curious, impulsive, and sociable.

Ten years later, Holland (1975) examined relations between the Ac scale and the Guilford-Zimmerman Temperament Survey among a sample of sales job applicants (N = 200). Significant correlations were found for General Activity (.25), Ascendancy (.22), and Social Interaction (.19) scales. In the same article, Holland reported that the VPI Ac scale correlated significantly and positively with various personality factors, as measured using the 16 PF among a sample of nearly 800 boys and 400 girls. Such correlations at .20 or greater were observed for

Warmth, Dominance, Surgency (i.e., enthusiasm and impulsivity), Parmia (i.e., spontaneity), and Presmia (i.e., intuitiveness). From these results, Holland associated low Ac scale scores with self-deprecation and an "unsociable, depressive, and unconventional outlook" (Holland, Johnston, & Asama, 1994, p. 338).

Holland, Johnston, and Asama (1994) represents the first peer-reviewed article in which Holland examined profile elevation rather than merely the Ac scale (first 30 items). The study is also among the first of several efforts to compare profile elevation scores with FFM personality traits and the Personality Styles Inventory (PSI; Silver & Malone, 1993). Authors hypothesized that profile elevation was negatively correlated with scales for FFM Neuroticism, PSI Depression, and FFM Paranoia among both men and women. Results supported the hypothesis for men, as correlations for Neuroticism (-.37, p < .01), Depression (-.34, p < .01), and Paranoia (-.16, p < .05) were all significant and negatively related. For women, the hypothesis was only partially supported, as correlations for Neuroticism (-.19, p > .05), Depression (-.23, p < .01), and Paranoia (-.14, p < .05) were each negative, but only Depression was significant.

Profile Elevation: Recent research and developments. Despite decades of findings in which profile elevation has correlated with important psychological and personality variables, the meaningfulness of profile elevation is contentious among scholars. More specifically, there are two dominant, opposing interpretations for profile elevation within the relevant literature (Darcy & Tracey, 2003; Wee, 2016). The first interpretation is that profile elevation is a measurement artifact that should either be ignored or controlled for. The second interpretation is that profile elevation has substantive meaning within the fields of personality and interest assessment. With respect to the former interpretation, Prediger (1982) observed through principal components analysis that Holland-based vocational interest scores yields a three-factor solution

in which one of these factors represents profile elevation level. According to Prediger, profile elevation does not indicate a general factor of interest that is akin to Spearman's concept of g intelligence as argued by Darcy and Tracey (2003), but rather signifies a form of response bias. More specifically, Prediger (1998) asserted that profile elevation is merely a form of acquiescence, reflecting a client's tendency to endorse many items (i.e., *yay-saying*) or endorse very few items (i.e., *nay-saying*), regardless of item content. To support his argument, Prediger (1998) demonstrated that profile elevation level (i.e., low, medium, high) does not moderate RIASEC scale validity (i.e., interest-goal congruence). From this finding, Prediger questioned the usefulness of profile elevation in vocational psychology.

However, researchers of other studies (i.e. Darcy & Tracey, 2003; Wee, 2016) support the opposing dominant interpretation of profile elevation, which is that this interest construct has substantive meaning within the field of personality and interest assessment. For example, Wee (2016) found that profile elevation is more attributed to an attitudinal disposition as opposed to an acquiescence response style. From study findings, the author concluded that "The general factor of interests [i.e., profile elevation] can thus be used to offer insight into an individual's personality and is worth reporting in interest assessment results" (2016, Abstract). Further supporting the interpretation that profile elevation has substantive meaning is found in Darcy and Tracey's (2003) article, which references numerous studies that have shown a significant relationship between profile elevation and personality traits. Furthermore, profile elevation has been significantly related to several disorders or symptoms of psychological maladjustment. Thus, profile elevation indeed has substantive meaning with respect to personality and psychological maladjustment. Many of these such studies have populated the literature in more recent decades and are discussed in detail throughout the remaining sections of this chapter.

Relating Differentiation and Profile Elevation to Neuroticism and FFM Traits

Holland was consistent throughout his career in his contention that, beyond vocational interest types, the RIASEC types represent personality traits (e.g., Holland, 1997). Passionate in this belief, Holland returned from retirement to compare his RIASEC framework to a then-emerging personality inventory being developed by Costa and McCrae (1985), which is based on the Five-Factor Model (FFM) of personality. As noted by Bullock (2006), "more research has been conducted with regard to these two theories than any other combination of personality and vocational theories" (p. 36). Costa, McCrae, and Holland (1984) represents the first study to compare Holland's RIASEC typology to the FFM personality domains. Upon reporting findings of substantial overlap between the two models, research efforts in this area began to multiply. In the following two decades, 12 studies were conducted, justifying a meta-analytic examination from Larson, Rottinghaus, and Borgen (2002). Their meta-analysis was based on correlation results across each study, the findings of which helped substantiate Holland's claim that his RIASEC model and related tools, to a significant degree, capture information about personality. In addition to Holland's assumptions related to RIASEC typology, his secondary construct of interest differentiation and his interpretive concept of profile elevation have been examined in relation to the FFM traits (e.g., Holland, Johnston, & Asama, 1994).

There are at least seven studies that have either explored Holland-based differentiation, profile elevation, or both in relation to FFM personality domains. From these studies, insights about the meaningfulness of differentiation and profile elevation have emerged. Relevant to the current study are findings pertaining to the comparative meaningfulness of the various indices of interest differentiation as they relate to personality. Also relevant to the current study are findings on interest differentiation and profile elevation in relation to the FFM Neuroticism scale.

Of the FFM traits, Neuroticism is most strongly related to psychological maladjustment (Khan, Jacobson, Gardner, Prescott, & Kendler, 2005). Therefore, the purpose of this section is to review such literature and highlight key findings. First, a brief overview of Costa and McCrae's FFM taxonomy is provided, followed by a review of studies comparing interest score differentiation and profile elevation to the FFM traits.

An Overview of the Five-Factor Model of Personality

Colloquially termed the *Big Five*, the FFM is comprised of (five) global traits, or broad personality domains labelled Neuroticism, Extraversion, Openness, Conscientiousness, and Agreeableness. Each of these broad domains are comprised of six lower-order trait facets (see Table 3). The Big Five robust factors of personality were originally identified from a series of factor analyses of character adjectives used across different languages and mediums. This method for identifying personality traits is based on the lexical-semantic assumption, which posits that the most salient personality characteristics have become ingrained in language and literature (John & Srivastava, 1999). Implementation of this method across a variety of samples and languages has consistently reproduced the same five domains (McCrae & Costa, 1997; McCrae & Allik, 2002). Furthermore, factor analyses of personality scales from various other measures that were developed without the lexical-semantic assumption have also reproduced the same five global personality traits (see e.g., McCrae & Costa, 1997). Indeed, measures based on the Five-Factor Model such as Costa and McCrae's NEO-PI-R (1985, 1990) and shorter NEO-FFI have been widely accepted by scholars, prompting research efforts in a multitude of fields, including vocational interest assessment.

Table 3

The Five Global Personality Traits and Respective Lower-order Facets

Neuroticism	*Extraversion*	*Openness*	*Agreeableness*	*Conscientiousness*
Anxiety	Warmth	Fantasy	Trust	Competence
Hostility	Gregariousness	Aesthetics	Straight-forwardness	Order
Depression	Assertiveness	Feelings	Altruism	Dutifulness
Self-consciousness	Activity	Actions	Compliance	Achievement Striving
Impulsive	Excitement Seeking	Ideas	Modesty	Self-Discipline
Vulnerability to Stress	Positive Emotion	Values	Tinder-mindedness	Deliberation

Differentiation and the FFM Personality Traits

To date, there are at least four studies that have examined Holland-based interest differentiation in relation to the Big Five personality traits (i.e., Bullock & Reardon, 2008; De Fruyt & Mervielde, 1997; Gottfredson & Jones, 1993; Hirschi, 2009). The first to examine this relationship was Gottfredson and Jones (1993).

To examine correlations between interest differentiation and the Big Five personality traits, Gottfredson and Jones (1993) used the Vocational Preference Inventory (VPI; Holland, 1985) and the NEO-PI (Form R; Costa & McCrae, 1989) among a sample of 479 male and 246 female Navy recruits. In their study, two indices of differentiation were used, including Holland's (1968, 1994) high-low index as well as Iachan's (1984) index. Among women, only one personality factor, Openness, correlated significant and positive for both Holland's (1968,

1994) high-low index (r = .23, p < .001) and Iachan's (1984) index (r = .16, p < .05). However, among men, Holland's (1968) high-low index was significantly and positively correlated (in the .15 range) with all NEO-PI personality factors except Neuroticism. In contrast, Iachan's (1984) index yielded non-significant correlations for each of the Big Five personality factors among men.

The next study to compare interest differentiation with the Big Five personality factors was conducted by De Fruyt and Mervielde (1997), who used Dutch versions of the Self-Directed Search (SDS) and the NEO-PI-R (Costa & McCrae, 1992) among a sample of 498 male and 436 female university students in Belgium. Holland's (1968) high-low index was the only index used to operationally define differentiation. Significant correlations were only observed among women. Similar to the earlier study by Gottfredson and Jones (1993), Holland's index was significantly correlated with Openness. However, unlike the prior study, this correlation showed a *negative* association with Openness (r = -.28, p < .001). Also unlike the prior study, differentiation was found among women to be a significant correlate of Conscientiousness (r = .16, p < .001).

These findings were closely replicated in a more recent study by Bullock and Reardon (2008), who used the SDS and the NEO-FFI (Form S, Costa & McCrae, 1992) to investigate Holland's secondary constructs in relation to the Big Five personality factors among a sample of college students attending a career course (n = 209; 50.2% female; 60.3% Caucasian). Two indices of differentiation were used including Holland's high-low index and Iachan's (1984) index. Although findings were not distinguished by gender, correlation analyses indicated that Holland's high-low index was significantly related to Openness (r = -.137, p < .05) and

Conscientiousness (r = .144, p < .05). In contrast, Iachan's index was only significantly correlated with Openness (r = -.169, p < .01).

The most recent study to examine the relationship between Holland-based interest differentiation and the Big Five personality factors was conducted by Hirschi (2009). In part, the study aimed to examine the antecedents of interest differentiation development in adolescence among a sample of 210 high school students from a German-speaking region of Switzerland. For assessing vocational interest, the General Interest Structure Test-Revised (Bergmann & Eder, 2005) was used. For the Big Five personality factors, a German adaptation of the NEO-FFI (Borkenau & Ostendorf, 1993; Costa & McCrae, 1992) was administered. Differentiation was computed using the standard deviation of all six RIASEC scale scores for each student, representing a departure from how the earlier studies operationalized the differentiation construct.

Preliminary analyses indicated that female students had higher differentiation scores than did male students. More exactly, the correlation coefficient for the relationship between differentiation and gender was -.294 (p < .001). Perhaps because differentiation was operationalized using standard deviations as opposed to Holland's (1968, 1994) high-low index or Iachan's (1984) index, resulting correlations with the Big Five personality traits differed from earlier findings. More specifically, a significant correlation was noted for Extraversion (r = .152, p < .05), but no other FFM traits were significantly correlated with differentiation. Hierarchical regression analysis indicated that gender and nationality were significant predictors of differentiation, but that the personality traits were not a significant predictor beyond that. In other words, interest differentiation was not found to be related to personality traits among high school students.

Critical analysis. A critical analysis from this literature indicates that Holland's (1968, 1994) high-low index of differentiation outperforms alternative indices for detecting relationships with the FFM personality traits (e.g., Gottfredson & Jones, 1993; Bullock & Reardon, 2008). The most consistent findings are that differentiation is related to FFM traits of Openness and Conscientiousness. Although Hirschi (2009) did not observe such a relationship (instead finding significance with FFM Extraversion), the study's findings are an anomaly that could be attributed to the method in which differentiation was operationalized, which deviated from how the other studies defined the construct. This finding along with those for Iachan's (1984) index exemplify the major problem in interest differentiation research wherein alternative indices produce different findings, lending to confusion and equivocal results regarding this vocational interest construct.

Additional findings that are relevant to the current study pertain to the relationships observed between interest differentiation and Neuroticism, as this FFM trait is related to psychological maladjustment more so than any other FFM trait. As detailed above, the observed relationships between differentiation and FFM Neuroticism were almost exclusively non-significant. One possible explanation for this is that, as established throughout the first two chapters of this dissertation, differentiation is theoretically linked to internalizing maladjustment, not externalizing maladjustment. A careful inspection of the lower-order facets for FFM Neuroticism, however, suggests that this scale is confounded by both the internalizing and externalizing dimensions of maladjustment. More specifically, the lower-order facets of anxiety, depression, self-consciousness, and vulnerability to stress are characteristic of internalizing maladjustment. Contrastingly, the lower-order facets of hostility and impulsivity are characteristic of externalizing maladjustment. Thusly, any potentially significant findings with

respect to the internalizing facets of neuroticism might have been counteracted by non-significant relationships with the externalizing facets of FFM Neuroticism. Accordingly, a study is needed for comparing differentiation (i.e., Holland's [1968, 1994] high-low index) with scales that do not confound the dimensions of psychological maladjustment.

Profile Elevation and the Big Five Personality Traits

To date, there are at least seven studies that have examined Holland-based interest profile elevation in relation to the Big Five personality traits (i.e., Bullock & Reardon, 2008; De Fruyt & Mervielde, 1997; Gottfredson & Jones, 1993; Gottfredson, Jones, & Holland, 1993; Fuller, Holland, & Johnston, 1999; Hirschi, 2009; Holland, Johnston, & Asama, 1994). Among the first to examine this relationship was Gottfredson, Jones, and Holland (1993).

Gottfredson, Jones, and Holland (1993) compared VPI scores with lower-order facet scores on the NEO-PI (Costa & McCrae, 1989) among a sample of male (n = 479) and female (n=246) Navy recruits. Although profile elevation was not directly examined in the study, correlations were almost exclusively negative (regardless of statistical significance) for the relationships between RIASEC scale scores and Neuroticism, thusly indicating an inverse relationship between profile elevation and Neuroticism (e.g., as profile elevation increases, neuroticism decreases). Among women, RIASEC scores were inversely associated with each of the lower-order facets for FFM Neuroticism (i.e., Anxiety, Hostility, Depression, Self-Consciousness, Impulsiveness, Vulnerability), with the strongest correlation existing between the Social interest scale and the Hostility facet scale (-.16, p < .05). The study represents the only examination of the relationship between endorsed responses on a RIASEC-based inventory and lower-order facet scores from the FFM, as all other studies have examined profile elevation in relation to the broader personality dimensions.

Using the same sample of Navy recruits, Gottfredson and Jones (1993) represents the first study to directly analyze profile elevation in relation to the NEO-PI (Costa & McCrae, 1989) personality traits. As authors hypothesized, profile elevation was significantly and negatively correlated with Neuroticism (r=-.17, p<.01), but only for women. Furthermore, significant and positive correlations were observed for Openness (r=.16, p<.05) and Conscientiousness (.13, p<.05). For men, profile elevation correlated significantly and positively (within the range of .15 to .19) for all personality factors except Neuroticism (-.08, p>.05).

In a later study by Holland, Johnston, and Asama (1994), the relationships between profile elevation on the SDS (Holland, 1985) and scores on the NEO-PI/FFI (Costa & McCrae, 1989) were examined as an *afterthought* (p. 338). Originally, the study aimed to examine canonical and simple correlations between RIASEC scores and the Big Five personality traits. Upon analyzing the results, authors chose to conduct further correlation analyses to examine profile elevation as an index that potentially serves as a "useful tool in the evaluation of psychological health" (p. 112). More specifically, authors tested the hypothesis that profile elevation was negatively correlated among both men and women for the NEO PI/FFI scale of Neuroticism, which is highly associated with mental health disorders and symptoms. Resulting correlations supported the hypothesis for men, as the correlation between profile elevation and Neuroticism was significant and negative (-.37, p < .01). For women, the hypothesis was only partially supported, as the correlations for Neuroticism was negative but non-significant (-.19, p > .05). Authors concluded that this finding "implies that a low, flat SDS is an unreliable sign of Neuroticism that should alert counselors or clinicians to look for more reliable and valid signs of psychological problems" (p. 338). Regarding non-hypothesized correlations, significant findings were observed among men for Extraversion (.33, p < .01), Openness (.50, p < .01), and

Conscientiousness (.22, $p < .01$). For women, additional findings of significance were noted for Extraversion ($r = .30$, $p < .01$) and Openness ($r = .45$, $p < .01$)

De Fruyt and Mervielde (1997) examined a sample of 498 male and 436 female university students in Belgium using Dutch versions of the SDS and NEO-PI-R (Costa & McCrae, 1992). Authors observed direct correlations between profile elevation and Extraversion (.32, $p < .001$), Conscientiousness (.23, $p < .001$), and Openness (.22, $p < .001$) for males and females. In addition, a significant inverse relationship was noted for Neuroticism (-.23. $p < .001$).

In more recent studies, researchers have conducted more rigorous statistical procedures than just correlation analyses to understand the relationship between profile elevation and the Big Five personality traits. For instance, Fuller, Holland, and Johnston (1999) conducted a multivariate analysis of variance (MANOVA) on a sample of 319 career workshop attendees and dislocated workers (139 females, 180 males, 96.7% Caucasian) to investigate profile elevation level in relation to scores on the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1989). More specifically, profile elevation scores were grouped into four quartiles, which served as the multileveled independent variable. In contrast, the dependent variables were represented with the five NEO-FFI scores.

Results from the MANOVA were significant as profile elevation had a strong, direct effect on Openness and Extraversion. More exactly, high profile elevation scores were positively related to Extraversion and Openness for both men and women. However, MANOVA results indicated that men and women differed with respect to Neuroticism. Whereas the MANOVA indicated profile elevation had a significant effect on Neuroticism for men (i.e., Neuroticism showed significant increases at lower levels of profile elevation), no such effect was observed among women. Regardless, the major findings from the study are generally consistent with the

pattern of findings observed in earlier scholarship (e.g., De Fruyt & Mervielde, 1997; Gottfredson, Jones, & Holland, 1993; Holland, Johnston, & Asama, 1994), wherein higher profile elevation scores among men and women were moderately associated with the positive personality traits of Extraversion ($r = .32$, $p < .0001$ for men; $r = .30$, $p < .001$ for women) and Openness ($r = .38$, $p < .0001$ for men; $r = .45$, $p < .0001$ for women). These findings suggest that people with higher profile elevation levels are more likely to "value new experiences and have a more outgoing, sociable, and cheerful disposition" (p. 120).

With respect to the major practical implication from their study, Fuller, Holland, and Johnston (1999) concluded that "counselors should view [profile elevation] as an indicator that the client may have adjustment or psychological issues that need to be addressed" (p. 122). Authors recommend that, in such instances as low profile elevation, the counselor may consider further assessment, treatment, or referral. In contrast, counselors are encouraged to view high profile elevation as suggestive of greater psychological functioning, emotionality, and sociability. In addition, higher profile elevation may indicate a greater openness or willingness to participate in career-related interventions and occupational exploration activities. Furthermore, their study helped substantiate that previously observed relational patterns between profile elevation scores and personality traits (e.g., Extraversion and Openness) exist beyond correlational analyses, ultimately meaning Holland-based interest inventory scores are useful as indicators of personality.

In a similar and more recent study, Bullock and Reardon (2008) used the SDS and the NEO-FFI to examine profile elevation, Holland's secondary constructs, and the Big Five personality factors among a sample of college students ($n = 209$; 50.2% female; 60.3% Caucasian) attending a career course. Two indices of differentiation were used including

Holland's (1968, 1994) high-low index and Iachan's (1984) index. Correlation analyses indicated that differentiation high-low was significantly related to Openness (-.137) and Conscientiousness (.144). In contrast, Iachan's (1984) index was only significantly correlated with Openness (-.169). Profile elevation indicated significant correlations with Extraversion (.127), Openness (.387), and Conscientiousness (.114). Neither profile elevation nor the indices for differentiation were significantly correlated with Neuroticism. However, whereas profile elevation indicated a negative association, the differentiation indices suggested a positive association.

In addition to correlation analyses, Bullock and Reardon (2008) conducted regression analyses and a multivariate analysis of variance (MANOVA). For the regression, profile elevation served as the dependent variable and the FFM traits were the hypothesized predictors. Results indicated that Openness and Conscientiousness explained a significant amount of variance in profile elevation. According to the authors, these findings suggest that "a client with a higher profile elevation score will most likely be open to considering options and be conscientious about career exploration tasks suggested to them" (p. 334). Furthermore, authors concluded that:

> A client with a lower profile elevation score may need to be approached in a different manner because this client is not going to be as willing to consider options and may not complete assigned tasks. The findings with regard to extraversion may indicate that the client with lower profile elevation may approach the career-development tasks in an introverted way. This client may require more intensive collaboration with the therapist. (p. 335)

As a partial replication of Fuller et al.'s (1999) study, Bullock and Reardon (2008) also conducted a MANOVA, wherein profile elevation was divided into quartiles as the grouping variable, and the five personality factors served as the dependent variables. Rejecting the null hypothesis of equality of means across all groups for each variable, Pillai's statistic and Hotelling's statistic were each significant at .001, with a moderate Wilk's multivariate effect size (.22). Follow-up univariate analysis indicated a significant linear relationship between profile elevation and Openness. A quadratic effect was also observed for the relationships between profile elevation and Openness as well as Conscientiousness. More specifically, a significant quadratic effect for Openness was observed because the lowest and highest profile elevation quartiles were more similar than different. With respect to Conscientiousness, these scores increased as profile elevations increased, until the highest quartile. At that point, scores for Conscientiousness began to decline.

Overall, Bullock and Reardon's (2008) findings were consistent with prior studies regarding Openness and Extraversion (i.e., Gottfredson & Jones, 1993; Holland, Johnston, et al., 1994; Fuller et al., 1999). With respect to the significant finding between profile elevation and Conscientiousness, the results were consistent with Gottfredson and Jones (1993) and Holland, Johnston, et al. (1994). However, authors described the non-significant relationship between profile elevation and Neuroticism as *surprising*, as similar and previous research efforts yielded an inverse, significant relationship between these variables (i.e., Gottfredson and Jones, 1993; Holland, Johnston, et al., 1994; Fuller et al., 1999). One potential explanation for this inconsistent result between studies is discussed later in the critical analysis of this literature.

In the most recent examination of profile elevation and the Big Five personality traits, Hirschi (2009) examined a sample of 210 German-speaking high school students in Switzerland

(68% female) who were administered the General Interest Structure Test–Revised (Allgemeiner Interessen Struktur Test–Revidierte; Bergmann & Eder, 2005) and a German adaptation of the NEO-FFI (Borkenau & Ostendorf, 1993; Costa & McCrae, 1992). Authors aimed to examine whether the NEO-FFI personality trait scores were predictive of profile elevation. First, unlike prior studies, preliminary analyses of correlations indicated that profile elevation only one significant association with the personality traits. This association was observed for Openness (r = .266, $p < .001$). Nonetheless, results from the multiple hierarchical regression indicated that the personality traits explained a significant amount of the variance in profile elevation as second-block predictors after gender and nationality. More specifically, Openness (β = .262, $p < .001$) and Agreeableness (β = –.163, $p = .024$) were the significant, single predictors. The author noted, however, that no relationship was observed between profile elevation and the positive personality traits of Extraversion and Conscientiousness. Furthermore, no relationship was found between profile elevation and Neuroticism. Consequently, Hirschi (2009) asserted that the results "do not support a notion that higher elevated interests are a sign of a more adapted personality but supports the notion that is related to and predicted by more intellectual curiosity and openness" (p. 398).

Critical Analysis. There exists a significant bulk of literature that has focused on the relationships between profile elevation and the FFM personality traits. Across studies, correlation analyses suggest that profile elevation is most consistently and directly (i.e., positively) related to Extraversion, Openness, and, to a lesser degree, Conscientiousness. In a few studies, correlations are relatively stronger (in the moderate range) for Extraversion. These findings indicate that lower profile elevation scores are associated with Introversion. This relationship with Introversion is important to note, as practitioners have long surmised that low

profile elevation scores are related to depression and subdued levels of affectivity. However, findings with respect to the FFM personality traits could indicate that practitioners are confusing or pathologizing an introverted disposition with depression or internalizing maladjustment.

Also relevant to the current study is the relationship between profile elevation and the FFM personality trait of Neuroticism, as this scale within Costa and McCrae's (1985, 1989, 1992) taxonomy is the trait most associated with psychological maladjustment. However, findings with respect to profile elevation and Neuroticism are equivocal. More specifically, four studies observed a significant, inverse (i.e., negative) association regarding these two variables, while three studies reported findings of non-significance. Perhaps one reason the inconsistent findings are presented is because the Neuroticism scale confounds the two dimensions of psychological maladjustment (i.e., internalizing, externalizing). For example, three of the six lower-order facets comprising the Neuroticism scale (i.e., depression, anxiety, vulnerability to stress) are clearly related to internalizing maladjustment, while two of the other lower-order facets (i.e., hostility, impulsivity) belong to the externalizing dimension. As discussed in the next section of this chapter, profile elevation could be negatively associated with internalizing maladjustment and positively associated with externalizing maladjustment. The fact that profile elevation is negatively associated with some lower-order facets of Neuroticism and positively associated with other lower-order facets could explain why some studies observed significant findings with respect to profile elevation and Neuroticism, while other studies did not.

The Primary Dimensions of Psychological Maladjustment

The current study examines the influence of internalizing and externalizing maladjustment on Holland-based vocational interest scores of differentiation and profile elevation. Relevant studies are reviewed in this section. First, the internalizing and externalizing

dimensions of psychiatric disorders and symptoms are explained. Following this discussion on the two primary dimensions of psychological maladjustment, relevant studies pertaining to differentiation and profile elevation are reviewed and critically analyzed. Concluding this section will be a summary of pertinent findings.

Internalizing and Externalizing Dimensions of Psychiatric Disorders

There are hundreds of psychological or behavioral disorders that are identified and described in the Diagnostic and Statistical Manual (DSM). While the number of unique diagnoses is extensive, researchers have demonstrated the existence of two primary dimensions along which the more common disorders vary. These two primary dimensions are (1) internalizing maladjustment, and (2) externalizing maladjustment. According to Dennis et al. (2013), disorders that vary along the same dimension are more similar in terms of etiology, consequences, treatment modalities, and outcomes than are disorders belonging to the opposing dimension.

Internalizing dimension of maladjustment. The internalizing dimension of psychological maladjustment can generally be defined as mental disorders involving symptoms of distress that are directed inward (Thackery & Harris, 2003). The internalizing dimension is characterized by disorders relating to high levels of negative affectivity. Internalizing maladjustment is commonly associated with poor self-esteem, social withdrawal, unexplained physical complications, self-harming behaviors, and suicidal ideation. These problems can interfere with performance in one or more major life domains, such as school, work, and family functioning. In terms of DSM diagnoses, the internalizing dimension captures disorders consistent with, or closely related to depression, anxiety, trauma or stressor-related disorders, obsessive-compulsiveness, psychosomatic disorders, and dissociative disorders. With respect to

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treatment, internalizing disorders can generally be controlled or addressed with medication (e.g., antidepressants), therapy, or some combination of both.

Externalizing dimension of maladjustment. The externalizing dimension of psychological maladjustment can generally be defined as mental disorders involving symptoms of distress that are directed outward (Thackery & Harris, 2003). Whereas persons with internalizing disorders direct their maladaptive feelings or emotions inward, toward themselves, such negative cognitions among persons with externalizing disorders are manifested in behaviors that are directed toward the environment. These behaviors are generally conducted in a manner that interferes with the individual's functioning in at least one major life domain (e.g., school, work, social relationships, family). More specifically, externalizing maladjustment is typified by problems with emotional dysregulation and impulsivity. Behavioral manifestations can be characterized as antisocial, aggressive (e.g., verbal, physical), and oppositional, especially toward authority figures (e.g., workplace bosses), societal norms, and others' rights. Indeed, externalizing disorders among adults are often associated with substance use disorders, crime (e.g., theft), and interpersonal violence (e.g., domestic violence). In terms of DSM diagnoses, the externalizing dimension captures disorders consistent with, or closely related to, attention-deficit/hyperactivity disorder, oppositional defiance, conduct disorders, antisocial personality, pyromania, kleptomania, and intermittent explosive disorder.

Interest Differentiation and the Dimensions of Psychological Maladjustment

Vocational interest differentiation is theoretically linked to psychological maladjustment. In addition to this theoretical linkage, studies have empirically examined differentiation in relation to the overarching construct psychological maladjustment (Buboltz & Woller, 1998; Loughead & Reardon, 1989) as well as specific forms of internalizing maladjustment (Chason,

2010; Davis, 2007; Hartley, 2009) and externalizing maladjustment (i.e., Gottfredson & Jones, 1993). Findings with respect to the internalizing and externalizing dimensions are first discussed, followed by a review of the two peer-reviewed studies that confounded these dimensions into the overarching construct of psychological maladjustment. This section concludes with a critical analysis of study findings before discussing relevant literature pertaining to profile elevation.

Differentiation and internalizing maladjustment. Within the literature, there are three studies, all dissertations, which have compared Holland-based vocational interest differentiation scores to specific forms of internalizing maladjustment. More specifically, differentiation has been examined in relation to depression (i.e., Davis, 2007) and commitment anxiety (i.e., Chason, 2010; Hartley, 2009). These studies are reviewed.

Differentiation and depression. Davis (2007) in a dissertation examined vocational interest differentiation as a hypothesized predictor of depression and self-confidence, respectively. For measuring these constructs, male and female college students (N = 90) were administered the Strong Interest Inventory (SII; Donnay et al., 2005), the Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996), and the Skills Confidence Inventory (SCI; Betz, Borgen, & Harmon, 2005). As opposed to using Holland's (1968, 1994) high-low index, the differentiation construct was operationalized using Sackett and Hansen's (1984) index (see Table 3).

For hypothesis testing, a series of hierarchical regression models were used in which depression and self-confidence served as the dependent variables, respectively. In these regression models, gender and education were entered as first-block predictors and differentiation was entered as a second-block predictor along with profile elevation. However, the researcher's hypotheses were only partially supported. More specifically, the four-factor

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model accounted for only 1.6% of the variance in BDI depression. Results were much different, though, when SCI self-confidence replaced BDI depression as the criterion variable. Although first-block predictors (i.e., gender, education level) accounted for only 3.8% of the variance in self-confidence, the addition of second-block predictors (i.e., differentiation, profile elevation) increased the amount of variance accounted for to 39.4% (p < .0001).

Differentiation and anxiety. From the literature, there are two dissertations that have compared vocational interest differentiation to the commitment anxiety scale of the Career Thoughts Inventory (CTI; Sampson et al., 1996). The CTI is a widely used self-report inventory for measuring dysfunctional career thoughts that hinder career decision-making (Meyer & Shippen, 2015). In addition to commitment anxiety, the CTI is comprised of scales for decision-making confusion and external conflict (this scale is not related to externalizing maladjustment, but rather locus of control). With respect to commitment anxiety, this scale reflects "an inability to make a commitment to a specific career choice, accompanied by generalized anxiety about the outcome of the decision making process, with anxiety perpetuating the indecision" (Sampson et al., 1996, p. 2). Results from the two dissertations comparing this scale to differentiation are discussed in chronological order.

Hartley (2009) hypothesized that the three CTI scales are significant predictors of Iachan's (1984) index of differentiation as measured from results on the Self-Directed Search (SDS) among a sample of 243 college students (50.6% female; 21% African American). For hypothesis testing, the researcher used multiple regression. However, the hypothesis was unsupported, as findings indicated that the CTI scales, including commitment anxiety, combined to explain a mere 1.4% of the variance in Iachan's (1984) index of differentiation.

In a similar dissertation, Chason (2010) hypothesized that as CTI scores decrease, vocational interest differentiation would increase. For measuring constructs, the CTI and SDS were administered to a sample of university students (N = 226; 49.6% female; 20.4% African American), and Iachan's (1984) index was again used for operationalizing the differentiation construct. Replicating earlier findings, the three CTI predictor variables accounted for a menial 2.5% of variance in differentiation. However, correlation analysis was also conducted, yielding a weak but significant correlation between Iachan's (1984) index of differentiation and the CTI commitment anxiety scale ($r = -.139$, $p < .05$). Thus, the researcher's hypothesis was only partially supported.

Differentiation and subjective well-being. Cotter and Fouad (2011) hypothesized that higher levels of interest differentiation would relate to higher subjective well-being with a sample of university students (N = 172; 67% female; 4% African American). Students were administered the SII (Strong et al., 2004) to collect a measure of differentiation, which was operationalized using Swanson and Hansen's (1986) index as opposed to Holland's (1968, 1994) high-low index. Subjective well-being was made operational using the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, and Griffen, 1985). For hypothesis testing, only correlation analysis was conducted, results of which indicated non-significant associations between Sackett and Hansen's (1995) differentiation index and subjective well-being.

Differentiation and externalizing maladjustment. As established in Chapter 1, Holland's theoretical assumptions suggest that differentiation is more related to internalizing maladjustment than externalizing maladjustment. However, there is one study (i.e., Gottfredson & Jones, 1993) that has compared differentiation to behaviors that are related to the externalizing

dimension. This study is also unique in that it represents the only examination of differentiation in relation to important behavioral variables among a predominantly African American sample.

Differentiation and misconduct. Gottfredson and Jones (1993) examined interest differentiation on the SDS (Holland, 1979) and the Vocational Preference Inventory (VPI, Holland, 1985b) with a predominantly African American sample of 249 seventh-grade students. To examine the meaningfulness of differentiation, scores for both interest inventories were operationalized using Holland's (1968, 1994) high-low index as well as Iachan's (1984) index. These indices were then compared to numerous variables. Relevant to the current study, differentiation was examined in relation to an 8-item, self-report measure of rebellious behavior (based on Bachman's [1975] scale) as well as a 19-item, self-report measure for delinquent behavior (Gottfredson, 1984; alpha = .83). However, results derived from correlation analyses suggested that both indices of differentiation for both interest inventories were non-significant correlates of rebellious behavior and delinquency among boys and girls, respectively. Thusly, this study in part supports the notion that differentiation is unrelated to the externalizing dimension of maladjustment.

Differentiation and psychological maladjustment (confounded dimensions). There are two studies that have examined vocational interest differentiation in relation to composite scores for the overarching construct of psychological maladjustment. These composite scores are produced from multiple scales that related to internalizing and externalizing dimensions of psychological maladjustment. These two investigations are peer-reviewed studies and are discussed.

Loughead and Reardon (1989) hypothesized that vocational interest differentiation is related to psychological maladjustment among a sample of 51 university students and psychiatric

inpatients. For data collection, authors used the SDS and the Minnesota Multiphasic Personality Inventory (MMPI), which consists of a variety of scales for assessing personality traits and psychopathology. Instead of using Holland's (1968, 1994) high-low index, authors operationally defined differentiation using Iachan's (1984) index. In addition, researchers examined *level* of differentiation, which in actuality was an index of profile elevation that uses the mean scores across the six RIASEC scales (p. 431). Regardless, for hypothesis testing, the researchers conducted regression analysis wherein Iachan's (1984) index and *level* of differentiation served as predictor variables for (a) MMPI ego-strength, and (b) the overall mean score for eight MMPI clinical scales. However, hypothesized relationships were unsupported. More specifically, the two regression models indicated that Iachan's (1984) index accounted for less than 1% of variance in psychological maladjustment. Furthermore, correlation analyses also yielded only non-significant results.

In a similar study by Buboltz and Woller (1998), researchers examined Iachan's (1984) index of differentiation (as derived from the SII) and psychological maladjustment among a sample of 283 individuals from an on-campus career counseling clinic. Psychological maladjustment was operationalized using the five scales on the Psychological Screening Inventory (PSI; Lanyon, 1970) as well as the nine scales of the Symptom Checklist 90-Revised (SCL-90-R). Scale scores from these measures were used as the dependent variables in two separate MANOVA procedures that were conducted for the study, both of which indicated non-significant findings. Although authors stated that MANOVA findings were non-significant, errors in reportage throughout the study warrants caution with respect to conclusions made by the authors (these errors are critically analyzed below).

Critical Analysis. There are several limitations that are consistent in studies that have examined differentiation in relation to the internalizing and externalizing spectra of psychopathology. Of the seven studies reviewed, mostly non-significant findings were reported. However, only one study operationalized differentiation the way Holland defined it (i.e., the difference between the highest and lowest scale scores). Instead, authors primarily operationalized differentiation using Iachan's (1984) index and Swanson & Hansen's (1986) index. Although these alternative indices can more accurately detect the degree of variation between scale scores within a respondent's profile, these indices have shown to be inferior compared to Holland's index, especially when being compared to important psychological variables such as personality traits. In the one study reviewed (Gottfredson & Jones, 1993) in this section that used Holland's (1968, 1994) index, differentiation was compared to aspects of externalizing maladjustment, which is not theoretically linked to differentiation like internalizing maladjustment.

A second limitation pertains to the two peer-reviewed studies (Buboltz & Woller, 1998; Loughead & Reardon, 1989) that examined differentiation in relation to psychological maladjustment as an overarching construct. As previously discussed, composite scores for psychological maladjustment in these studies were produced from scales or symptom checklist terms that confounded the internalizing and externalizing dimensions. Thus, these studies are minimally helpful for understanding the specific relationships between differentiation and the individual dimensions of maladjustment. For example, a potentially significant relationship between differentiation and items measuring internalizing maladjustment could have been present in these studies, but such a result was perhaps lost or confounded by non-significant relationships between differentiation and items measuring externalizing maladjustment.

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A third limitation pertaining to the studies in which researchers have compared differentiation to psychopathology pertains to methods and statistical analyses. For example, in their examination of Iachan's (1984) index in relation to psychological maladjustment, Buboltz and Woller (1998) excluded pertinent information that calls into question the legitimacy of their non-significant findings. First, authors failed to explain how Iachan's (1984) index of differentiation was transformed into a multilevel factor or categorical variable in conducting their MANOVA. At best, readers might assume that differentiation scores were grouped in accordance to some arbitrary cut-point that authors did not explain. Secondly, authors failed to acknowledge whether MANOVA assumptions were met despite having a small sample of 51 participants. Thirdly, results from the statistical analyses beyond the "overall F value" were unreported, which lends minimal information about their findings. Lastly, in discussing the convergent validity of the instrumentation used, authors stated that correlation coefficients were as low as .30 for the PSI and .36 for the SCL-90-R. The authors likely made a mistake in referring to discriminant validity as convergent validity, but the oversight only fuels further skepticism of the results.

A fourth limitation in these studies involves the fact that reported findings were based on samples that were mixed in terms of gender. In most studies, authors did not report findings for females or males specifically, but rather the combined sample. This is problematic, as females and males have been shown to differ significantly with respect to the psychological meaningfulness of their differentiation scores (e.g., De Fruyt & Mervielde, 1997; Gottfredson & Jones, 1993). Thusly, with respect to the studies reviewed above, reported findings are likely confounded by gender. For instance, whereas there might be a significant relationship between differentiation and depression among women, a potentially non-significant relationship between these two variables among men could result in non-significant findings for the entire sample.

A final major limitation of the relevant research also involves sampling. More specifically, only one study examined a predominantly African American sample (i.e., Gottfredson and Jones [1993]). However, this sample consisted of seventh graders, which means a predominantly African American sample of adults is still missing. Thusly, there is a considerable gap in the literature for understanding the relationships between differentiation and psychological maladjustment among African American adults. Furthermore, most of the reviewed studies used university students. More research is needed that examines populations for whom vocational evaluation is most relevant (e.g., black mothers on welfare).

Profile Elevation and the Dimensions of Psychological Maladjustment

In part, the current study examines the influence of internalizing and externalizing maladjustment on vocational interest profile elevation. Holland, Johnston, and Asama (1994) defined profile elevation as the sum of endorsed items (i.e., "like" responses) across all six RIASEC-based scales. As previously alluded, profile elevation has a long history with respect to psychological variables, and Fuller, Holland, and Johnston (1999) speculated that profile elevation could be a useful index for purposes of psychological health evaluation (p. 112).

This section includes a review of findings from studies investigating the relationship between profile elevation and psychological maladjustment. A bulk of these findings are derived from two peer-reviewed articles (Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994) that compared profile elevation to the Personality Styles Inventory (PSI; Silver & Malone, 1993). Development of the PSI was based on personality disorders as described in the DSM-III-R, and the instrument uses scales for Depression, Obsessive-Compulsive, Paranoia, Narcissism, Impulsivity, and Hysteria. Findings with respect to profile elevation and these scales

are sorted below into their respective dimensions of psychological maladjustment and discussed accordingly, along with findings from other relevant studies.

Profile elevation and internalizing maladjustment. In the literature, authors of six studies have examined profile elevation as it relates to aspects of internalizing maladjustment. More specifically, profile elevation has been compared to depression (i.e., Davis, 2007; Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994; Smisson, 2009), commitment anxiety (i.e., Chason, 2010; Kronholz, 2017; Smisson, 2009), obsessive-compulsiveness (Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994), and paranoia (Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994). These studies are reviewed.

Profile elevation and depression. As noted by Spokane, Luchetta, and Richwine (2002), "the possibility of a relationship between depression and interest profile elevation has been discussed for years" (p. 402). Not only has this relationship been discussed, but several studies have examined it. However, results are equivocal. More specifically, some scholars have observed a significant relationship between profile elevation and depression, while others have not. As detailed in the previous section on differentiation, Davis (2007) examined profile elevation and differentiation as second-block predictors of BDI depression (Beck, Steer, & Brown, 1996) and self-confidence as measured with the Skills Confidence Inventory (SCI; Betz, Borgen & Harmon, 2005). Whereas profile elevation and differentiation were non-significant as second-block predictors for depression scores, these interest constructs explained a significant portion of the variance in SCI self-confidence.

In contrast, Holland, Johnston, and Asama (1994) examined scores from a sample of 298 employed and unemployed adults (41.3% female) to investigate correlations between SDS profile elevation and the aforementioned PSI scales. As hypothesized, profile elevation was

significantly and negatively correlated with PSI depression among females ($r = -.23$, $p < .01$) and males ($r = -.34$, $p < .01$). These findings were replicated in the more recent study by Fuller, Holland, and Johnston (1999), who examined the same variables using a sample of 319 adult workshop attendees (44% female). Similar to observations from the earlier study, profile elevation was significantly and negatively correlated with depression among females ($r = -.27$, $p < .001$) and males ($r = -.24$, $p < .001$).

Although significant correlations between profile elevation and PSI depression were observed in the above findings, Smisson (2009) found no such relationship in a study wherein depression was operationalized with its corresponding scale on the Minnesota Multiphasic Personality Inventory-2 (MMPI-2; Butcher et al., 1989). Sampled in that study were 135 adult personal-injury clients (46% females) with various physical or cognitive impairments. In addition to correlation analysis, hierarchical regressions were performed in which profile elevation served as the criterion variable and depression was treated as one of several predictors. However, findings indicated that a non-significant amount of variance in profile elevation was accounted for by depression scores.

Profile elevation and anxiety. In addition to MMPI depression, Smisson (2009) also examined profile elevation as a potential predictor of two MMPI-2 anxiety scales (i.e., trait anxiety [7-scale], state anxiety [*A*-Scale]). However, similar to the results with respect to depression, profile elevation was observed to be a non-significant predictor for both trait and state anxiety among the sample of personal-injury clients. Furthermore, only non-significant correlations were reported between variables.

In another dissertation, Chason (2010) hypothesized that as CTI scales of commitment anxiety, decision-making confusion, and external conflict decrease, profile elevation would

increase. Sampled were 226 male and female university students who were enrolled in a career planning course. For hypothesis testing, correlation and multiple regression analyses were conducted. With respect to correlation analysis, only non-significant findings were observed. Regarding multiple regression, results were significant for the overall model (F (3, 222) = 3.456, p = .017). However, findings indicated that the three CTI scales combined to explain only 4.5% of the variance in profile elevation. Regarding the individual performance of CTI commitment anxiety as a predictor, scale scores increased as profile elevation increased. In this respect, the researcher's hypothesis was not supported.

Findings from the above study were mostly replicated in a dissertation by Kronholz (2017), who examined SDS and CTI (Sampson et al., 1996) archival data sets produced on 86 university students (i.e., undergraduate and graduate) and individuals from the community who entered an on-campus career center for individual counseling. For hypothesis testing, a multiple regression was conducted to examine if CTI scale of commitment anxiety and decision-making confusion predicted profile elevation. Regression results were significant ($F_{(2, 83)}$ = 7.926, $p < .01$) and yielded an R^2 of .16. Of the 16% of profile elevation variance explained in the model, commitment anxiety accounted for 9% and decision-making confusion accounted for 7%. Similar to earlier findings from Chason (2010), increases in profile elevation related to increases in commitment anxiety.

Profile Elevation and obsessive-compulsiveness. Two studies compared profile elevation with PSI obsessive-compulsiveness. The first study was the one conducted by Holland, Johnston, and Asama (1994). Results of correlation analysis indicated that profile elevation and PSI obsessive-compulsiveness was significant for males (r = .19, p < .05), but not for females. Findings were later replicated by Fuller, Holland, and Johnston (1999), who once again found a

significant correlation statistic for males (r = .20, p < .01). Like the previous study, the correlation was non-significant for women.

Profile Elevation and paranoia. The same two studies compared profile elevation with PSI paranoia. Correlation analysis from Holland, Johnston, and Asama's (1994) study indicate that profile elevation is significantly correlated with paranoia among men (r = -.16, p < .05), but not women. In contrast, Fuller, Holland, and Johnston (1999) observed only non-significant findings for both men and women.

Profile elevation and externalizing maladjustment. In the literature, there are several authors who have examined profile elevation as it relates to aspects of externalizing maladjustment. More specifically, profile elevation has been compared to impulsivity (i.e., Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994), hysteria (i.e., Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994), antisocial personality (i.e., Holland, 1965), behavioral misconduct (i.e., Gottfredson & Jones, 1993), oppositional personality (i.e., Chadick, 2017), and narcissism (i.e., Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994; although there is ongoing debate whether narcissism belongs to the internalizing or externalizing dimension of psychological maladjustment, there is evidence to suggest this personality disorder is more heavily associated with externalizing maladjustment). These studies are reviewed.

Profile elevation and impulsivity. Gottfredson and Jones (1993) reviewed the literature on profile elevation with respect to personality. Though suggesting that profile elevation is weakly related to personality attributes, the authors concluded that "high elevation to some degree reflects a… impulsive general style and low elevation reflects the opposite" (p. 47). This conclusion was largely based on earlier findings (e.g., Holland, 1965; Holland, 1975) and more

recent studies that have examined profile elevation in relation to FFM traits of extraversion and conscientiousness. However, recent studies investigating profile elevation in specific relation to impulsivity are less prevalent and more equivocal.

Holland, Johnston, and Asama (1994) examined scores from a sample (N = 298) of employed and unemployed adults (41.3% female) to investigate correlations between SDS profile elevation and the Personality Styles Inventory (PSI; Silver & Malone, 1993). However, only non-significant findings were observed with the PSI impulsive style for men and women. In contrast, Fuller, Holland, and Johnston (1999) found a significant correlation for profile elevation and impulsivity among women (r = .18, p < .05), but not men.

Profile elevation and hysteria. Two scholarly endeavors have compared profile elevation to PSI hysteria, which consists of the aforementioned studies by Holland, Johnston, and Asama (1994) as well as Fuller, Holland, and Johnston (1999). From the former study, correlation analysis indicated non-significant findings among male and female participants. However, Fuller et al.'s (1999) study observed a significant and direct correlation between profile elevation and hysteria among women (r = .23, p < .01).

Profile elevation and antisocial personality. Two early studies by Holland consist of the literature that examines the number of endorsed items on a vocational interest inventory in relation to antisocial personality. Specifically, Holland (1965) examined his VPI acquiescence scale (i.e., number of endorsed responses for only the first 30 items) in relation to the psychopathic deviate scale of the MMPI. A significant correlation was observed with the psychopathic deviate scale (r = .26) for men, but not women. However, among women, Holland did observe a correlation between his acquiescence scale and the MMPI lie scale (.38), which indicates these participants were *faking good*. Indeed, a tendency to lie is common among those

with externalizing forms of maladjustment such as antisocial personality (Dennis, Feeney, & Titus, 2013).

Profile elevation and misconduct. Gottfredson and Jones (1993) used a predominantly African-American sample consisting of seventh-grade students (n = 249) to compare profile elevation to numerous variables, including scores from an 8-item self-report measure of rebellious behavior (based on Bachman's [1975] scale) and a 19-item self-report measure or delinquent behavior (Gottfredson, 1984; alpha = .83). Results of correlation analyses suggested that profile elevation on the SDS and VPI were positively associated with rebellious behavior and delinquency, particularly for boys. However, profile elevation for the girls was not significantly correlated with these criterion variables, regardless of Holland measure used.

Profile elevation and oppositional personality. A more recent study, Chadick (2017) used the O*Net Interest Profiler Short Form (IPSF, Rounds, Su, Lewis, & Rivkin, 2010) to examine the relationship between profile elevation and various scales of the Millon College Counseling Inventory (MCCI; Millon, Strack et al., 1996) among a sample of 254 undergraduate students (63% female). The MCCI uses 11 scales designed to screen for psychological problems among college students. Chadick hypothesized that profile elevation is associated with MCCI scales of Dejected, Sociable, Confident, and Needy. However, correlation analyses indicated non-significant findings with hypothesized variables. Instead, profile elevation was only significantly correlated with MCCI Oppositional ($r = .15$, $p < .05$). This scale is used for identifying individuals who are unconventional, passive aggressive, nervous, distracted, angry, and dissatisfied with self and others. Consistent with previous findings with externalizing maladjustment, profile elevation was *positively* (i.e., directly) associated with the oppositional scale.

Profile elevation and narcissism. Holland, Johnston, and Asama (1994) found a

significant correlation between profile elevation and narcissism among females ($r = .20$, $p < .05$),

but not males. In contrast, Fuller, Holland, and Johnston (1999) found significant correlations for

both males and females. More specifically, profile and elevation were correlated at $r = .17$ for

men and $r = .29$ for women.

Critical analysis. Holland and other researchers have posited that low profile elevation

scores are an indicator of psychological maladjustment that likely signals the need for more

intensive assessment and treatment. From the empirical literature, the best evidence for this

interpretation is derived from two peer-reviewed studies that reported significant and negative

associations between profile elevation scores and PSI depression scores (i.e., Fuller, Johnston, &

Holland, 1999; Holland, Johnston, & Asama, 1994). However, Davis (2007) and Smisson (2009)

observed no such relationship between profile elevation and scores for BDI depression or MMPI

depression.

In fact, the reviewed literature suggests that higher profile elevation scores are more

strongly associated with psychological maladjustment than are lower scores (with the exception

of depression and paranoia). With respect to the internalizing dimension of maladjustment,

profile elevation had significant and direct (i.e., positive) associations with commitment anxiety

as well as obsessive-compulsiveness. Regarding the externalizing dimension of maladjustment,

significant findings exclusively described positive associations between profile elevation and, for

example, impulsivity, hysteria, antisocial personality, and oppositional personality. Thus,

Holland's position that lower profile elevation signals psychological maladjustment has less

empirical evidence than does the notion that higher profile elevation is indicative of

psychological maladjustment (particularly with respect to the externalizing dimension).

However, more research is needed in order to substantiate such an interpretation (i.e., higher scores are more strongly related to psychological maladjustment) for clinical use. More specifically, a study that uses more sophisticated statistical methods than correlation analysis is needed to examine the unique influence of each respective dimension of maladjustment on profile elevation. Secondly, the observation of significant findings with respect to profile elevation and both dimensions of maladjustment could indicate that an interaction effect is occurring between the two dimensions. A study examining such an interaction effect could lend further insight into the relationship between profile elevation and internalizing and externalizing maladjustment. Lastly, as evidenced from the review of literature, findings with respect to profile elevation need to be reported by gender. As indicated in several studies, significant findings are often found for one gender but not the other. Thus, additional gender-specific scholarship on this topic is warranted, particularly for those populations for whom career counseling and assessment would be most helpful (e.g., African American mothers receiving welfare).

Overview of the TANF Program and Welfare Recipients

Commonly referred to as *welfare,* Temporary Assistance for Needy Families (TANF) was created by the Social Security Act (SSA) to promote self-sufficiency for poverty-stricken families (Russell, 2005). Initially, the state-federal welfare program was named the Aid to Families with Dependent Children (AFDC), which was in effect from 1935 to 1996. Criticized for being too lenient in providing cash assistance, the transition from AFDC to TANF in 1996 was accompanied by changes in welfare policies (Carcasson, 2006). Most notably, the new policies deemphasized (but did not eliminate) government payouts as well as introduced a strategy called *Work First.*

Through the TANF *Work First* strategy, employment-related services and affordable childcare are provided to help impoverished families achieve financial independence (Russell, 2005). Though cash assistance is also still provided, recipients must meet certain work requirements, lest sanctions be imposed on benefits. Regarding work requirements, TANF recipients must engage in 30 hours of employment or work-related activities (e.g., vocational evaluation, career counseling, job readiness training) per week (Carcasson, 2006). According to policy, TANF recipients are to obtain employment within 2 years of enrollment and may receive cash assistance and affordable childcare for a maximum of 5 years. The time-limited nature of welfare benefits under TANF, in conjunction with more stringent work requirements, dramatically reduced the number of individuals on welfare caseloads after 1996 (TANF: Update on Program Performance, 2012). While this reduction was partly because recipients gained suitable employment, as many as 87% of recipients exited without gainful employment because of the policy changes under TANF (TANF: Update on Program Performance, 2012). Consequently, there is a significant and growing number of impoverished individuals who are neither employed nor on welfare (Wu, 2010).

Among those who do currently receive TANF services is a disproportionately large number of black families (Banerjee, 2003; B. J. Lee, Slack, & Lewis, 2004; Williamson et al., 2011). Though comprising only 13% of the total U.S. (U.S. Census Bureau, 2018), African Americans comprise 30.2% of adult TANF enrollees (USDHHS, 2018). Also, regarding overall gender distribution of adult TANF recipients, about 85% are women. These statistics are indicative of the different challenges, or barriers, that black women encounter in the workforce.

Employment Barriers for TANF Recipients

As reflected in TANF's time-limited services and *Work First* criteria, stable employment is meant to replace recipients' cash assistance following receipt of services (Carcasson, 2006). However, mounting research reveals a troublesome number of individuals who are failing to achieve self-sufficiency (e.g., Wu, 2010). Currently, numbers of TANF recipients considered *hard-to-employ* are on the rise and some state TANF programs are described as "ill-equipped" to address their needs (Butler et al., 2012*;* Danziger & Seefeldt, 2003). For recipients who do make the *successful* transition from TANF to the world of work, studies indicate that they are likely to continue experiencing financial hardship and unstable employment conditions (Cancian, Haveman, Meyer, & Wolfe, 2002; Cheng, 2010; Heflin, 2006). For example, according to Wu (2010), less than 40% of mothers in poverty were able to keep their job within a year following receipt of TANF services. For many of those who were able to sustain employment, earnings often remained stagnant or decreased. Such findings underscore the pervasive barriers and challenges that many TANF recipients experience in their pursuit of employment.

As alluded, a plethora of recent research on TANF has highlighted career barriers as being accountable for undesired employment trends among recipients. Barriers commonly associated with TANF recipients include childcare concerns, low educational attainment, psychological maladjustment, drug addiction, domestic violence, disability, generational poverty, limited access to quality healthcare, and a multitude of other personal and environmental constraints. Indeed, barriers are considered multiple and complex for TANF recipients and other low-income populations (Danziger & Seefeldt, 2003; Loprest & Nichols, 2011; Banerjee, 2011). To help refine and measure the construct of career barriers, Liptak (2011) conducted a literature review of data on poverty-stricken individuals enrolled in programs meant to provide

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employment services. According to findings, barriers for low-income populations most often cluster into one of five groups: (1) personal or financial concerns, (2) psychological or physical issues, (3) career decision-making and planning skills, (4) job search skills, and (5) education and training.

As a result of research linking career barriers to low-income populations, numerous pilot programs were created through TANF to provide *barrier removal services*. Of the 10 pilot programs that were introduced, only three were considered effective for increasing *(subsidized)* employment. Furthermore, recipients from all programs were unable to achieve job stability and wages that would otherwise enable self-sufficiency (Butler et al., 2012). Generally, TANF services and practices are derived from *poverty* theories that stress class-culture, rational choice, and expectancy (Blane & Ellwood, 1994). Thus, TANF recipients are rarely examined in the context of a career theory. However, such inquiry could be useful for better understanding career development processes of TANF recipients, the specific role of barriers in career decision-making, and interventions that might improve employment outcomes.

Welfare Recipients and Psychiatric Disorders

Identified as being among the more pervasive employment barriers encountered by TANF mothers is psychological maladjustment (other barriers are detailed in Chapter 2). Researchers have found that TANF mothers are approximately two times more likely to experience psychological maladjustment than non-welfare populations (Danziger et al., 2000; Ensminger, 1995; Jayakody, Danziger, & Pollack, 2000; Klein, Amundson, & Borgen, 1992; Rank, 1994). Estimates for the frequency of psychological maladjustment ranges from roughly 35% to more than 40% (Danziger, Kalil, & Anderson, 2000; U.S. Department of Health and Human Services, 1995; Zedlewski, 1999).

The various psychiatric disorders and symptoms TANF mothers experience are associated with both dimensions of psychological maladjustment. Regarding internalizing maladjustment, TANF mothers most commonly experience depression and anxiety (Danziger, Corcoran, et al., 2000; Jayakody et al., 2000). Black TANF mothers, in particular, are also more susceptible to experience externalizing maladjustment than their non-TANF peers. Compared to their non-black peers, research suggests externalizing disorders are more prevalent among black women raised in single-parent homes, wherein the mother serves as the head-of-household at some point during the child's early development (The Annie E. Casey Foundation, 2012; Barrett & Turner, 2005). Indeed, black mothers on welfare are commonly raised in such conditions. Furthermore, in addition to a disproportionately high vulnerability to externalizing maladjustment, those on TANF often experience serious barriers to employment that are closely related to this dimension among adults, such as substance use disorders, crime, and domestic violence (e.g., Dworsky & Courtney, 2007).

The high rate of psychological maladjustment among TANF recipients is primarily explained in the literature as being a function of economic hardship (Ensminger, 1995; Jarret, 1996; Rank, 1994; Rogers-Dillon, 1995; Yaniv, 1998). This perspective is supported by the voluminous literature that demonstrates that impoverished individuals, regardless of whether they are welfare recipients, more often present with symptoms of depression, anxiety, and a variety of other forms of psychological maladjustment (Bennet, 1987; Brown, Ni Bhrolchain, & Harris, 1975; Brown, Adams, & Kellam, 1981; Gyami, Brooks-Gunn, & Jackson, 2001; Pearlin & Johnson, 1977; Reading & Reynolds, 2001; Ross & Huber, 1985; Thompson & Ensminger, 1989). More exactly, poor economic conditions are heavily associated with a host of life stressors that are known to negatively influence psychological functioning, such as

unemployment, inadequate healthcare, exposure to violence, and a myriad of other undesirable circumstances. For example, a meta-analysis conducted by Murphy and Athanasou (1999) revealed that an individual's psychological functioning often endures some degree of impairment during prolonged bouts of unemployment, which is a major issue among black TANF mothers. Though psychological functioning generally improves once employment is achieved or re-achieved (Murphy & Athanasou, 1999), most people in extreme economic hardship such as TANF recipients experience a constellation of occupational barriers (e.g., lack of reliable transportation, limited education) that make gaining or maintaining employment particularly difficult (Dworsky & Courtney, 2007).

Further compounding the prevalence of psychiatric disorders among TANF mothers is that many of these individuals are apprehensive towards seeking mental health treatment, even when such treatment is made available and financially accessible through government-sponsored programs. This phenomenon is particularly true among economically disadvantaged African Americans. Scholars have identified *mistrust* as a primary barrier to these African Americans seeking mental health treatment (Suite, La Bril, Primm, & Harrison-Ross, 2007).

This mistrust that individuals in the African American community have towards the mental health system can be understood from a brief overview of a troubling history with respect to medicine, research, and mental health services. Regarding apprehension towards the medical field, scholars Harris, Gorleick, Samuels, and Bempong (1996) traced the "legacy of mistrust" among African Americans back to unethical experiments performed in the South during the antebellum era, stating: "Southern blacks became a prime source for medical school dissection experiments and autopsy specimens. This practice continued in the postbellum South in the form of 'night-doctors' who stole and dissected the bodies of blacks" (p. 198).

These and other such deleterious acts committed by the medical community during and since the antebellum South was accompanied with *scholarly* opinions in journal articles suggesting that African Americans were an inferior race of human (Poussaint & Alexander, 2000). Such pseudoscientific and racist classifications of African Americans permeated academic journals throughout the centuries with disastrous implications. For example, until as recent as the 1970s, African American women in the South were routinely sterilized against their consent or knowledge, an abominable practice that has since been coined by African Americans as the *Mississippi Appendectomy* (Roberts, 2000).

Perhaps no other instance of scientific abuse towards African Americans has captured the public's attention more than the infamous Tuskegee Syphilis Study that began in 1932 and lasted more than 40 years (Suite, La Bril, Primm, & Harrison-Ross, 2007). The Tuskegee experiments, which were funded by the U.S. Public Health Service, were conducted on hundreds of African Americans who either knowingly or unknowingly had syphilis. However, the government scientists never treated these individuals for syphilis even though a cure (penicillin) was validated in the 1940s. In fact, government scientists actively withheld the antibiotic (as well as knowledge of it) from participants. This egregious negligence on behalf the medical community resulted in tragic consequences, including the deaths of more than 120 African Americans from syphilis or related complications (Poussaint & Alexander, 2000).

In addition to the fields of medicine and scientific research, there is a documented legacy of racism and discrimination within the mental health system. Relevant to the current study, mental health practitioners have historically over pathologized or misdiagnosed African Americans (Suite, La Bril, Primm, & Harrison-Ross, 2007). Examples of this phenomenon are evident throughout the literature since the 1970s. For instance, numerous studies have

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demonstrated that African Americans are over-diagnosed with severe mental health disorders and underdiagnosed with less serious mental health disorders (Baker & Bell, 1999; Coleman & Barker, 1994; Friedman & Cheryl, 2002; Friedman & Paradis, 1991; Schultz, 2004). Scholars suggest that this tendency to either over pathologize or misdiagnose African Americans is a result of prejudice on behalf the clinician as well as a *lack of contextual diagnostic analysis* (Suite, La Bril, Primm, & Harrison-Ross, 2007, p. 881)

In acknowledging the problem of bias against African Americans and other minorities, the American Counseling Association's (ACA; 2014) code of ethics states that "counselors recognize historical and social prejudices in the misdiagnosis and pathologizing of certain individuals and groups and strive to become aware and address such biases in themselves or others" (p. 11). To attenuate this problem, more assessment instruments and their theoretical assumptions should be examined and validated among disadvantaged minority populations, particularly those assumptions which posit a relationship between common career assessment constructs and psychological maladjustment. However, to date, assessment instruments and the assumptions which underpin them have rarely, if ever, been examined for African American mothers receiving welfare. In fact, a single study (Russell, 2005) represents the entirety of literature in which this population been examined in context of a career theory, the results of which are discussed in the following section.

African American Mothers Receiving Welfare and Their Vocational Interests

As previously mentioned, adult welfare recipients are often referred to counselors and training workshops for career assessment and vocational guidance to enhance their employment outcomes. Despite decades of these referrals, there exists a dearth of research in which African American mothers receiving welfare are examined through the conceptual prism of a career

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theory. The current section details findings from the only study (Russell, 2005) in which this topic has been investigated.

The stated purpose of Russell's (2005) study was to examine the relationships between Holland-based vocational interests and personality characteristics among a sample (N = 185) of African American mothers receiving welfare who attended a career development and life skills workshop funded by the State of Florida Department of Labor. Towards this end, archival data was analyzed, including RIASEC scores and primary Holland types as measured using the Self-Directed Search (SDS; Holland, 1990) and personality characteristics as measured using the 16PF (Cattell et al., 1970). From greatest to least, the mean scores across SDS scales indicated a rank ordering of Social, Conventional, Enterprising, Artistic, Investigative, and Realistic (summarized as S-C-E-A-I-R) for the sample. Regarding the frequency distribution of primary vocational interest type, approximately half the sample had a high-point code for the Social dimension and roughly a quarter of the sample indicated a high-point code for the Conventional dimension. Frequency distributions for the other primary RIASEC-based types were too small to analyze statistically in a subsequent MANOVA in which Social and Conventional types represented the independent grouping variables and the 16 personality factor scores represented the continuous dependent variables.

Statistical significance was observed from results of the MANOVA, and follow-up ANOVAs were conducted to identify the specific differences between the Social and Conventional groups. Results indicated significant differences between these groups for the 16PF factors of Warmth, Social Boldness, Insecurity, Self-Sufficiency, and Tension. Whereas the Social group scored significantly higher on Warmth and Social Boldness, the Conventional group scored significantly higher on Insecurity, Self-Sufficiency, and Tension.

Overall, these findings are in partial support of Holland's (1997) assumption that his RIASEC typology measures aspects of personality in addition to vocational interests. Some of the results from Russell's (2005) study will be discussed in relation to the current study's findings. More specifically, contained in the current study will be measures of central tendency for RIASEC-based scale scores (as measured with the O*NET CIP) as well as frequency distributions of Holland high-point codes. Results will be compared and contrasted with Russell's (2005) to indicate, in part, the generalizability of findings observed in the current study with respect to vocational interest scores. Furthermore, such findings will help to accumulate evidence and substantiate a scholarly line of inquiry regarding the vocational interests of African American mothers receiving welfare that can be built upon in future research of this population.

Chapter Summary

Contained in this chapter was a review of literature. Topics expounded on were: (a) vocational interest assessment and tools; (b) Holland's (1985, 1997) theory of vocational interests and work environments; (c) the history of differentiation and profile elevation as psychologically meaningful constructs; (d) the relationships of differentiation and profile elevation with neuroticism and other Five-Factor Model (FFM) personality traits; (e) the primary dimensions of psychological maladjustment and review of the relevant literature; (g) and an overview of the Temporary Assistance for Needy Families (TANF) program and welfare recipients with respect to psychological maladjustment and vocational interests.

In summary, African American mothers receiving welfare are particularly susceptible to internalizing and externalizing maladjustment; thus, population-specific research into their differentiation and profile elevation scores could help answer theoretical questions related to Holland's assumptions. Namely, how do internalizing and externalizing maladjustment influence

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interest score differentiation and profile elevation? In addressing this question among African American TANF mothers, counselors will have empirical evidence for interpreting vocational interest scores in a manner that improves service delivery to these clients and will inform future courses of action with respect to achieving desirable employment outcomes. Indeed, African American mothers receiving welfare have largely been without the benefit of vocationally related research in the context of career theory, despite being clients of career counseling and assessment services. At best, the lack of empirical research is perplexing. At worst, the lack of scholarship signals neglect of African American TANF mothers on behalf of researchers in the fields of vocational psychology and rehabilitation counseling. This gap in research is addressed with the current study, the methods of which are discussed in the following chapter.

CHAPTER III: METHODS

Introduction

This chapter details the research design and methods used to examine psychiatric disorder dimensions (i.e., internalizing disorder, externalizing disorder) in relation to vocational interest score differentiation and profile elevation among African American mothers receiving welfare. More specifically, this chapter outlines the primary research questions, data collection procedures, the research design, population, sampling, statistical analyses, and instrumentation. This chapter will then conclude with a summary.

Research Questions

There are six research questions for the current study that examines the influence of psychological maladjustment (i.e., internalizing disorders, externalizing disorders) on vocational interest score differentiation and profile elevation among African American mothers receiving welfare in North Carolina. For addressing research questions, internalizing maladjustment and externalizing maladjustment serve as the independent, grouping variables. These grouping variables each have two levels for indicating the presence or absence of the corresponding form of maladjustment (i.e., internalizing, externalizing), as measured using the Global Appraisal of Individual Needs- Short Screener (GAIN-SS; Dennis, Feeney, & Titus, 2013). In contrast, the dependent variables are vocational interest score differentiation and profile elevation. These variables are continuous and were measured using the O*NET Computerized Interest Profiler (CIP; Rounds et al., 1999). More specifically, interest differentiation represents the difference between a participant's highest and lowest Holland-based scale scores. Profile elevation represents the participant's total number of endorsed items (i.e., "Like" responses) across all Holland-based scale scores. Accordingly, the following research questions pertain to the

influence of psychological maladjustment (i.e., internalizing, externalizing) on Holland-based scores of differentiation and profile elevation:

1. What is the effect of internalizing maladjustment level (presence, absence) on vocational interest score differentiation among African American mothers receiving welfare?

2. What is the effect of externalizing maladjustment level (presence, absence) on vocational interest score differentiation among African American mothers receiving welfare?

3. What is the interaction between levels of internalizing and externalizing maladjustment on vocational interest score differentiation among African American mothers on welfare?

4. What is the effect of internalizing maladjustment level (presence, absence) on vocational interest profile elevation among African American mothers receiving welfare?

5. What is the effect of externalizing maladjustment level (presence, absence) on vocational interest profile elevation among African American mothers receiving welfare?

6. What is the interaction between levels of internalizing and externalizing maladjustment on vocational interest profile elevation among African American mothers on welfare?

Addressing these research questions enhances the interpretability of differentiation and profile elevation as they relate to the two dimensions of psychological maladjustment. The first three research questions help determine whether Holland-based differentiation is indeed related to internalizing maladjustment and unrelated to externalizing maladjustment. The third research question pertains to a possible interaction effect between the dimensions of maladjustment on differentiation scores. Addressing this question helps to inform whether the effect of one dimension of maladjustment on differentiation is reliant upon levels of the opposing dimension of maladjustment.

The latter three research questions pertain to the influence of psychological maladjustment disorder dimensions on profile elevation. Research questions 4 and 5 help to determine whether profile elevation scores are negatively related to internalizing maladjustment and positively related to externalizing maladjustment. Such opposite relationships as observed in the literature between profile elevation and the two dimensions of maladjustment might suggest that an interaction effect is present. Because an interaction effect for the dimensions of psychological maladjustment has yet to be examined, the sixth and final research question helps to address this gap in the literature.

Aside from addressing the six primary research questions, the current study contains additional analyses that are to the benefit of African American mothers receiving welfare and the counselors who provide them with services. More specifically, the incidence of primary RIASEC-based type is reported along with measures of central tendency for interest scores across O*NET CIP scales. Furthermore, psychometric properties of the O*NET CIP and GAIN-SS are examined and reported for the sample of African American mothers receiving welfare.

Archival Data Collection Procedures

This section outlines the archival data collection procedures used for the current study examining the results of African American mothers receiving welfare who participated in a vocational evaluation (VE) screening program at an on-campus clinic in North Carolina. The VE program was staffed with graduate-level counseling students and faculty supervision aiming to help economically disadvantaged persons enhance their employability through affordable VE and career assessment services (Fish, Cox, Leierer, Sligar, & Toriello, 2015). Below is a description of how data from the VE process was handled, secured, and stored. Following this description, an outline of the VE process itself is discussed.

From October 2012 through December 2016, the local North Carolina Department of Social Services (DSS) referred Work First (i.e., TANF) participants to the VE program. Participants signed consent forms allowing for their results to be used in research. The VE program ensured confidentiality of identifying information. Hard-copy files were kept in locked cabinets. Competent graduate-level students were identified and hired to transfer hard-copy VE data from these files into an electronically secured database called Microsoft Access.

Regarding the actual VE process, service provision began with referrals. More specifically, welfare recipients were referred by DSS to the VE lab for partial fulfillment of recipients' TANF-based work requirements (Fish, Cox, Leierer, Sligar, & Toriello, 2015). Following referral from DSS, participants usually completed the VE program by attending five sessions over the course of one or two weeks (the clinic operated Monday, Wednesday, and Friday from 9 a.m. to 1 p.m.). These five VE sessions lasted under an hour apiece and included (1) orientation, (2) intake, (3) aptitude assessment, (4) evaluation of interests, values, and barriers), and (5) the final VE summary report.

The first session, orientation, occurred Monday mornings to inform clients about the VE program, distribute client handbooks, and process paperwork. The paperwork included consent forms, confidentiality agreements, and DSS release of information forms. Following orientation, clients could (and typically did) elect to immediately proceed with the intake session.

For intake, clients met individually and privately with a VE program staff member. Two of the three instruments used in the current study were administered during this session. More exactly, clients completed My Vocational Background, which was specifically designed to collect demographic information (e.g., age, marital status, employment status, race, gender, dependents). In addition to the questionnaire, a trained staff member would administer the

GAIN-SS (Dennis, Feeney, & Titus, 2013). This instrument was used to assess biopsychosocial functioning and screen for problems necessitating treatment or more intensive assessment.

After completing two sessions on Monday, the participants returned Wednesday morning for the third session. This session involved an assessment of the client's aptitudes (i.e., academic and occupational potential). Following this session, clients returned Friday morning to complete the O*NET Computerized Interest Profiler (CIP) among other vocationally related instruments. As always, one or more VE program staff members would be present to administer the tools in accordance with instruction manuals and clinic procedures.

Lastly, the fifth and final VE program session was held the following Monday morning. Clients returned to the clinic to review and discuss the VE summary report, which is a two-page document compiled by VE program staff that outlines results and recommendations from the evaluation. With the client's consent, the VE summary report was faxed to the TANF caseworker. In addition, staff would provide the client with the option to schedule a return to the clinic for additional counseling or vocational guidance.

Research Design

The current quantitative, exploratory study uses a non-experimental design for examining archival data collected from a VE program in North Carolina. More specifically, the current study is an *ex post facto* investigation on the influence of internalizing and externalizing maladjustment on vocational interest score differentiation and profile elevation among African American mothers receiving welfare. As discussed in this chapter's section on statistical analysis, the current study conducts multiple two-way analyses of variance (ANOVA) in which levels of internalizing and externalizing maladjustment serve as the independent factors. Serving

as the continuous, dependent variables are vocational interest score differentiation and profile elevation, respectively.

Population

The population examined in the current study includes African American mothers enrolled in North Carolina's Temporary Assistance for Needy Families (TANF) program called Work First. Prior to listing demographic information about this population, a review of North Carolina's Work First program is provided. This review of the Work First program will provided additional context for understanding the population of concern to the current study.

In 1995, North Carolina initiated the Work First program amid nationwide welfare reform that was characterized by a fundamental shift in policy and eligibility requirements. Among these changes in policy were more stringent time limits on cash assistance for parents as well as the imposition of work requirements (North Carolina Department of Health and Human Services [NCDHHS], 2018). Specifically, Work First cash assistance for recipients who are parents or adult caretakers is limited to 24 months, during which time the adult must engage in work-related activities for a certain number of hours each week, lest sanctions be placed on receipt of benefits. The work-related activities constitute, for example, unsubsidized employment, subsidized employment, job search, job readiness, vocational education, and job skills training. The emphasis on employment for recipients is reportedly meant to help low-income families achieve financial self-sufficiency.

Generally, in order to qualify for North Carolina's TANF-based services, the family must have at least one child dependent who is under the age of 18 years. Additionally, the household income must be at or below 200% of the federal poverty level (NCDHHS, 2018). On behalf of the dependent child (or children), the biological parents, adoptive parents, or stepparents can

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apply for assistance and become included in the payments (other relatives or individuals with legal custody or guardianship may also apply on the child's behalf, but are not included in payments). The amount of cash assistance varies by state, but monthly installments to TANF families in North Carolina is $213, which is much lower than the national average of $406 for state-based TANF programs. However, North Carolina's TANF families receive medical assistance and roughly two-thirds are enrolled in the Supplemental Nutrition Assistance Program (SNAP), which provides a monthly average of $390 in food stamps.

According to a report published by the U.S. Department of Health and Human Services (2017), more than 17,000 North Carolina families, on average, were enrolled in TANF at any one time during the 2016 fiscal year. Whereas most (76.1%) of these families were without an adult TANF recipient, 22.8% of families had one adult recipient, and 1% had two or more adult recipients.

Demographics

In North Carolina, there are more than 4,300 adult Work First participants (U.S. Department of Health and Human Services, 2017). Of these Work First participants, roughly 95% are women. These women are mostly single (83.4%) and have an average of 1.6 child dependents. A disproportionately high percentage of participants identify as African American. Although forming just 22.2% of North Carolina's overall population (U.S. Census Bureau, 2019), African Americans or Blacks comprise 65.7% of the state's Work First participants, followed by Caucasians (26.7%). and Hispanics (3.1%). In terms of age, most are 20-29 years (53.5%) or 30-39 years (30.9%). Lastly, the population can be described as low socioeconomic status, unemployed (65.7%), and with limited formal education (only 13.6% have at least a high school diploma).

Sample and Sampling

Inclusion criteria for the sample in the current study consists of African American mothers receiving welfare who completed a vocational evaluation (VE) screening program at the Navigate Counseling Clinic in North Carolina between October 2012 and January 2017. Data on individuals who do not satisfy these criteria were excluded from the study to avoid injecting extraneous variables into the analyses. A preliminary inspection of the archival data in question indicated 160 cases that met the initial criteria for study inclusion. Of these 160 potential cases, missing data was identified in 38 participant cases with respect to the variables relevant to research questions. Imputation was considered for these 38 participant cases. However, for circumstances described in Chapter 4 (see "Data Cleaning Procedures"), these case with missing data were addressed with list-wise deletion. Ultimately, a final sample size of 122 participant cases (N = 122) was obtained for the current study. This number exceeded the targeted sample size of at least 100 participant cases for examination.

Sampling Procedure

In determining a minimum sample size of at least 100 (N ≥ 100) for the current study, several important factors were taken into account. In particular, issues of effect size and power were considered. A sample of size of 100 participants could potentially lend an effect size greater than .99 and a power of .90 (Cohen et al., 2003). Effect size denotes the strength of the relationship between the IV and the DVs (Ary, Jacobs, & Sorensen, 2010). According to Cohen (1988), an effect size of .2 is considered small, .5 is moderate, and .8 is deemed large. In contrast to effect size, power denotes the likelihood that the influence an independent variable has on the dependent variable will be accurately detected when such an influence does indeed exist (Trochim, 2006). In other words, power is related to the probability of making a Type I error

(i.e., when data leads the research to reject the null hypothesis when the null hypothesis is actually true; Neyman & Pearson, 1967).

There are several *rules of thumb,* or informal standards that many researchers use for identifying a reasonable sample size (VanVoorhis & Morgan, 2007, p. 47). These rules of thumb suggest sample size cutoffs that are based on the number of participants or cases needed in order to achieve a minimally acceptable power of .80 (Cohen, 1988). However, the sample size needed to reach .80 power varies according to the nature of the study and the statistical analysis employed. A rule of thumb for identifying a reasonable sample size for employing the statistical analyses in the current study (i.e., 2 X 2 factorial ANOVAs) is 14 participants per cell (given three or more cells and a moderate effect size; Kraemer & Thiemann, 1987).

In accordance with these rules of thumb, at least 56 participants would be required for the current study; however, a larger sample (i.e., $N \geq 100$) is warranted. Firstly, a larger sample size increases power, meaning the chance of making a Type I is decreased. Secondly, larger sample sizes are more likely to meet the assumptions of factorial ANOVA (i.e., normal distribution of the dependent variables across all levels of the independent variables). Lastly, a larger sample size would be more likely to meet the rule of thumb for a 2 X 2 factorial ANOVA that suggests that at least 14 cases are included in each 2 X 2 cell. Thusly, a sample size of at least 100 ($N \geq$ 100) was chosen for the current study.

Statistical Analysis

The current study examines the influence of internalizing and externalizing maladjustment levels on vocational interest score differentiation and profile elevation. First, a software program, SPSS, was used to investigate descriptive statistics such as measures of central tendency and frequency distributions for demographic variables. These descriptive

statistics help to explain the sample in terms of age, marital status, education level, employment status, employment history, and medical impairment status. Furthermore, demographic variables were analyzed to identify and protect against possible covariance with the dependent variables (i.e., differentiation, profile elevation). Pearson's *r* was used to examine for covariance with the continuous variable of age, and ANOVAs were used for the remaining demographic variables, all of which are categorical in nature.

In addition to the above examination of demographic variables, the incidence of primary RIASEC-based type was reported along with measures of central tendency for interest scores across O*NET CIP scales. Furthermore, psychometric properties of the O*NET CIP and GAIN-SS were examined and reported for the sample of African American mothers receiving welfare (the analysis of which is detailed in Chapter 4). However, for addressing the six primary research questions, this study employed a series of 2 X 2 factorial ANOVAs (see Table 4).

Table 4

2 X 2 Factorial ANOVA Groups Defined by Maladjustment Type and Level

	Externalizing Maladjustment Yes	Externalizing Maladjustment No
Internalizing Maladjustment Yes	*Group 1*	*Group 2*
Internalizing Maladjustment No	*Group 3*	*Group 4*

Note. Groups will be compared based on their interest score differentiation and profile elevation, respectively.

In determining whether to employ a series of ANOVAs as opposed to one multivariate analysis of variance (MANOVA), a preliminary inspection of the data was conducted. More exactly, a MANOVA requires that the dependent variables (i.e., score differentiation and profile

elevation) exhibit a correlation within the absolute range of .2 and .9. However, analysis of the relationship between differentiation and profile elevation yielded a correlation coefficient (i.e., r = .1) that falls below and outside the acceptable range for conducting a MANOVA. Therefore, a series of 2 X 2 factorial ANOVAs was chosen as the current study's primary statistical method.

Because the 2 X 2 ANOVA was used to address research questions, the current study contains an examination of whether the data met the assumptions of this statistical method. There are three primary assumptions that should be met for the results of a two-way ANOVA to be considered valid. These assumptions include: (1) no outliers; (2) a normal distribution of the dependent variable across all levels of the independent variables; and (3) homogeneity of variance (i.e., equal error variance of the dependent variable is present across all levels of the independent variables). For assessing the assumption of no outliers, SPSS software was used in producing boxplots to display the distribution of each dependent variables (i.e., differentiation, profile elevation) across all levels of the grouping variables. Potential outliers were visually identified by cases that were indicated beyond either tail of each respective boxplot. For assessing normality, the Shapiro-Wilk test was used, with non-significant findings at $\alpha = .05$ indicating normality. For assessing linearity, a visual inspection of scatterplots was conducted. Lastly, homogeneity of error variances was assessed using Levene's test for both dependent variables. A non-significant finding at $\alpha = .05$ suggests this assumption is met.

After assumptions testing, a series of 2 X 2 factorial ANOVAs were used for addressing research questions. This statistical method was a strong fit for the sampled data. More specifically, factorial ANOVA is commonly used for examining the influence of independent, categorical variables on a dependent, continuous variable. Regarding the current study, internalizing and externalizing maladjustment level (i.e., presence, absence) represent the

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independent categorical variables. In contrast, interest score differentiation and profile elevation represent the continuous dependent variable, respectively. In addition to being a strong fit for the sampled data, the factorial ANOVA adequately addresses the previously mentioned research questions. This statistical approach uses a set of procedures for identifying a main effect for factor A, a main effect for factor B, and a potential A*B interaction. For these reasons, the 2 X 2 factorial ANOVA was the chosen statistical method for the current study.

Instrumentation

This section describes the instruments used for collecting the archival data that is under examination in the current study. In total, there are three such instruments. These instruments include a demographic questionnaire, the O*NET Computerized Interest Profiler (CIP; Rounds et al., 1999), and the Global Appraisal of Individual Needs- Short Screener (GAIN-SS; Dennis, Feeney, & Titus, 2013). Particular attention is given to the psychometric properties of the O*NET CIP and GAIN-SS among the original norming samples. Psychometric properties of these instruments among the current sample are discussed in Chapter 4.

Demographic Questionnaire - My Vocational Background

My Vocational Background is a paper-pencil demographic questionnaire that was specifically designed for the VE screening program. This questionnaire consists of several pages that employ a mixed response format. More exactly, respondents complete check-mark boxes related to identifying information and report education and employment information indicated through fill-in-the-blank responses. Data extracted from this questionnaire for purposes of the current study includes age, marital status, employment history, education level, and number of dependents.

O*NET Computerized Interest Profiler, Version 3.0

The O*NET Computerized Interest Profiler (CIP) was administered to participants of the current study. The CIP is a software-based, self-report instrument consisting of scales reflecting Holland's (1985a) theory of six vocational interest types and work environments. Accordingly, the six scales are labelled Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), or Conventional (C; also known by the acronym RIASEC). This instrument was used for measuring the dependent variables in the current study (i.e., differentiation, profile elevation).

Instrument attributes and response format. As previously indicated, the O*NET CIP consists of six scales. Each scale is comprised of 30 items, meaning the inventory has 180 total items. These items depict a specific work activity that directly corresponds to one of the six RIASEC scales. A 3-point response format, operated by a keyboard or mouse, indicates whether participants *Like*, *Dislike*, or are *Unsure* about a specific activity that is described.

Scoring. Higher scores are used to suggest the respondent's vocational interest type. Respondents must complete all items before scores are automatically computed. Scores equal the tallied number of "like" responses for each scale (ranging from zero to 30), as items receiving a "dislike" or "unsure" response are not counted towards scale scores. Results from the automated scale scores enable the administrator of the instrument to calculate differentiation and profile elevation. For purposes of the current study, differentiation was calculated using Holland's (1973) recommendation of taking the absolute difference between the respondent's highest and lowest scale scores. Profile elevation was calculated by summing all O*NET CIP scale scores for each respective participant (i.e., the total sum of endorsed items across all RIASEC scales).

Instrument development. The CIP was developed to serve as a computerized and interchangeable version of O*NET's paper-pencil Interest Profiler (IP). Therefore, development

of the CIP is best explained by first describing how the IP was formulated. Holland's (1985a) Theory of Career Choice served as the conceptual *blueprint* for decisions related to IP construction, scales, and item development. Items for the IP (and subsequently the CIP) were developed through a rigorous, multi-phase process that involved several large pilot studies with diverse respondents, repetitious use of subject matter experts (SME), and numerous screenings that reduced more than 800 items to 180 items. To help decipher the best items, test developers established three major criteria for the six RIASEC scales, including (a) strong conformity with Holland's (1985a) hexagonal model of vocational interests; (b) maximum representation of occupations and training levels; and (c) minimal endorsement rate disparities between ethnic groups and gender types. These criteria were satisfied, and strong evidence of reliability and validity of the paper-pencil IP resulted.

Using a diverse norm group of 1061 individuals, internal consistency reliabilities ranged from .93 to .96, and the test-retest estimates ranged from .81 to .92. Convergent validity was established using the Interest-Finder, and structural validity was demonstrated with strong conformity to Holland's (1985a) hexagonal model of vocational interests. The success of the paper-pencil IP justified the development of a computerized version, which can be used interchangeably.

Because CIP items were already constructed, tested, and selected through numerous research phases for the paper-pencil IP, the development of the CIP only required additional phases. The first of these phases was software design and development. Towards this end, feedback was collected from DOL administrators as well as software developers to formulate goals for the CIP. Simply put, these goals guided the development of a computerized instrument that was user-friendly (regardless of computer experience), easily understood, visually appealing,

and compatible with a variety of computer figurations and operating systems. Resulting feedback indicated that these goals were achieved with the CIP.

Psychometric properties. Reliability and validity of the CIP were evaluated in a collaborative research study involving a comparability sample of 463 participants and a test-retest sample of 125 participants. The comparability sample was administered both the CIP and the IP using counterbalancing to control for order effects. Additionally, this group was instructed to rank-order RIASEC codes by preference, record their current and ideal occupations, and complete a survey about the software design of the instrument.

Norm groups. The comparability sample was mixed with regard to gender (38.6% male, 61.4% female), ethnicity (40% Caucasian, 39% African American, 16% Hispanic), age range (17 to 50 years), employment status (employed, unemployed, student) and educational background (ranging from no high school to graduate school). Furthermore, participants were from all four regions of the United States. Regarding the test-retest sample, participants completed the CIP on two different occasions, with an approximated 30-day interval between administrations. In contrast to the comparability group, participants in the test-retest sample were exclusively from North Carolina. The test-retest sample were also more likely to be female (70%), Caucasian (68%), employed (83% vs. 50% in the comparability sample), and with some college education (50% vs. 33% in the comparability sample).

Reliability. Very high internal consistency estimates were observed for the CIP, as Cronbach's alpha coefficients ranged from .93 to .96. Also providing strong evidence for reliability were test-retest correlations, which yielded a range of .82 to .92. According to authors, the tool platform (i.e., computerized, paper-pencil) had minimal effect on reliability, as the CIP and IP shared similar internal consistency and test-retest estimates.

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Validity. The CIP was examined for validity using several different analyses. More specifically, criterion-related validity, convergent validity, parallel forms validity, and structural validity were assessed. Results provided strong evidence of validity in each of these areas.

Criterion-related validity. This type of validity was evaluated by measuring the amount of agreement between the participant's CIP high-point code and the RIASEC interest profile of their current or ideal occupation (as self-reported in a questionnaire). Amount of agreement was measured using circular scale scores, which are based on the conceptual distance between two Holland codes on the RIASEC hexagon. Scores range from 0 (no agreement) to 3 (exact match). For example, scores of 0 represent pairs of Holland codes that exist on opposite corners of the RIASEC hexagon (e.g., Social vs. Realistic), while higher circular scale scores are for code pairings that are closer together (i.e., more similar). According to authors, the resulting agreement rates for the CIP were consistent with rates produced by other quality measures of interest (c.f., Slaney, 1978).

Convergent validity. This type of validity was examined by comparing participants' results on the CIP with the RIASEC Self-Description Questionnaire (SDQ). Similar to the CIP, the SDQ is a self-report measure of interest that helps identify a person's interest profile. Expecting a moderate relationship between these two instruments, results yielded moderately high levels of convergence, suggesting the CIP and SDQ are measuring the same constructs.

Parallel forms validity. This type of validity was examined by analyzing the CIP scores and IP scores to evaluate any potential influence of the testing platform (i.e., computerized versus paper-pencil). However, a high degree of similarity between CIP and IP profiles were observed. This suggests that any influence of the testing format on scores is minimal at most, meaning the two instruments are interchangeable.

Structural validity. To assess this type of validity, the degree of similarity between the CIP and its underlying conceptual structure (Holland's hexagon) was evaluated using inter-correlations of the interest scales as well as multidimensional scaling. The evidence of structural validity observed for the test-retest sample is consistent with other measures of interest, including the IP (Rounds et al., 1999).

Summary of reliability and validity. Overall, psychometric testing for the CIP yielded strong evidence of reliability and validity, justifying its usefulness for measuring occupational interests. Reliability was high to very high for internal consistency and test-retest estimates. Validity of the CIP was also well-established. Specifically, CIP results strongly corresponded to subjects' ideal job, the CIP's underlying data structure fit Holland's model, and the instrument is comparable with the IP, which is another instrument with strong psychometric properties.

Global Appraisal of Individual Needs- Short Screener, Version 3.0

The Global Appraisal of Individual Needs- Short Screener (GAIN-SS; Dennis, Feeney, & Titus, 2013) is a 3-5 minute assessment tool (web-based or paper-pencil) used by clinicians to quickly and accurately generate diagnostic impressions of persons entering mental or behavioral health treatment. The GAIN-SS is remarkably useful for (a) identifying persons with a disorder and ruling out those without a disorder, (b) approximating disorder type and severity, and (c) guiding further courses of action with respect to assessment and treatment. The instrument exhibits high reliability and validity, and is applicable to a variety of populations. For these reasons, the National Institute of Health recognizes the GAIN-SS as being among the best screeners of its type (Dennis, Chan, & Funk, 2006). Furthermore, the GAIN-SS is recommended for use in welfare and employment assistance programs (Dennis, Feeney, & Titus, 2013), making it a suitable instrument for the current study.

The GAIN-SS tool is conceptually underpinned by a statistical model of emotional and behavioral problems that is characterized by four dimensions: (1) internalizing disorders, (2) externalizing disorders, (3) substance use disorders, and (4) crime and violence. Although the instrument is comprised of four scales representing these dimensions, the current study focuses solely on the internalizing and externalizing dimensions. Research suggests that the internalizing and externalizing dimensions of psychological maladjustment are the two factors upon which common disorders and symptoms load most heavily. Furthermore, the GAIN-SS scale of substance use disorders and crime and violence are highly correlated with the externalizing dimension among adults, who are the sampled demographic in the current study.

Instrument attributes and response format. The GAIN-SS is comprised of four subscales and 23 items. These subscales are called the Internalizing Disorder Screener (IDS), Externalizing Disorder Screener (EDS), Substance Disorder Screener (SDS), and the Crime and Violence Screener (CVS). Each subscale contains five to seven items that directly correspond to a specific symptom or diagnosis in the Diagnostic and Statistical Manual (DSM). Specifically, the IDS contains six items that are used to identify internalizing disorders and symptoms such as depression, anxiety, trauma, somatic complaints, suicidal ideation, schizoaffective disorder, and schizophrenia (Dennis, Feeney, & Titus, 2013). For example, one IDS item requires respondents to indicate the last time they had significant problems with "feeling very trapped, lonely, sad, blue, depressed, or hopeless about the future" (Dennis, Feeney, & Titus, 2013, p. 14). The other scale used in the current study, the EDS, is comprised of seven items that are used to identify externalizing disorders and symptoms. These disorders or symptoms include attention-deficit hyperactivity, impulse control disorders, conduct disorders, oppositional defiance, antisocial personality disorder, pyromania, kleptomania, and intermittent explosive disorder. For each

subscale, items require a response indicating how recent the emotion or behavior occurred (Dennis, Feeney, & Titus, 2013). Responses include past month, 2 to 3 months ago, 4 to 12 months ago, more than 1 year ago, or never. Scoring is based on how the respondent answers these items.

Scoring. There are two primary methods for scoring the GAIN-SS. The first method involves adding the number of past-year symptoms endorsed by the respondent across all scales to produce one composite score that represents overall severity of psychological maladjustment or distress. However, a purpose of the current study is to examine the isolated effects of internalizing maladjustment and externalizing maladjustment, respectively. For examining these subscales individually, authors of the GAIN-SS recommend against using past-year symptoms as a continuous variable. Instead authors argue that cut-points should be used, creating a two-leveled categorical variable for indicating those with and without a probable diagnosis within the corresponding dimension of psychological maladjustment as measured with the respective GAIN-SS subscreener.

Cut-points for sensitivity and specificity. As recommended by the GAIN-SS manual authors, the current study used cut-points based on past-year symptoms for examining the individual and interaction effects of internalizing and externalizing maladjustment. The exact cut-point varies for the different subscales in terms of optimal sensitivity (i.e., the instrument's ability to accurately identify those with a disorder) and specificity (i.e., the instrument's ability to accurately identify those without a disorder). Ideally, instruments used for the purpose of identifying those with and without a diagnosable condition exhibit rates of sensitivity and specificity of at least 90% (Dennis, Feeney, & Titus, 2013).

For the IDS, a cut-point of three past-year symptoms nearly achieves the standard of 90% sensitivity and specificity (Dennis, Feeney, & Titus, 2013, p. 28). Although a cut-point of three past-year symptoms for the IDS among adults has a less-than-desired sensitivity of 81%, using this cut-point in the current study for the IDS provides minimal risk of mistakenly identifying individuals as having an internalizing disorder when in actuality they do not. More exactly, a cut-point of three past-year symptoms for the IDS among adults has specificity reported at 97% (Dennis, Feeney, & Titus, 2013). Thus, this GAIN-SS cut-point for the IDS was used for distinguishing between African American mothers receiving welfare who were likely to have or not have a diagnosable form of internalizing maladjustment.

In contrast to the IDS, the cut-point chosen for the EDS was two past-year symptoms for indicating a diagnosable form of externalizing maladjustment. Although the EDS does not achieve the ideal minimum sensitivity of 90% at this cut-point, it yields a specificity of 100% among adults. Thusly, the aforementioned cut-points (i.e., a score of three for the IDS and a score of two for EDS) were used in the current study. These cut-points helped to sort clients into those who probably *do* and probably *do not* have a diagnosable condition as indicated by the GAIN-I and GAIN-SS scales (Dennis, Feeney, & Titus, 2013, p. 28).

Instrument development. Development of the GAIN-SS shares the basic four dimensions as found on the full GAIN, which is much longer. The full GAIN is a highly reliable and valid biopsychosocial tool that merges clinical and research assessment into a 1-2 hour structured interview to assess problems, measure change, and document service provision. Although the full version of the GAIN has demonstrated good to excellent reliability and has validity that is well-established in the literature, implementing the full version of the tool requires programs to expend substantial resources with regard to training, time, and cost that

might not always be feasible. Furthermore, the full GAIN takes 90-120 minutes per staff member and client to complete, putting additional strain on already limited resources. In recognition of these problems, the GAIN-SS was developed.

In creating the GAIN-SS, authors sought to develop a more efficient version of the full GAIN assessment without compromising the strong psychometric properties it exhibits (Dennis, Chan, & Funk, 2006). Indeed, this goal was accomplished with the GAIN-SS. The exact psychometric properties and estimates of the GAIN-SS are provided below in terms of reliability and validity.

Reliability (adults). Dennis, Feeney, and Titus (2013) examined internal consistency reliability of the GAIN-SS on a diverse sample of nearly 2,000 adults across the country. Internal consistency reliabilities indicate whether items within the total screener or within individual subscales are closely related, thusly measuring the same underlying construct. Authors reported that the Total Disorder Screener (comprised of all 23 items) has excellent internal consistency, as Cronbach's alpha was .88. For the individual subscales, internal consistency was good to excellent for the IDS, EDS, and SDS, but the Cronbach's alpha coefficient for CVS fell below the cutoff of .70. Regardless, only the subscales of IDS and EDS are used in the current study, with Cronbach's alpha coefficients of .78 and .80, respectively. These estimates for internal consistency indicate that items are indeed closely related and that IDS and EDS subscales have good reliability.

Validity (adults). Concurrent validity, or degree of convergence between similar constructs, was examined by measuring the diagonal correlations between the GAIN-I and the GAIN-SS (Dennis, Feeney, & Titus, 2013). Strong evidence of concurrent validity was observed for each subscale, as correlations were greater than .90 for each except the CVS subscale.

Specific to the diagonal correlations observed for the IDS and EDS, coefficients were .92 and .93, respectively (Dennis, Feeney, & Titus, 2013). In addition to concurrent validity, estimates for discriminant validity were also reported. Discriminant validity is measured using non-diagonal correlations between the GAIN-I and GAIN-SS, with smaller correlations indicating discriminant validity. Specific to subscales used in the current study, discriminant validity was .42 for the IDS and .53 for the EDS. In addition to concurrent and discriminant validity, the instrument has strong criterion-related validity as discussed with respect to high sensitivity and specificity for cut-points for the IDS and EDS indicating a diagnosed condition. Simply put, the GAIN-SS exhibits strong evidence of high validity for purposes of the current study.

<p align="center">Identification of Variables</p>

Beyond the descriptive variables such as demographics (i.e., age, marital status, employment history, education level, dependents) and primary Holland-based interest type, there are four variables of focus in the current study. These variables are used to address the six research questions the current study aims to address. The four variables are described:

Differentiation. This Holland-based construct is measured using the O*NET Computerized Interest Profiler (CIP; Rounds et al., 1999). More precisely, vocational interest differentiation was computed using Holland's (1968, 1994) high-low index, which is calculated by taking the absolute difference between the respondent's highest and lowest RIASEC scale scores. Accordingly, differentiation is treated as a continuous, dependent variable with a possible range of scores between 0 and 30.

Profile elevation. This Holland-based construct is measured using the O*NET CIP (Rounds et al., 1999). More precisely, vocational interest profile elevation was computed as directed by Holland, Johnston, and Asama (1994), who made this construct operational by using

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the sum total of endorsed items (i.e., "like" responses) across all RIASEC scale scores. Accordingly, profile elevation is treated as a continuous, dependent variable with a possible range of scores between 0 and 180.

Internalizing maladjustment. This primary dimension of psychological maladjustment was measured using the GAIN-SS (Dennis, Feeney, & Titus, 2013). More precisely, internalizing maladjustment was represented as a two-level categorical variable for indicating those who likely *do* or likely *do not* have a diagnosable internalizing disorder. This distinction is based on the recommended cut-point of at least three past-year symptoms for the Internalizing Disorder Subscreener (IDS) of the GAIN-SS. In other words, those with three or more past-year symptoms for this subscreener indicated those with internalizing maladjustment. Alternatively, those with fewer than three past-year symptoms indicated those without internalizing maladjustment.

Externalizing maladjustment. This primary dimension of psychological maladjustment was measured using the GAIN-SS (Dennis, Feeney, & Titus, 2013). More precisely, externalizing maladjustment was represented as a two-level categorical variable for indicating those who likely *do* or likely *do not* have a diagnosable externalizing disorder. This distinction was based on the recommended cut-point of at least two past-year symptoms for the Externalizing Disorder Subscreener (EDS) of the GAIN-SS. In other words, those with two or more past-year symptoms for this subscreener indicated those with externalizing maladjustment. Alternatively, those with less than two past-year symptoms indicated those without externalizing maladjustment.

Limitations and Delimitations

As with any research endeavor, there are several limitations in the current study. These limitations mostly pertain to the research design, instrumentation, and statistical procedures used. These primary limitations are discussed.

With respect to the research design, the current study is an *ex post facto* investigation of archival data. Consequently, there are certain threats to validity. Namely, such a study is inhibited in suggesting cause-effect relationships between variables. This problem is a major limitation that is associated with secondary data analysis (Kiecolt & Nathan, 1985). Most notably, secondary data analysis is often conducted without access to the original survey. Thus, information pertaining to how the survey was administered or interpreted is often lost. Additionally, as the data from original surveys or instruments gets transferred into computerized information management systems, there is the inherent threat of substantial human-made errors in data input that are difficult to trace. In potentially ameliorating this threat, competent graduate-level students were hired for handling, securing, and storing data with clear policies and procedures for directing such action.

There are also limitations associated with the instrumentation used in the current study. Each of these instruments use survey methods or self-report inventories for data collection. However, such methods are highly corruptible to inaccurate or socially desirable responding. In addition, there are potential issues associated with the consistency of administration procedures that could alter the reliability or validity of the instrument. Although little can be done with respect to inaccurate self-reporting, the consistency of administration was ensured through the reinforcement of manual guidelines and written policies and procedures for instrument administration.

Another limitation pertaining to instrumentation relates to the sensitivity of GAIN-SS cut-points for indicating those with and without a probable internalizing or externalizing diagnosis. Ideally, instruments used for the purpose of identifying those with and without a diagnosable condition exhibit rates of sensitivity (i.e., the instrument's ability to accurately identify those with a disorder) and specificity (i.e., the instrument's ability to accurately identify those without a disorder) of at least 90% (Dennis, Feeney, & Titus, 2013). The cut-points used for the Internalizing Disorder Subscreener (IDS) and Externalizing Disorder Subscreener (EDS) of the GAIN-SS do not meet this standard for sensitivity, which is a limitation of the current study. With that said, the established cut-points do indeed exhibit excellent specificity among adults at 97% for the IDS and 100% for the EDS (Dennis, Feeney, & Titus, 2013).

A third limitation related to instrumentation involved the use of only one instrument or method of data collection for indicating a diagnostic impression. More exactly, the current study used data derived solely from the GAIN-SS for indicating those with and without a diagnosable form of internalizing or externalizing maladjustment. However, in practical settings, counselors and related practitioners are ethically obligated to "use multiple forms of assessment, data, and/or instruments in forming… diagnoses" (ACA Code of Ethics, 2014, p. 11). The use of multiple instruments and methods of data collection (e.g., interviewing, observation, testing) allows for cross-validation, or corroborating evidence to support any conclusions made regarding a mental or behavioral health disorder to avoid misdiagnoses. However, because only one instrument (GAIN-SS) was used for suggesting psychological maladjustment, there exists a threat to the validity of findings that are observed in the current study.

A final major limitation that threatens the validity of the current study pertains to the statistical approach. As with any statistical method, the factorial ANOVA contains limitations.

First, the assumptions of ANOVA need to be met for accurate and valid findings to be observed. Thusly, the current study evaluated these assumptions.

Chapter Summary

The current study examines the relationships between psychological maladjustment (i.e., internalizing, externalizing) and Holland-based vocational interest scores of differentiation and profile elevation among African American mothers receiving welfare in North Carolina. Employed in the current study was a quantitative, *ex post facto* research design for investigating archival data with a series of 2 X 2 factorial ANOVAs. The archival data under examination was collected using reliable and valid instruments (e.g., O*NET CIP, GAIN-SS), the results of which were handled, secured, and stored in accordance with policies and procedures outlined by the on-campus vocational evaluation (VE) program. Although there are several limitations present in the current study, actions have already been taken or are in place for ameliorating such problems.

CHAPTER IV: RESULTS

Introduction

The primary purpose of the current study was to examine the influence of internalizing and externalizing maladjustment on vocational interest score differentiation and profile elevation among African American mothers receiving welfare. Provided in this chapter are results from this study, which includes data cleaning, demographic data, and statistical analyses of research questions. In addition to addressing research questions, this chapter contains results from examining the descriptive data of RIASEC scale scores and primary Holland codes among the sample. Furthermore, psychometric properties of instruments used in the current study (O*NET Computerized Interest Profiler [CIP]; Global Appraisal of Individual Needs-Short Screener [GAIN-SS]) were evaluated and reported. The chapter concludes with a summary of results.

Data Cleaning Procedures

Examined in the current study were archival data on African American mothers enrolled in North Carolina's Temporary Assistance for Needy Families (TANF) program who completed a vocational evaluation screening at the Navigate Counseling Clinic between October 2012 and January 2017. In total, the archival data set consisted of 160 cases that met demographic-based inclusion criteria. Of these 160 cases, there were 122 cases that contained complete data with respect to the independent variables (i.e., internalizing maladjustment, externalizing maladjustment) and dependent variables (i.e., differentiation, profile elevation). The remaining 38 cases were missing scale score data from the GAIN-SS and O*NET CIP.

Imputation techniques were considered for the 38 participant cases with missing data, but listwise deletion was selected. There are certain factors to consider when choosing whether to use imputation or listwise deletion for missing data. These factors include sample size,

proportion of missing data, and the method of statistical analysis (Rubin, 1987). Regarding the current study, the 38 out of 160 participant cases were either missing scores for *all* GAIN-SS scales, *all* O*NET CIP scales, or both. In other words, the archival set contained a high proportion of missing data. According to Cheema (2014), listwise deletion outperforms mean and regression imputation when a two-way ANOVA is used to examine a medium sample size with a high percentage of missing data (Cheema, 2014). Furthermore, Cheema (2014) asserted that "missing data imputation is not always an improvement over non-imputation and… some missing data imputation methods can actually cause more harm than benefit" (p. 70). Simply put, imputing missing data was deemed inappropriate for purposes of the current study because the potential *harms* (bias, error) of imputation outweighed the potential benefits (increased power). Therefore, the 38 cases with missing data were excluded from the current study using listwise deletion.

The best-case scenario is that the missing data occurred at random. However, such an assumption is hardly verifiable, which presents a limitation to the current study that is further discussed in Chapter 5. Regardless, results of the aforementioned data cleaning procedures produced a final sample size of 122 African American mothers receiving welfare (N = 122). This sample size exceeded the minimum targeted sample of 100 participant cases (as established in Chapter 3), which has the potential of yielding effect sizes above .99 and power estimates above .90 (Cohen et al., 2003).

Demographic Data

Participant cases included in the current study are described in terms of demographic variables. Demographic variables collected for examination were age in years, marital status, education level, current employment status, history of prior employment, and medical

impairment status. In addition to helping describe the sample, demographic variables were examined in relation to vocational interest score differentiation and profile elevation to identify and protect against possible covariance that might confound results in the subsequent analyses of research questions. The following two subsections contain findings related to: (a) descriptive data results for each demographic variable; and (b) analyses of covariance between demographic variables and the dependent variables (differentiation, profile elevation).

Descriptive Data Results of Demographic Variables

Regarding demographic variables for the sample ($N = 122$), all participant cases (100%) were representative of mothers on welfare who identified as African American or Black. In addition to ethnicity and gender, data for the following demographic variables were collected: (a) age in years, (b) marital status, (c) education level, (d) employment status, (e) history of prior employment, and (f) medical impairment status. Either measures of central tendency or frequency distributions are reported for each of these variables. Table 5 provides a summary of descriptive data for each demographic variable among the sample.

Age. Of the total sample, five cases were missing data for age. For the remaining 117 cases, ages ranged from 18 to 52 years. The mean age was 28 years ($M = 28.71$, $SD = 7.77$), with a median of 26 years and mode of 23 years (n = 14). Whereas participants aged 20 to 29 years comprised the highest percentage of respondents (61.5%), participants aged 50 years or greater represented the lowest percentage of respondents (1.7%).

Marital status. Of the total sample, 15 cases were missing data for marital status. For the remaining 107 cases, a vast majority identified as single (n = 96), comprising 89.7% of the sample (with pairwise deletion). The remaining cases represented those who identified as married (n = 6; 5.6%) or divorced (n = 5; 4.7%).

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Table 5

Frequency Distributions for Demographic Variables of Respondents

Variable	Level	Frequency	Percent	Valid Percent
Age (years)	≤ 19	4	3.3	3.4
	20 - 29	72	59.0	61.5
	30 - 39	27	22.1	23.1
	40 - 49	12	9.8	10.3
	≥ 50	2	1.6	1.7
	Missing	5	4.1	
Marital Status	Single	96	78.7	89.7
	Married	6	4.9	5.6
	Divorced	5	4.1	4.7
	Missing	15	12.3	
Education Level	< H.S. Diploma	30	24.6	25.9
	H.S. Diploma	71	58.2	61.2
	Associate's	12	9.8	10.3
	Bachelor's	3	2.5	2.6
	Missing	6	4.9	
Employment Status	Unemployed	110	90.2	94.8
	Part-time	6	4.9	5.2
	Missing	6	4.9	
Employment History	No	14	11.5	12.3
	Yes	100	82.0	87.7
	Missing	8	6.6	
Medical Impairment	No	95	77.9	83.3
	Yes	19	15.6	16.7
	Missing	8	6.6	

Note. The "Valid Percent" column represents the percentage of respondents for each level of demographic variables after list-wise deletion of cases with missing data.

Education level. Of the total sample, six cases were missing data for participants'

highest attained level of formal education. For the remaining 116 cases, a majority of participants

(n = 71) reported an education level equivalent to a high school diploma or GED, which

comprised 61.2% of the sample (with pairwise deletion). Slightly more than a fourth of the valid

sample (25.9%) were without at least a high school diploma or GED. Lastly, 12 participants

(10.3%) had achieved an associates degree (or equivalent) and 3 participants (2.6%) had attained

a bachelor's degree. None of the participants reported having a graduate-level diploma.

Employment status. Of the total sample, six cases were missing data for participants'

employment status (i.e., unemployed, part-time, fulltime). For the 116 cases with employment

status data, a vast majority of participants (n = 110) reported being unemployed, comprising

94.83% of the sample (with pairwise deletion). The remaining six (n = 6) cases were participants

who reported being part-time employed, as none of the participants reported fulltime

employment.

Employment history. Of the total sample, eight cases were missing data for whether

participants had a prior history of gainful employment. For the remaining 114 cases, a majority

of participants (n = 100; 87.72%) reported having been employed at some point in their past.

Table 5 provides a summary participants' employment history in terms of whether they had

obtained gainful employment prior to time of data collection.

Medical impairment status. As part of the demographic questionnaire, participants were

asked whether they had a mental or physical condition that might impede their ability to obtain

or maintain employment. Participants who endorsed this item were asked to describe the nature

of their impairment. Of the total sample, eight cases were missing data for this demographic

variable. Of the 114 cases, a majority of participants (n = 95; 83.33%) identified as being without

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a disability or significant medical condition. The remaining 19 participants who indicated a significant medical condition reported impairments such as asthma, diabetes, and chronic pain.

Covariance of Demographic Variables with Dependent Variables

For examining covariance between the demographic variables and the continuous dependent variables of differentiation and profile elevation, correlations and effect sizes were analyzed. More specifically, Pearson's *r* was measured for age, which was the only continuous demographic variable included in the current study. Because the remaining demographic variables were categorical, eta squared (η^2) and partial eta squared was assessed with a series of ANOVAs to examine effect sizes on differentiation and profile elevation to determine whether further analysis was warranted.

A correlation matrix (see Table 6) displays the relationships between age and the dependent variables (differentiation, profile elevation). Pearson's *r* quantified the strength of correlation between variables. Results indicated that age was significantly associated with neither differentiation nor profile elevation. Therefore, additional analysis was unwarranted for protecting against age as a covariate with the dependent variables.

Table 6

Correlations between Age, Interest Differentiation, and Interest Profile Elevation

Variable	Age	Differentiation	Profile Elevation
Age	-		
Differentiation	-.09	-	
Profile Elevation	.12	-.07	-

Note. None of the correlations are significant at the .05 level (2-tailed).

As previously mentioned, ANOVAs were used to measure effect size, or percentage of variance in the dependent variables (i.e., differentiation, profile elevation) accounted for by

changes in the demographic categorical variables (Cohen, 1992). Effect sizes were distinguished in accordance with Cohen's (1992) parameters: .02 to .12 = small effect size; .13 to .25 = medium effect size; ≥ .26 = large effect size. Medium and large effect sizes suggest that further analysis is needed (Cohen, 1992). However, resultant effects of the demographic categorical variables (i.e., marital status, education level, employment status, employment history, medical impairment status) were either non-significant or in the low effect size range (see Table 7).

Table 7

Effect Sizes of Categorical Demographic Variables on Dependent Variables

Variable	Differentiation	Profile Elevation
Marital Status	.02	.02
Education Level	.06	.00
Employment Status	.01	.01
Employment History	.02	.04*
Medical Impairment Status	.01	.00

Note. * Effect is significant at the .05 level (2 tailed). Effect sizes were measured with ANOVA.

In summary, the analyses of demographic variables indicated either non-significant correlations, low effect sizes, or no effect with the dependent variables (differentiation, profile elevation). Accordingly, the conclusion was made that covariation between the demographic and dependent variables did not pose a threat of confounding results in the subsequent analyses of research questions. Therefore, the next step in the current study involved determining whether the sampled data met assumptions of the 2 X 2 factorial ANOVA for purposes of addressing research questions.

Assumptions Testing for Two-way ANOVA

As previously stated, a factorial MANOVA was initially considered for addressing research questions; however, a preliminary inspection of the data indicated that the correlation between differentiation and profile elevation was menial and non-significant ($r = -.07$; $p > .05$). Because the MANOVA assumes that the dependent variables are correlated, a determination was made that this statistical method was inappropriate for the data. Consequently, a series of 2 X 2 ANOVAs was instead chosen as the statistical method for addressing research questions.

As outlined in Chapter 3, there are three primary assumptions that should be met for the results of a two-way ANOVA to be considered valid. These assumptions include: (1) no outliers; (2) normal distributions of the dependent variable across all levels of the independent variables; and (3) homogeneity of variance. In addition to these assumptions, there are *rules of thumb* for the minimum number of cases that should comprise each factor cell. For example, Kraemer and Thiemann (1987) suggested having at least 14 cases in each cell to produce adequate power. This section details findings with respect to whether the data adequately met the assumptions of a two-way ANOVA as well as the *rule of thumb* for cell counts.

Outliers. For assessing the assumption of no outliers, SPSS software was used to produce boxplots that displayed the distributions of each dependent variable (differentiation, profile elevation) across all levels of the grouping variables. As zero cases were observed beyond the tails for each respective boxplot, the data was determined as adequately addressing the assumption of no outliers. These findings are shown in Table 8.

Table 8

Results of 2-way ANOVA Assumptions Testing

Dependent Variable	Group #	n	Outliers	Shapiro-Wilk	Levene's Test
Differentiation	Group 1	52	0	$p = .20$	$p = .95$
	Group 2	14	0	$p = .92$	
	Group 3	22	0	$p = .17$	
	Group 4	34	0	$p = .02*$	
Profile Elevation	Group 1	52	0	$p = .29$	$p = .53$
	Group 2	14	0	$p = .94$	
	Group 3	22	0	$p = .89$	
	Group 4	34	0	$p = .82$	

Note. P-values are reported for Shapiro-Wilk and Levene's Test. For Shapiro-Wilk, a significant p-value (at alpha = .05) indicates a violation of the normality assumption. For Levene's Test, a significant p-value (at alpha = .05) indicates a violation of the equal variances assumption. *Denotes significance. Group 1 = No Internalizing + No Externalizing; Group 2 = No Internalizing + Yes Externalizing; Group 3 = Yes Internalizing + No Externalizing; Group 4 = Yes Internalizing + Yes Externalizing.

Normality. The Shapiro-Wilk test was used for assessing the assumption that the dependent variables are normally distributed across all levels of the independent variables. A non-significant finding (at $\alpha = .05$) for the Shapiro-Wilk test indicates that the assumption of a normality is met. Therefore, to examine this assumption in the current study, a total of eight Shapiro-Wilk tests were conducted.

Results indicated that differentiation was normally distributed across all levels of the independent variables except Group 4 (i.e., Yes Internalizing, Yes Externalizing). Although the two-way ANOVA is considered robust against violations of normality (Good & Lunneborg, 2006), this finding is a limitation of the current study that is further discussed in Chapter 5. In

contrast to differentiation, Shapiro-Wilk test statistics were exclusively non-significant for the distribution of profile elevation across levels of the independent factors, suggesting the assumption of normality was met for this dependent variable. Table 8 displays exact *p*-values observed from Shapiro-Wilk testing.

Homogeneity of variances. For assessing homogeneity of variances, Levene's Test of Equality of Error Variances was used. This statistical approach tests the null hypothesis that the error variance of the dependent variable is equal across groups. Therefore, a non-significant finding at $\alpha = .05$ suggests this assumption is met. Indeed, testing of the data produced non-significant results for differentiation ($p = .95$) and profile elevation ($p = .53$). Consequently, the data met the assumption of homogeneity of variances.

Cell counts. As previously alluded, Kraemer and Thiemann (1987) suggested that each cell should contain least 14 cases to produce adequate power. This rule of thumb was adequately met in the current study. More exactly, cell counts ranged from 14 to 52 cases. Table 8 displays the number of cases in each group or cell.

Summary. Overall, the data used in the current study mostly met assumptions of the two-way ANOVA. There was, however, a single violation observed wherein interest score differentiation was found to be non-normally distributed for Group 4 (i.e., Yes Internalizing, Yes Externalizing). Although this finding is a limitation (as discussed in Chapter 5), the two-way ANOVA is considered *remarkably robust* against violations of normality (Good & Lunneborg, 2006, p. 41). Therefore, the two-way ANOVA was deemed appropriate for addressing research questions.

Addressing Research Questions

For addressing research questions, main and interaction effects were examined for internalizing and externalizing maladjustment level on Holland-based interest score differentiation and profile elevation among African American mothers receiving welfare ($N = 122$). More specifically, one 2 X 2 ANOVA was conducted with vocational interest score differentiation as the dependent variable, and another 2 X 2 ANOVA was conducted with profile elevation as the dependent variable. As previously alluded, the sampled data adequately met the assumptions of this statistical approach. Prior to reporting the results of the two-way ANOVAs, descriptive statistics are provided for the variables under examination.

Descriptive Data for Variables Related to Research Questions

Descriptive data for the independent and dependent variables involved in the analysis of research questions are provided. More specifically, descriptive data related to the independent variables (internalizing, externalizing) are first described, followed by measures of central tendency for the dependent variables (differentiation, profile elevation).

Descriptives for independent variables. There are two independent variables (Internalizing Maladjustment, Externalizing Maladjustment) with two levels (Yes, No) for indicating those with and without a probable diagnosis in the corresponding disorder dimension of psychological maladjustment. As previously alluded, levels of the independent variables were determined using GAIN-SS cut-points based on the number of past-year symptoms endorsed by the respondent. Accordingly, measures of central tendency are reported for past-year symptoms endorsed on the Internalizing Disorder Subscreener (IDS) and Externalizing Disorder Subscreener (EDS), respectively. Furthermore, this section details the number of participants in each cell as summarized in Table 9.

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Table 9

Distributions for Level of Internalizing and Externalizing Maladjustment

	No Internalizing	Yes Internalizing	Total
No Externalizing	52 (Group 1)	22 (Group 3)	74
Yes Externalizing	14 (Group 2)	34 (Group 4)	48
Total	66	56	122

Internalizing maladjustment. The mean number of past-year symptoms endorsed on the IDS was 2.23 (SD = 1.59) with a median score of 2 and mode of 4. The "No Internalizing" group was comprised of participants (n = 66; 54.10%) who scored under the cut-point (i.e., three past-year symptoms) for the Internalizing Disorder Subscreener of the GAIN-SS, thus indicating those participants who were likely without a diagnosable form of internalizing maladjustment. Contrastingly, the "Yes Internalizing" group was comprised of participants (n = 56; 45.90%) who scored at or above the cut-point on the corresponding subscreener, suggesting these participants were likely to have a diagnosable form of internalizing maladjustment, such as depression, anxiety, trauma from stress, suicidality, or schizoaffective disorder.

Externalizing maladjustment. The mean number of past-year symptoms endorsed on the EDS was 1.25 (SD = 1.31) with a median score of 1 and mode of 0. The "No Externalizing" group was comprised of participants (n = 74; 60.66%) who scored under the cut-point (i.e., two past-year symptoms) for the Externalizing Disorder Subscreener of the GAIN-SS, indicating participants who were unlikely to have a diagnosable form of externalizing maladjustment. Contrastingly, the "Yes Externalizing" group was comprised of participants (n = 48; 39.34%) who scored at or above the cut-point on the corresponding subscreener, suggesting these participants were likely to have a diagnosable form of externalizing maladjustment (e.g., attention-deficit hyperactivity disorder [ADHD], conduct disorders, impulse control disorders).

Descriptives for dependent variables. There are two dependent variables: (1) interest score differentiation; (2) interest score profile elevation. These variables are continuous; therefore, measures of central tendency are reported for the entire sample as well as for each maladjustment group. Descriptive data for interest score differentiation is first provided, followed by those for profile elevation.

Table 10

Descriptive Means and Standard Deviations of Interest Score Differentiation by Level of Internalizing and Externalizing Maladjustment

Dimension of Maladjustment	Level	*N*	Mean	*SD*
Internalizing	No	66	17.36	6.22
	Yes	56	19.88	5.71
	Total	122	18.52	6.10
Externalizing	No	74	18.15	6.17
	Yes	48	19.08	6.00
	Total	122	18.52	6.10

Note. The possible range of O*NET CIP differentiation scores is 0 to 30.

Interest differentiation. The mean vocational interest differentiation score for the entire sample was 18.52 ($SD = 6.1$). As summarized in Table 10, mean differentiation scores for the "No Internalizing" and "Yes Internalizing" groups were 17.36 ($SD = 6.22$) and 19.88 ($SD = 5.71$), respectively. Mean differentiation scores for the "No Externalizing" and "Yes Externalizing" groups were 18.15 ($SD = 6.17$) and 19.08 ($SD = 6.00$), respectively. Mean interactions for differentiation by level of internalizing and externalizing maladjustment are later provided in Table 15.

Interest Profile Elevation. The mean profile elevation score for the entire sample was 86.38 ($SD = 38.05$). As summarized in Table 11, mean profile elevation scores for the "No

Internalizing" and "Yes Internalizing" groups were 87.35 (*SD* = 40.95) and 85.23 (*SD* = 34.66),

respectively. Mean profile elevation scores for the "No Externalizing" and "Yes Externalizing"

groups were 89.50 (*SD* = 39.63) and 81.56 (*SD* = 35.35), respectively. Mean interactions for

profile elevation by level of internalizing and externalizing maladjustment are later provided in

Table 15.

Table 11

Descriptive Means and Standard Deviations of Interest Score Profile Elevation by Level of Internalizing and Externalizing Maladjustment

Dimension of Maladjustment	Level	*N*	Mean	*SD*
Internalizing	No	66	87.35	40.95
	Yes	56	85.23	34.66
	Total	122	86.38	38.05
Externalizing	No	74	89.50	39.63
	Yes	48	81.56	35.35
	Total	122	86.38	38.05

Note. The possible range of O*NET CIP profile elevation scores is 0 to 180.

Noteworthy is that the descriptive means presented in the above tables differ from the

estimated marginal means (EMM) that were used for purposes of the 2 X 2 ANOVA for

addressing research questions. The differences between the descriptive means and the EMMs

result from the current study having different sample sizes across levels of the grouping

variables. Different subsample sizes were addressed in SPSS using the Type III sum of squares

(full) factorial model. According to Howell and McConaughy (1982), this model offers the most

defensible approach for addressing unequal sample sizes in a two-way factorial ANOVA. More

specifically, the Type III method uses an unweighted means technique. The EMMs for the

variables in question are reported in the following narrative sections that pertain to research questions. Furthermore, profile plots are provided to offer a visual inspection of EMMs.

Addressing Research Question One

The first research question is: What is the effect of internalizing maladjustment level (i.e., yes, no) on vocational interest score differentiation among African American mothers receiving welfare? A two-way factorial ANOVA was conducted to examine the isolated effect of internalizing maladjustment level (i.e., Yes Internalizing, No Internalizing) on vocational interest score differentiation. Estimated marginal means (EMM), standard errors, and confidence intervals for interest differentiation scores across levels of internalizing maladjustment are displayed in Table 13.

Results of the factorial ANOVA approached statistical significance but failed to exceed the threshold at alpha = .05. More exactly, the effect for internalizing maladjustment produced an F ratio of $F(1, 118) = 3.745$, $p = .055$, indicating a non-significant difference between those with internalizing maladjustment ($EMM = 19.97$) and without internalizing maladjustment ($EMM = 17.60$). The partial eta squared was .03, meaning approximately 3% of the variance in interest score differentiation was accounted for by the different levels of internalizing maladjustment.

Addressing Research Question Two

The second research question is: What is the effect of externalizing maladjustment level (i.e., yes, no) on vocational interest score differentiation among African American mothers receiving welfare? A two-way factorial ANOVA was conducted to examine the isolated effect of externalizing maladjustment level (i.e., Yes Externalizing, No Externalizing) on vocational interest score differentiation. Estimated marginal means (EMM), standard errors, and confidence

intervals for interest differentiation scores across levels of externalizing maladjustment are displayed in Table 14.

The factorial ANOVA yielded a non-significant effect for externalizing maladjustment. More exactly, the effect for externalizing maladjustment level produced an F ratio of $F(1, 118) = 0.001$, $p = .98$, indicating a non-significant difference between those with externalizing maladjustment ($EMM = 18.77$) and without externalizing maladjustment ($EMM = 18.80$). The partial eta squared was .00, meaning none of the variance in differentiation was accounted for by the different levels of externalizing maladjustment.

Addressing Research Question Three

The third research question is: What is the interaction between levels of internalizing and externalizing maladjustment on vocational interest score differentiation among African American mothers receiving welfare? A two-way ANOVA was used to examine whether the effect of maladjustment for one GAIN-SS disorder dimension (e.g., internalizing maladjustment) was dependent upon the level of the opposing GAIN-SS disorder dimension (e.g., externalizing maladjustment). The mean interactions are displayed in Table 15.

Results indicated a non-significant interaction effect between levels of internalizing and externalizing maladjustment on interest score differentiation. More specifically, the interaction effect produced an F ratio of $F(1, 118) = .47$, $p = .49$. Partial eta squared was .004, meaning 0.4% of variance in interest score differentiation was accounted for by the interaction between internalizing and externalizing maladjustment. Provided in Table 12 is a summary of results from the tests of between-subjects effects with differentiation as the dependent variable.

Table 12

Tests of Between-Subjects Effects with Differentiation as the Dependent Variable

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power[b]
Corrected	208.60[a]	3	69.53	1.91	.13	.046	.48
Intercept	34101.29	1	34101.29	938.451	.00	.888	1.00
Internalizing	136.09	1	136.09	3.75	.055	.031	.48
Externalizing	0.03	1	.03	.001	.98	.000	.05
Intern*Extern	17.20	1	17.20	.47	.49	.004	.11
Error	4287.87	118	36.34				
Total	46325.00	122					
Corrected Total	4496.47	121					

a.   R Squared = .046 (Adjusted R Squared = .022)
b.   Computed using alpha = .05.

Addressing Research Question Four

The fourth research question is: What is the effect of internalizing maladjustment level (i.e., yes, no) on vocational interest score profile elevation among African American mothers receiving welfare? A factorial ANOVA was conducted to examine the isolated effect of internalizing maladjustment level (i.e., Yes Internalizing, No Internalizing) on profile elevation. Estimated marginal means (EMM), standard errors, and confidence intervals for interest profile elevation scores across levels of internalizing maladjustment are displayed in Table 13.

Results of the factorial ANOVA were non-significant at the alpha = .05 level. More exactly, the effect for internalizing maladjustment on profile elevation produced an F ratio of $F(1, 118) = .086$, $p = .77$, indicating a non-significant difference between those with internalizing maladjustment (*EMM* = 85.66) and without internalizing maladjustment (*EMM* = 83.39). The

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partial eta squared was .001, meaning less than 1% of the variance in profile elevation was

accounted for by the different levels of internalizing maladjustment.

Table 13

Estimated Marginal Mean Differentiation and Profile Elevation Scores for Internalizing Maladjustment Levels

Dependent Variable	Internalizing Maladjustment	N	Mean	Std. Error	95% Confidence Interval	
					Lower	Upper
Differentiation	No	66	17.60	.91	15.80	19.39
	Yes	56	19.97	.83	18.34	21.60
Profile Elevation	No	66	83.39	5.76	71.98	94.79
	Yes	56	85.66	5.24	75.30	96.03

Note. No = No Internalizing Maladjustment group; Yes = Yes Internalizing Maladjustment group. The possible range of O*NET CIP differentiation scores is 0 to 30. The possible range of O*NET CIP profile elevation scores is 0 to 180.

Addressing Research Question Five

The fifth research question is: What is the effect of externalizing maladjustment level

(i.e., yes, no) on vocational interest profile elevation scores among African American mothers

receiving welfare? A factorial ANOVA was conducted to examine the effect of externalizing

maladjustment level (i.e., Yes Externalizing, No Externalizing) on profile elevation scores.

Estimated marginal means (EMM), standard errors, and confidence intervals for interest profile

elevation scores across levels of externalizing maladjustment are displayed in Table 14.

Results from the factorial ANOVA indicated a non-significant effect at alpha = .05 for

externalizing maladjustment level (yes, no) on profile elevation. More exactly, the effect for

externalizing maladjustment produced an F ratio of $F(1, 118) = 1.308$, $p = .26$, indicating a non-

significant difference between those with externalizing maladjustment ($EMM = 80.07$) and

without externalizing maladjustment ($EMM = 88.98$). The partial eta squared was .011, meaning

1.1% of the variance in profile elevation was accounted for by the different levels of externalizing maladjustment.

Table 14

Estimated Marginal Mean Differentiation and Profile Elevation Scores for Externalizing Maladjustment Levels

Dependent Variable	Externalizing Maladjustment	N	Mean	Std. Error	95% Confidence Interval Lower	Upper
Differentiation	No	74	18.80	.77	17.28	20.32
	Yes	48	18.77	.96	16.87	20.66
Profile Elevation	No	74	88.98	4.87	79.34	98.61
	Yes	48	80.07	6.08	68.04	92.11

Note. No = No Externalizing Maladjustment group; Yes = Yes Externalizing Maladjustment group. The possible range of O*NET CIP differentiation scores is 0 to 30. The possible range of O*NET CIP profile elevation scores is 0 to 180.

Addressing Research Question Six

The sixth and final research question is: What is the interaction between levels of internalizing and externalizing maladjustment on vocational interest score profile elevation among African American mothers receiving welfare? A two-way ANOVA was used to examine whether the influence of maladjustment level on profile elevation for one GAIN-SS disorder dimension (e.g., internalizing maladjustment) was dependent upon the level of the opposing GAIN-SS disorder dimension (e.g., externalizing maladjustment). The mean interactions are displayed in Table 15.

Results indicated a non-significant interaction between internalizing and externalizing maladjustment on interest score profile elevation. The interaction effect produced an F ratio of $F(1, 118) = .391$, $p = .53$. Partial eta squared was .011, meaning roughly 1% of the variance in

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interest score profile elevation was accounted for by the interaction between internalizing and externalizing maladjustment level. Provided in Table 16 is a summary of results from the tests of between-subjects effects with profile elevation as the dependent variable.

Table 15

Mean Interactions for Internalizing and Externalizing Maladjustment

Dependent Variable	Group	Intern.	Extern.	N	Mean	Std. Error	95% Confidence Interval	
							Lower	Upper
Differentiation	1	No	No	52	17.19	.84	15.54	18.85
	2		Yes	14	18.00	1.61	14.81	21.19
	3	Yes	No	22	20.41	1.29	17.86	22.95
	4		Yes	34	19.53	1.03	17.48	21.58
Prof. Elev.	1	No	No	52	90.27	5.31	79.76	100.78
	2		Yes	14	76.50	10.23	56.25	96.75
	3	Yes	No	22	87.68	8.16	71.53	103.84
	4		Yes	34	83.65	6.56	70.65	96.64

Note. The possible range of O*NET CIP differentiation scores is 0 to 30. The possible range of O*NET CIP profile elevation scores is 0 to 180.

Table 16

Tests of Between-Subjects Effects with Profile Elevation as the Dependent Variable

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power[b]
Corrected	2444.39[a]	3	814.80	.56	.65	.014	.16
Intercept	690589.83	1	690589.83	471.66	.00	.800	1.00
Internalizing	125.60	1	125.60	.09	.77	.001	.06
Externalizing	1915.00	1	1915.00	1.31	.26	.011	.21
Intern*Extern	572.48	1	572.48	.39	.53	.003	.10
Error	172770.27	118	1464.16				
Total	1085456.00	122					
Corrected Total	175214.66	121					

a. R Squared = .014 (Adjusted R Squared = -.011)
b. Computed using alpha = .05.

Summary of Findings

The primary purpose of the current study was to examine the influence of internalizing and externalizing maladjustment level on Holland-based interest score differentiation and profile elevation among African American mothers receiving welfare. Towards this end, six research questions were established and examined using a series of 2 X 2 factorial ANOVAs. Results were exclusively non-significant with respect to main and interaction effects of internalizing and externalizing maladjustment on differentiation and profile elevation, respectively (these results are discussed further in Chapter 5). However, a post hoc analysis is warranted.

Although the GAIN-SS cut-point of three past-year symptoms for indicating an internalizing diagnosis among the sample (n = 56; 45.90%) produced an incidence of maladjustment that is consistent with prior literature about mothers on welfare (Danziger, Kalil,

& Anderson, 2000), the cut-point of two past-year symptoms for the externalizing dimension of the GAIN-SS produced a disproportionately high incidence of externalizing maladjustment. More specifically, 48 out of 122 sampled cases (39.34%) were identified as having a probable externalizing disorder using the cut-point of two past-year symptoms. To avoid the mistake of over-pathologizing this population, the cut-point for the Externalizing Disorder Subscreener of the GAIN-SS was raised to three past-year symptoms for the following post hoc analysis that used the same methods to address the same research questions.

Post Hoc Analysis of Research Questions

Because the previously established cut-point of two past-year symptoms yielded a higher incidence of externalizing maladjustment for the sample than what was expected from prior literature about African American adults, a post hoc analysis was conducted using a heightened cut-point (three past-year symptoms) for the Externalizing Disorder Subscreener. According to authors of the GAIN-SS, a cut-point of three past-year symptoms makes it highly unlikely that a respondent will be mistakenly identified as having probable diagnosis.

A series of 2 X 2 factorial ANOVAs were again conducted for addressing research questions, this time with the adjusted cut-point. This section provides: (a) a revised count of participants in each maladjustment group; (b) assumptions testing for the 2 X 2 ANOVA; (c) descriptive statistics; and (d) results from addressing research questions. The section concludes with a summary of findings.

Assumptions Testing for 2 X 2 ANOVA

Prior to conducting the series of two-way ANOVAs, an examination was warranted to determine whether the revised data (using the heightened cut-point for indicating externalizing

maladjustment) met assumptions of this statistical approach. The same procedures used in the

initial analysis for assumptions testing were replicated. Table 17 summarizes the results.

Table 17

Post Hoc Analysis: Results of 2-way ANOVA Assumptions Testing

Dependent Variable	**Group #**	**n**	**Outliers**	**Shapiro-Wilk**	**Levene's Test**
Differentiation	Group 1	61	0	$p = .32$	$p = .07$
	Group 2	5	2	$p = .35$	
	Group 3	40	0	$p = .09$	
	Group 4	16	0	$p = .12$	
Profile Elevation	Group 1	61	0	$p = .35$	$p = .07$
	Group 2	5	0	$p = .48$	
	Group 3	40	0	$p = .84$	
	Group 4	16	0	$p = .36$	

Note. P-values are reported for Shapiro-Wilk and Levene's Test. For Shapiro-Wilk, a significant p-value (at alpha = .05) indicates a violation of the normality assumption. For Levene's Test, a significant p-value (at alpha = .05) indicates a violation of the equal variances assumption. *Denotes significance. Group 1 = No Internalizing + No Externalizing; Group 2 = No Internalizing + Yes Externalizing; Group 3 = Yes Internalizing + No Externalizing; Group 4 = Yes Internalizing + Yes Externalizing.

As indicated from Table 17, the data mostly met the assumptions of the 2-way ANOVA.

The only violation of assumptions pertains to Group 2 (i.e., No Internalizing, Yes Externalizing),

wherein there are two outliers. Indeed, having outliers can skew the results of an ANOVA and is

therefore a limitation, which will be detailed further in the Chapter 5. Furthermore, Group 2

failed to meet the *rule of thumb* of at least 14 cases per cell. The limited number of cases for

Group 2 (n = 5) may decrease effect size and power. Regardless, the data met assumptions

adequately enough to proceed with the reexamination of research questions. Prior to reporting the results, descriptive statistics are provided for the independent and dependent variables.

Descriptive Data for Variables Related to Post Hoc Analysis of Research Questions

Descriptives for independent variables. There are two independent variables (Internalizing Maladjustment, Externalizing Maladjustment) with two levels (Yes, No) for indicating those with and without a probable diagnosis in the corresponding disorder dimension of psychological maladjustment. As previously alluded, levels of the independent variables were determined using GAIN-SS cut-points based on the number of past-year symptoms endorsed by the respondent. Accordingly, measures of central tendency are reported for past-year symptoms endorsed on the Internalizing Disorder Subscreener (IDS) and Externalizing Disorder Subscreener (EDS), respectively. Furthermore, this section details the number of participants in each cell as summarized in Table 18.

Internalizing maladjustment. The average number of past-year symptoms endorsed on the IDS of the GAIN-SS was 2.23 (SD = 1.59) with a median score of 2 and mode of 4. The "No Internalizing" group was comprised of participants (n = 66; 54.10%) who scored under the cut-point (i.e., three past-year symptoms) for the IDS, thus indicating those participants who were likely without a diagnosable form of internalizing maladjustment. Contrastingly, the "Yes Internalizing" group was comprised of participants (n = 56; 45.90%) who scored at or above the cut-point on the corresponding subscreener, suggesting these participants were likely to have a diagnosable form of internalizing maladjustment, such as depression, anxiety, trauma from stress, suicidality, or schizoaffective disorder.

Externalizing maladjustment. The average number of past-year symptoms endorsed on the EDS of the GAIN-SS was 1.25 (SD = 1.31) with a median score of 1 and mode of 0. The

number of participant cases indicated as having a probable disorder within the externalizing

spectrum of maladjustment was reduced from 48 cases (39.34%) in the initial analysis to 21

cases (17.21%) in the current post hoc analysis. In other words, there were 17 participants who

endorsed two past-year symptoms on the EDS. Because of the heightened cut-point of three past-

year symptoms for indicating externalizing maladjustment, these 17 participant cases were

moved from the "Yes Externalizing" group to the "No Externalizing" group in this post hoc

analysis. Table 18 displays the case count per group or factor cell.

Table 18

Post Hoc Analysis: Distribution for Level of Internalizing and Externalizing Maladjustment

	No Internalizing	Yes Internalizing	Total
No Externalizing	61 (Group 1)	40 (Group 3)	101
Yes Externalizing	5 (Group 2)	16 (Group 4)	21
Total	66	56	122

Descriptives for dependent variables. There are two dependent variables: (1) interest

score differentiation; (2) interest score profile elevation. These variables are continuous;

therefore, measures of central tendency are reported for the entire sample as well as for each

maladjustment group. Descriptives for interest score differentiation are first provided, followed

by descriptives for profile elevation.

Interest differentiation. The mean vocational interest differentiation score for the entire

sample was 18.52 ($SD = 6.1$). As summarized in Table 19, mean differentiation scores for the

"No Internalizing" and "Yes Internalizing" groups were 17.36 ($SD = 6.22$) and 19.88 ($SD = 5.71$), respectively. Mean differentiation scores for the "No Externalizing" and "Yes

Externalizing" groups were 18.59 ($SD = 6.32$) and 18.14 ($SD = 4.99$), respectively. Mean

interactions for differentiation by level of internalizing and externalizing maladjustment are later

provided in Table 24.

Table 19

Post Hoc Analysis: Descriptive Means and Standard Deviations of Interest Score Differentiation
by Level of Internalizing and Externalizing Maladjustment

Dimension of Maladjustment	Level	*N*	Mean	*SD*
Internalizing	No	66	17.36	6.22
	Yes	56	19.88	5.71
	Total	122	18.52	6.10
Externalizing	No	101	18.59	6.32
	Yes	21	18.14	4.99
	Total	122	18.52	6.10

Note. The possible range of O*NET CIP differentiation scores is 0 to 30.

Interest Profile Elevation. The mean vocational interest profile elevation score for the

entire sample was 86.38 ($SD = 38.05$). As summarized in Table 20, mean profile elevation scores

for the "No Internalizing" and "Yes Internalizing" groups were 87.35 ($SD = 40.95$) and 85.23

($SD = 34.66$), respectively. Mean profile elevation scores for the "No Externalizing" and "Yes

Externalizing" groups were 88.94 ($SD = 38.99$) and 74.05 ($SD = 31.11$), respectively. Mean

interactions for profile elevation by level of internalizing and externalizing maladjustment are

later provided in Table 24.

Table 20

Post Hoc Analysis: Descriptive Means and Standard Deviations of Interest Score Profile Elevation by Level of Internalizing and Externalizing Maladjustment

Dimension of Maladjustment	Level	*N*	Mean	*SD*
Internalizing	No	66	87.35	40.95
	Yes	56	85.23	34.66
	Total	122	86.38	38.05
Externalizing	No	101	88.94	38.99
	Yes	21	74.05	31.11
	Total	122	86.38	38.05

Note. The possible range of O*NET CIP profile elevation scores is 0 to 180.

Again, the descriptive means presented in the above tables differ from the estimated marginal means (EMM) that were used for purposes of the 2 X 2 ANOVA for addressing research questions. The differences between the descriptive means and the EMMs result from the current study having different sample sizes across levels of the grouping variables. Different sample sizes across levels of the grouping variables were addressed in SPSS using the Type III sum of squares (full) factorial model. This model offers the most defensible approach for addressing unequal sample sizes in a two-way factorial ANOVA (Howell & McConaughy, 1982). More specifically, the Type III method uses an unweighted means technique. The EMMs for the variables in question are reported in the following narrative sections that pertain to research questions. Furthermore, profile plots are provided to offer a visual inspection of EMMs.

Addressing Research Question One

The first research question is: What is the effect of internalizing maladjustment level (i.e., yes, no) on vocational interest score differentiation among African American mothers receiving welfare? A 2 X 2 factorial ANOVA was conducted to examine the effect of internalizing

maladjustment on vocational interest score differentiation. Estimated marginal means (EMM), standard errors, and confidence intervals for interest differentiation scores across levels of internalizing maladjustment are displayed in Table 22.

Results of the factorial ANOVA were statistically significant at alpha = .05. More exactly, the effect for internalizing maladjustment produced an F ratio of $F(1, 118) = 5.972$, $p = .016$, with a power of .679. These findings indicate a significant difference between those with internalizing maladjustment (*EMM* = 19.76) and those without internalizing maladjustment (*EMM* = 15.73). The partial eta squared was .048, meaning that 4.8% of the variance in differentiation was accounted for by the varying levels of internalizing maladjustment.

Addressing Research Question Two

The second research question is: What is the effect of externalizing maladjustment level (i.e., yes, no) on vocational interest score differentiation among African American mothers receiving welfare? A factorial ANOVA was conducted to examine the effect of externalizing maladjustment on interest score differentiation. Estimated marginal means (EMM), standard errors, and confidence intervals for interest differentiation scores across levels of externalizing maladjustment are displayed in Table 23.

Results of the factorial ANOVA indicated a non-significant effect for externalizing maladjustment. More exactly, the effect for externalizing maladjustment level produced an F ratio of $F(1, 118) = 1.76$, $p = .19$. These findings indicate a non-significant difference between those with externalizing maladjustment (*EMM* = 16.65) and without externalizing maladjustment (*EMM* = 18.84). The partial eta squared was .015, meaning that 1.5% of the variance in differentiation was accounted for by the different levels of externalizing maladjustment.

Addressing Research Question Three

The third research question is: What is the interaction between levels of internalizing and externalizing disorder on vocational interest score differentiation among African American mothers receiving welfare? A two-way ANOVA was used to examine whether the influence maladjustment level for one GAIN-SS disorder dimension (e.g., internalizing maladjustment) was dependent upon the level of the opposing GAIN-SS disorder dimension (e.g., externalizing maladjustment). The EMM interactions are displayed in Table 24.

Table 21

Post Hoc Analysis: Tests of Between-Subjects Effects with Differentiation as the Dependent Variable

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power[b]
Corrected	262.92[a]	3	87.64	2.44	.07	.058	.60
Intercept	16579.05	1	16579.05	462.10	.00	.797	1.00
Internalizing	214.26	1	214.26	5.97	.016	.048	.68
Externalizing	63.15	1	63.15	1.76	.19	.015	.26
Intern*Extern	36.51	1	36.51	1.02	.32	.009	.17
Error	4233.55	118	35.88				
Total	46325.00	122					
Corrected Total	4496.47	121					

a. R Squared = .058 (Adjusted R Squared = .035)
b. Computed using alpha = .05.

Results indicated a non-significant interaction effect between levels of internalizing and externalizing maladjustment on interest score differentiation. More exactly, the interaction effect produced an F ratio of $F(1, 118) = 1.018$, $p = .32$. Partial eta squared was .009, meaning 0.9% of variance in differentiation was accounted for by the interaction between internalizing and

externalizing maladjustment. Provided in Table 21 is a summary of post hoc analysis results

from the tests of between-subjects effects with differentiation as the dependent variable.

Addressing Research Question Four

The fourth research question is: What is the effect of internalizing maladjustment level

(i.e., yes, no) on vocational interest score profile elevation among African American mothers

receiving welfare? A factorial ANOVA was conducted to examine the effect of internalizing

maladjustment on profile elevation. Estimated marginal means (EMM), standard errors, and

confidence intervals for interest profile elevation scores across levels of internalizing

maladjustment are displayed in Table 22.

Table 22

Post Hoc Analysis: Estimated Marginal Mean Differentiation and Profile Elevation Scores for Internalizing Maladjustment Levels

Dependent Variable	Internalizing Maladjustment	N	Mean	Std. Error	95% Confidence Interval	
					Lower	Upper
Differentiation	No	66	15.73	1.39	12.97	18.49
	Yes	56	19.76	.89	18.00	21.52
Profile Elevation	No	66	90.31	8.78	72.93	107.70
	Yes	56	80.03	5.58	68.97	91.08

Note. No = No Internalizing Maladjustment group; Yes = Yes Internalizing Maladjustment group. The possible range of O*NET CIP differentiation scores is 0 to 30. The possible range of O*NET CIP profile elevation scores is 0 to 180.

Results of the factorial ANOVA were non-significant at the alpha = .05 level. More

exactly, the effect for internalizing maladjustment on profile elevation produced an F ratio of

$F(1, 118) = .977$, $p = .33$, indicating a non-significant difference between those with internalizing

maladjustment (*EMM* = 80.03) and without internalizing maladjustment (*EMM* = 90.31). The

partial eta squared was .008, meaning less than 1% of the variance in profile elevation was accounted for by the different levels of internalizing maladjustment.

Addressing Research Question Five

The fifth research question is: What is the effect of externalizing maladjustment level (i.e., yes, no) on vocational interest score profile elevation among African American mothers receiving welfare? A factorial ANOVA was used to examine the effect of externalizing maladjustment on profile elevation. Estimated marginal means (EMM), standard errors, and confidence intervals for interest profile elevation scores across levels of externalizing maladjustment are displayed in Table 23.

Table 23

Post Hoc Analysis: Estimated Marginal Mean Differentiation and Profile Elevation Scores for Externalizing Maladjustment Levels

Dependent Variable	Externalizing Maladjustment	N	Mean	Std. Error	95% Confidence Interval	
					Lower	Upper
Differentiation	No	101	18.84	.61	17.63	20.05
	Yes	21	16.65	1.53	13.61	19.69
Profile Elevation	No	101	89.50	3.84	81.89	97.10
	Yes	21	80.84	9.67	61.69	99.99

Note. No = No Externalizing Maladjustment group; Yes = Yes Externalizing Maladjustment group. The possible range of O*NET CIP differentiation scores is 0 to 30. The possible range of O*NET CIP profile elevation scores is 0 to 180.

Results indicated a non-significant effect at alpha = .05 for externalizing maladjustment level (yes, no) on profile elevation. More exactly, the effect for externalizing maladjustment produced an F ratio of $F(1, 118) = .693$, $p = .41$, indicating a non-significant difference between those with externalizing maladjustment (*EMM* = 80.84) and without externalizing maladjustment

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(*EMM* = 89.50). The partial eta squared was .006, meaning less than 1% of the variance in profile elevation was accounted for by the externalizing disorder dimension.

Addressing Research Question Six

The sixth and final research question is: What is the interaction between levels of internalizing and externalizing maladjustment on vocational interest score profile elevation among African American mothers receiving welfare? A two-way ANOVA was used to examine whether the effect of maladjustment level for one GAIN-SS disorder dimension (e.g., internalizing) was dependent upon the level of the opposing GAIN-SS disorder dimension (e.g., externalizing). The EMM interactions are displayed in Table 24.

Table 24

Post Hoc Analysis: Mean Interactions for Internalizing and Externalizing Maladjustment

Dependent Variable	Group	Intern.	Extern.	N	Mean	Std. Error	95% Confidence Interval Lower	Upper
Differentiation	1	No	No	61	17.66	.77	16.14	19.17
	2		Yes	5	13.80	2.68	8.50	19.11
	3	Yes	No	40	20.03	.95	18.15	21.90
	4		Yes	16	19.50	1.50	16.54	22.47
Prof. Elev.	1	No	No	61	86.82	4.83	77.25	96.39
	2		Yes	5	93.80	16.88	60.37	127.23
	3	Yes	No	40	92.18	5.97	80.36	103.99
	4		Yes	16	67.88	9.44	49.19	86.56

Note. The possible range of O*NET CIP differentiation scores is 0 to 30. The possible range of O*NET CIP profile elevation scores is 0 to 180.

Results indicated a non-significant interaction effect between levels of internalizing and externalizing maladjustment on interest score profile elevation. More specifically, the interaction

effect produced an F ratio of $F(1, 118) = 2.26$, $p = .14$. Partial eta squared was .019, meaning

roughly 2% of the variance in profile elevation was accounted for by the interaction between

internalizing and externalizing maladjustment levels. Provided in Table 25 is a summary of

results from the tests of between-subjects effects with profile elevation as the dependent variable.

Table 25

Post Hoc Analysis: Tests of Between-Subjects Effects with Profile Elevation as the Dependent Variable

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power[b]
Corrected	7109.31[a]	3	2369.77	1.66	.18	.041	.43
Intercept	381896.45	1	381896.45	268.07	.00	.694	1.00
Internalizing	1392.30	1	1392.30	.98	.33	.008	.17
Externalizing	987.09	1	987.09	.69	.41	.006	.13
Intern*Extern	3219.74	1	3219.74	2.26	.14	.019	.32
Error	168105.34	118	1424.62				
Total	1085456.00	122					
Corrected Total	175214.66	121					

a. R Squared = .041 (Adjusted R Squared = .016)
b. Computed using alpha = .05.

Summary of Post Hoc Findings

The primary purpose of the current study was to examine the influence of internalizing

and externalizing maladjustment level on Holland-based vocational interest score differentiation

and profile elevation among African American mothers receiving welfare. Towards this end, six

research questions were established and examined using a series of 2 X 2 factorial ANOVAs.

Whereas exclusively non-significant findings were observed in the original analysis, a significant

finding was observed in this post hoc analysis using a heightened cut-point for the Externalizing

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Disorder Subscreener of the GAIN-SS. More specifically, a statistically significant main effect was found for internalizing maladjustment level on vocational interest score differentiation. Contrary to the assumption that psychological maladjustment is inversely (negatively) associated with interest score differentiation, findings from the current study indicated a direct (positive) relationships. These and other results with respect to main and interaction effects of internalizing and externalizing maladjustment on differentiation and profile elevation are discussed further in Chapter 5. The next section contains results related to descriptive statistics for O*NET CIP scale scores and primary RIASEC types among the sample.

Descriptive Statistics for RIASEC Scale Scores and Primary Holland Type

The current section details the descriptive data results from analyzing RIASEC scale scores and primary Holland codes among the sample (N = 122) of African American mothers receiving welfare. Although these descriptive statistics are beyond the scope of the primary research questions, such findings have important implications for counselors and researchers. First, measures of central tendency for RIASEC-based scale scores are presented along with frequency distributions for primary Holland-based interest types. Then, mean RIASEC scale scores are reported for each of the four maladjustment groups as defined in the initial and post hoc analyses of research questions.

Descriptive statistics for scores across each RIASEC scale of the O*NET CIP were computed. Ranges, means, and standard deviations are summarized in Table 26. Results indicated that African American mothers receiving welfare tended to score highest on the Social scale ($M = 21.46$, $SD = 7.12$). Accordingly, these mothers likely share many of the characteristics associated with the Social personality or interest type (see Table 1 for descriptions

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of each RIASEC type). In contrast, the lowest mean scale score among the sample was

represented in the Realistic dimension (*M* = 8.65).

Table 26

Ranges, Means, and Standard Deviations of Scores Across O*NET CIP RIASEC scales

	Minimum	Maximum	Mean	Std. Deviation
Realistic (R)	0	29	8.65	8.02
Investigative (I)	0	30	10.23	8.11
Artistic (A)	0	29	12.95	8.89
Social (S)	0	30	21.46	7.17
Enterprising (E)	1	30	16.21	8.42
Conventional (C)	0	30	16.88	9.94

Note. These descriptive statistics are based on O*NET CIP scores as derived for the sample (N = 122) of African American mothers receiving welfare. The possible range of scores for each scale is 0 to 30.

Frequency distributions for primary RIASEC type are provided in Table 27. The primary

RIASEC type for a respondent is indicated by the scale with the highest number of endorsed

items (i.e., *like* responses). Results suggested that the Holland code of Social was most prevalent

among the sample. The second and third most prevalent primary RIASEC types were

Conventional and Enterprising, respectively. Alternatively, the least frequent primary RIASEC

types among the sample were Realistic and Investigative. These findings are further discussed in

Chapter 5.

Table 27

Distribution of Respondent's Primary RIASEC Type

Primary Type	Frequency	Percent
Realistic (R)	5	3.55
Investigative (I)	5	3.55
Artistic (A)	9	6.38
Social (S)	68	48.23
Enterprising (E)	23	16.31
Conventional (C)	31	21.99

Note. Primary RIASEC type is indicated by the respondent's highest scale score as produced from the O*NET CIP. The total frequency of RIASEC types exceeds the sample size ($N = 122$) number because some respondents ($n = 16$) had highest scale scores that were tied across two or more RIASEC scales.

Figure 3 provides a visual display of the mean Holland-based vocational interest score pattern across RIASEC scales for each of the four maladjustment groups as defined in the initial analysis of research questions. A visual comparison suggests, at least at face value, a large degree of similarity between groups. The groups seem to vary only slightly in terms of mean RIASEC scale scores.

Figure 3

Mean Vocational Interest Score Pattern by Maladjustment Group using Initial Cut-points
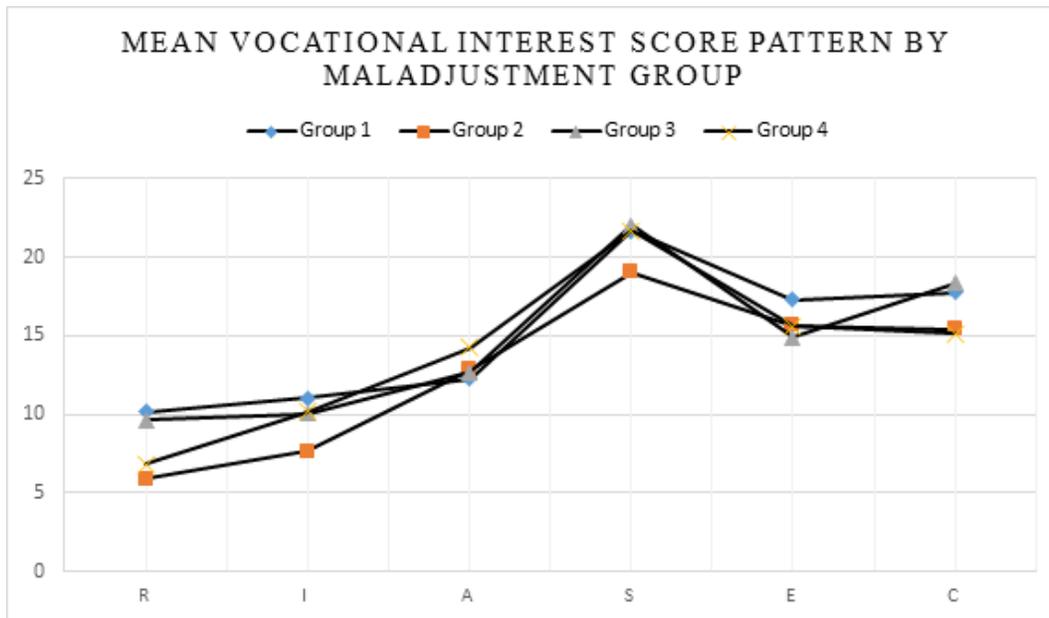
Note. Group 1 = No Internalizing + No Externalizing; Group 2 = No Internalizing + Yes Externalizing; Group 3 = Yes Internalizing + No Externalizing; Group 4 = Yes Internalizing + Yes Externalizing

Figure 4 shows the mean Holland-based vocational interest scores across RIASEC scales for each of the four maladjustment groups as defined in the *post hoc analysis* of research questions. Similar to the initial analysis, visual comparison suggests a large degree of similarity in mean vocational interest score patterns across the four maladjustment groups. However, there are some notable differences. For example, the highest mean RIASEC scale score for Group 2 (i.e., No Internalizing, Yes Externalizing) was represented with the Enterprising scale as opposed to the Social scale. Furthermore, Group 4 seems to have much lower scores for the Enterprising and Conventional scales compared to the other groups. These results are further discussed in Chapter 5. The following section pertains to psychometric properties of instruments used in the current study with the sample of African American mothers receiving welfare before concluding with a chapter summary.

Figure 4

Mean Vocational Interest Score Pattern by Maladjustment Group using Post Hoc Cut-points
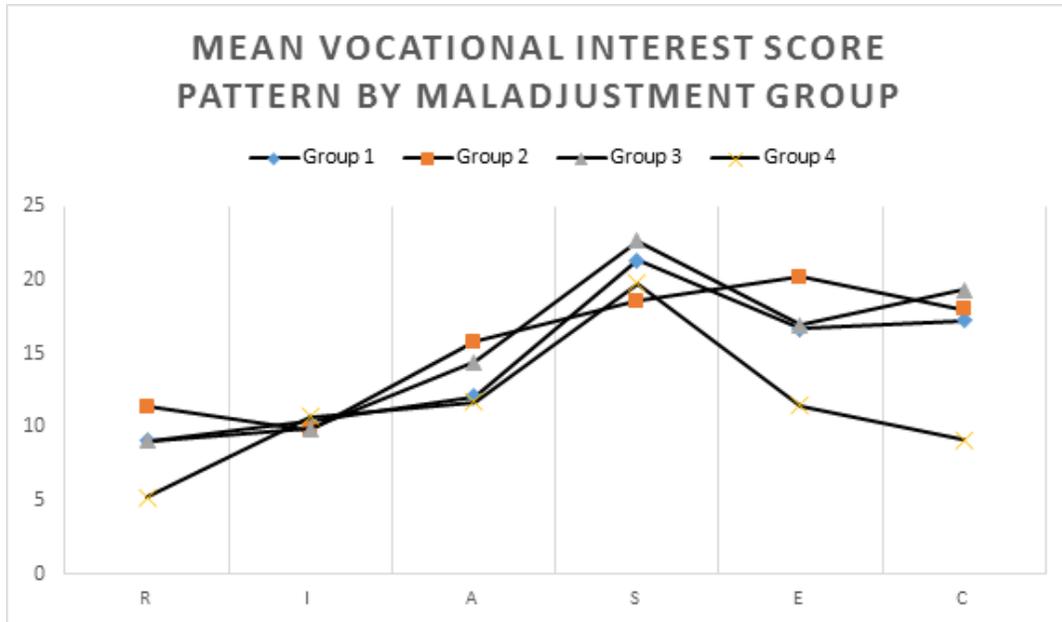
Note. Group 1 = No Internalizing + No Externalizing; Group 2 = No Internalizing + Yes Externalizing; Group 3 = Yes Internalizing + No Externalizing; Group 4 = Yes Internalizing + Yes Externalizing

Psychometric Properties of Instrument Data with Current Sample

As previously mentioned, the psychometric properties of assessment instruments have rarely been examined for African American mothers receiving welfare. To help address this gap, the psychometric properties of instruments used in the current study (i.e., O*NET CIP, GAIN-SS) were examined for the sample (N = 122). Ideally, an examination of both reliability and validity for each instrument would be conducted. However, the evaluation of psychometric properties was limited to the type of data provided in the archival set. For example, the archival data set provided RIASEC scale scores from the O*NET CIP, but was without participant responses for each item, thus prohibiting the ability to conduct the item-by-item analysis required for estimating internal consistency reliability. Nonetheless, the type of data provided in the archival set allowed for the examination of structural validity for the O*NET CIP as well as an

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estimate of internal consistency reliability for the GAIN-SS. The purpose of this section is to outline the findings with respect to psychometric properties among the current sample of African American mothers receiving welfare.

Structural Validity of the O*NET CIP

According to Holland's (1997) calculus assumption, or structural hypothesis, the six RIASEC interest types are related in a hexagonal structure, wherein the spatial distance between types represent their degree of similarity or dissimilarity (see Figure 2). For example, the adjacent types of Realistic and Investigative are, at least theoretically, more strongly related than the opposing types of Realistic and Social. Research findings have mostly supported the RIASEC ordering of types across gender, race, and socioeconomic status (Nauta, 2010).

For examining the structural validity of the O*NET CIP among the sample of African American mothers receiving welfare, the statistical methods and procedures used in Rounds et al.'s (1999) psychometric investigation of the O*NET CIP among the original norming sample were closely replicated. More specifically, intercorrelations between the six RIASEC subscales were measured and then compared to Holland's aforementioned structural hypothesis. After investigating the correlation matrix of RIASEC scale scores, structural validity was further examined using multidimensional scaling (MDS).

Intercorrelations between the RIASEC scale scores for the current sample are provided in Table 28. Overall, the correlational patterns between and among scale scores approximated those of the hypothesized RIASEC structure. In other words, interest scales that are closer in proximity according to Holland's hexagonal model are more strongly associated than scales that are further apart. However, analysis of the current data revealed a departure from Holland's calculus assumption with respect to the Enterprising scale. More specifically, the Enterprising dimension

was more strongly associated with the Realistic dimension than would be expected from Holland's calculus assumption. This finding closely mirrors results from Rounds et al.'s (1999) investigation of psychometric properties of the O*NET CIP among the original norming sample (as discussed in Chapter 5).

Table 28

Correlation Matrix of RIASEC Scale Scores

Subscale	R	I	A	S	E	C
R	1.00					
I	.42	1.00				
A	.35	.50	1.00			
S	.32	.41	.44	1.00		
E	.62	.47	.60	.58	1.00	
C	.36	.41	.40	.61	.67	1.00

Note. All correlations are significant at the .01 level (2-tailed).

Regarding examination of structural validity using MDS, this technique produces a geometric representation of data wherein the similarities or dissimilarities between variables are expressed as distances (de Leeuw, 2001). The MDS provided a spatial configuration of RIASEC variables based on Euclidean distances for measuring inter-scale proximity. This technique allowed for a visual comparison between the arrangements of RIASEC variables among the current sample with Holland's structural hypothesis (hexagonal ordering of RIASEC types). When accounting for structural aspects, measuring data within the RIASEC space is critical (Tay, Drasgow, Rounds, & Williams, 2009). More exactly, Prediger (1982) asserted that there are two bipolar dimensions that underpin the RIASEC space: people-things (Realistic-Social) and data-ideas (whereas Conventional and Enterprising scales are associated with *data*, the

Investigative and Artistic items are associated with *ideas*). Thus, the MDS was conducted in a

two-dimensional space. More specifically, proximity scaling (PROXSCAL; Busing,

Commandeur, & Heiser, 1997) was used for modeling the correlation matrix of scale scores, and

the solutions were evaluated in terms of the Stress-1 (Kruskal, 1964) goodness-of-fit statistic (the

lower the stress the better the fit). In addition to Stress-1, the proportion of the variance of

disparities accounted for by the MDS solution will be evaluated. According to Dugard, Todman,

and Staines (2009), a good fit is indicated when the Stress value is less than 0.15 and when the

Dispersion Accounted For (DAF) is *close to 1* (p. 275).

Figure 5

Multidimensional Scaling Solution for O*NET CIP Scale Scores among the Sample
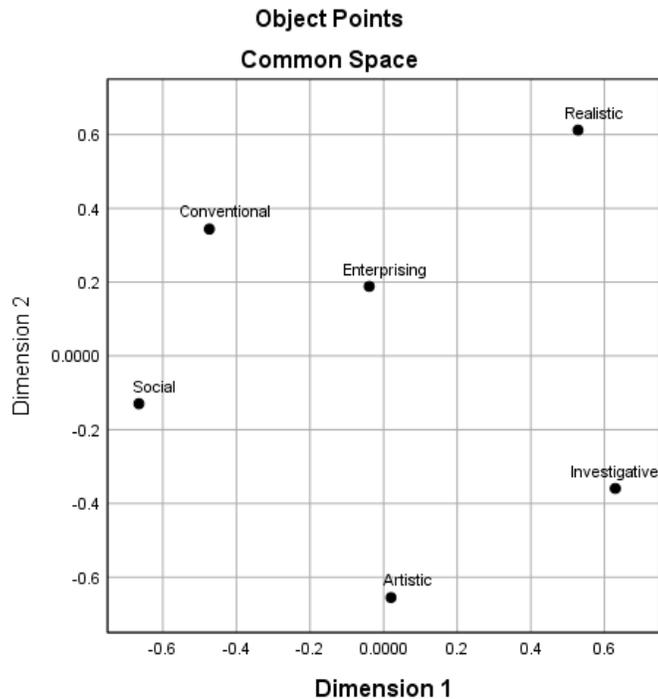

Figure 5 shows results from the MDS conducted in SPSS for the current sample of

African American mothers receiving welfare. In addition, Table 29 provides the coordinates for

each variable by each dimension. Indeed, a two-dimensional solution fit the data well. The

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Stress-1 value (0.146) was less than 0.15 and the DAF (.979) was near 1.0, which indicated a good fit in accordance with the previously mentioned standards set forth by Dugard, Todman, and Staines (2009). Additionally, the data was mostly consistent with the hypothesized structure and ordering of RIASEC types. Once again, there was a notable departure from the hypothesized structure regarding the Enterprising scale, which is depressed towards the center of the model where it is closer in proximity to the Realistic and Investigative scales than would be expected from Holland's calculus assumption. This finding is also consistent with Rounds et al.'s (1999) investigation of psychometric properties of the O*NET CIP with the original norming sample.

Table 29

Final Coordinates of RIASEC Variables by Dimension

O*NET CIP Scale	Dimension 1	Dimension 2
Realistic	.528	.612
Investigative	.629	-.359
Artistic	.020	-.655
Social	-.665	-.130
Enterprising	-.039	.188
Conventional	-.473	.344

Overall, the data obtained for the sample of African American mothers receiving welfare closely fit the RIASEC model as proposed by Holland's (1997) calculus assumption. However, the Enterprising scale was depressed towards the center of the MDS solution. These results were similarly observed in earlier investigations of psychometric examinations of the O*NET CIP and O*NET IP with their respective norming samples (Rounds et al., 1998; Rounds et al., 1999). Further discussion of these findings are presented in Chapter 5.

Internal Consistency Reliability of the GAIN-SS

The archival data set for the sample of African American mothers receiving welfare enabled examination of internal consistency reliability for the GAIN-SS subscreeners. Internal consistency is assessed with correlation analysis and refers to whether items in a given inventory

or subscale measure the same construct they are designed to measure (Heppner et al., 2008). For this study, internal consistency was described using Cronbach's alpha for the Internalizing and Externalizing Disorder Subscreeners of the GAIN-SS, respectively. Cronbach's alpha is a commonly used statistical procedure for estimating internal consistency reliabilities of instrument data (Heppner et al., 2008). Table 30 displays a commonly accepted *rule of thumb* as outlined by George and Mallery (2003) for classifying Cronbach's alpha test statistics.

Table 30

Guidelines for Interpreting Cronbach's Alpha Test Statistics

Cronbach's alpha	Internal consistency
$0.9 \leq \alpha$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

The GAIN-SS (version 3.0) is comprised of 23 total items classified into four subscales for examining internalizing disorders (e.g., depression, anxiety), externalizing disorders (e.g., ADHD, conduct disorders), substance use disorders (e.g., abuse, dependence), and participation in crime and violence (Dennis, Feeney, & Titus, 2013). However, only the Internalizing Disorder Subscreener (six items) and the Externalizing Disorder Subscreener (seven items) of the GAIN-SS were used in the current study and are thusly the only subscales examined in terms of internal consistency reliability. The GAIN-SS necessitates that respondents answer items using a Likert-type scale for indicating the frequency and recency in which a particular symptom or behavior has occurred. More specifically, this five-point, Likert-type response format includes 'never'

(score = 0), 'more than a year ago' (score = 1), '7-12 months ago' (score = 2), '1-6 months ago' (score = 3), and 'in the past month' (score = 4). Cronbach's alpha test statistics for the Internalizing and Externalizing Disorder Subscreeners among the current sample of African American mothers receiving welfare are reported in Table 31.

Table 31

Internal Consistency Reliability Estimates for GAIN-SS Internalizing and Externalizing Scales

Subscale	No. of Items	Cronbach's α
Internalizing Disorder	6	.68
Externalizing Disorder	7	.65

As indicated from Table 31, and in accordance with *rule-of-thumb* guidelines for describing internal consistency, the Cronbach's alpha test statistic for both the internalizing and externalizing disorder subscreeners were within the *questionable* range among the sample of African American mothers receiving welfare. Further analysis of internal consistency was conducted to determine if deleting a particular item on either GAIN-SS subscale would elevate Cronbach's alpha above .70, or into the *acceptable* range. However, results indicated that item deletion would not improve internal consistency to the degree that Cronbach's alpha would exceed this threshold. Tables 32 and 33 display Cronbach's alpha statistics if a particular item were deleted.

Table 32

Cronbach's Alpha by Item Deletion within the Internalizing Disorder Subscreener

Item	Cronbach's α if Item Deleted
a. … *feeling very trapped, lonely, sad, blue, depressed* …	.61
b. … *sleep trouble, such as bad dreams, sleeping restlessly* …	.62
c. … *feeling very anxious, nervous, tense, scared, panicked* …	.61
d. … *becoming very distressed and upset when something* …	.62
e. … *thinking about ending your life or committing suicide* …	.67
f. … *seeing or hearing things that no one else could see or* …	.69

Table 33

Cronbach's Alpha by Item Deletion within the Externalizing Disorder Subscreener

Item	Cronbach's α if Item Deleted
a. … *lied or conned to get things you wanted or to avoid* …	.61
b. … *had a hard time paying attention at school, work, or* …	.53
c. … *had a hard time listening to instructions at school* …	.61
d. … *had a hard time waiting for your turn?*	.64
e. … *were a bully or threatened other people?*	.61
f. … *started physical fights with other people?*	.62
g. … *tried to win back your gambling losses by going back* …	.67

Chapter Summary

Contained in this chapter were all results from the current study, which included data cleaning, descriptive statistics, assumptions testing, and statistical analyses of research questions. Furthermore, psychometric properties of instruments used for data collection (O*NET CIP; GAIN-SS) were examined and reported for the sample (N = 122) of African American mothers receiving welfare. Results from addressing research questions initially indicated exclusively non-

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significant main and interaction effects for the two dimensions of psychological maladjustment (internalizing, externalizing) on vocational interest score differentiation and profile elevation. However, after using a heightened cut-point for indicating externalizing maladjustment in a post hoc analysis of research questions, a statistically significant finding was observed via a main effect for internalizing maladjustment on differentiation. More specifically, African American mothers with internalizing maladjustment had significantly *higher* interest score differentiation than those without internalizing maladjustment. All results from the current study are further discussed in the following chapter, including implications, limitations, and recommendations for future research.

CHAPTER V: DISCUSSION

Introduction

This chapter contains a discussion of results from examining the influence of internalizing and externalizing maladjustment on Holland-based vocational interest score differentiation and profile elevation among African American mothers receiving welfare in North Carolina ($N = 122$). First provided in this chapter is a review of the study. Findings are then discussed with respect to descriptive statistics, research questions, and psychometric properties of instruments among the sample. The latter portion of this chapter contains an overview of the study's limitations, implications, and recommendations for future research. A summary of key findings and insights concludes the study.

Study Review

According to John L. Holland's (1985) theory of vocational interest types and environments, counselors can learn whether a client (examinee) is experiencing psychological maladjustment by attending to secondary constructs in vocational interest assessment. More specifically, Holland asserted that low *differentiation* (i.e., degree of interest scale score variation) and low *profile elevation* (i.e., total number of endorsed items, or *like* responses, across all interest scales combined) are each indicative of psychological maladjustment that warrants additional assessment or more intensive treatment for the client. Similarly, counselors have long been known to infer psychological maladjustment from interest score differentiation and profile elevation (Gottfredson & Jones, 1993). However, relevant findings from the literature are equivocal. Consequently, these interest assessment constructs are without a validated interpretation with respect to psychological maladjustment. This lack of an empirically

substantiated interpretation for differentiation and profile elevation is potentially a product of methodological flaws or gaps in the relevant literature that the current study aimed to address.

The purpose of the current study was to examine the influence of the two primary disorder dimensions of psychological maladjustment (i.e., internalizing, externalizing) on vocational interest score differentiation and profile elevation among African American mothers receiving welfare. Towards this end, the current study employed a quantitative, *ex post facto* research design to analyze archival data on the vocational evaluation (VE) results of adult welfare recipients in North Carolina. More specifically, African American mothers receiving welfare who were referred to the Navigate Counseling Clinic between 2012 and 2017 were the chosen sample for the current study. This population was selected, in large part, because these mothers have been without the benefit of research that examines their vocational complexities through the conceptual prism of a career theory. Furthermore, a substantial body of literature identifies psychological maladjustment as being among the more prevalent and significant barriers to employment that African American mothers receiving welfare experience (Danziger et al., 2000; Ensminger, 1995; Jayakody, Danziger, & Pollack, 2000; Klein, Amundson, & Borgen, 1992; Rank, 1994). Thus, findings from the current study not only serve to enhance the interpretability of Holland's theoretical constructs, but also serve to help improve counseling-based services delivered to a client population in need of proper career and mental health assistance.

For examining main effects and interaction effects of internalizing and externalizing maladjustment on vocational interest score differentiation and profile elevation among the sample ($N = 122$), six primary research questions were developed. These research questions were addressed with a series of 2 X 2 factorial analyses of variance (ANOVA) in which internalizing

maladjustment and externalizing maladjustment served as the independent grouping variables. The maladjustment variables each had two levels for indicating the likely presence or absence of a diagnosable condition within the corresponding disorder dimension (internalizing, externalizing) as measured and determined using cut-points from the Global Appraisal of Individual Needs- Short Screener (GAIN-SS; Dennis, Feeney, & Titus, 2013). In contrast, the continuous dependent variables were vocational interest score differentiation and profile elevation as measured using the O*NET Computerized Interest Profiler (CIP; Rounds et al., 1999). Whereas differentiation was made operational using Holland's (1968, 1994) high-low index (i.e., the difference between the highest and lowest scale scores), profile elevation was computed by adding the total number of endorsed items (*like* responses) across all interest scales combined.

Research questions were addressed with an initial analysis as well as a post hoc analysis, which differed only with respect to how externalizing maladjustment level was made operational. More specifically, the initial analysis was conducted using GAIN-SS cut-points of three past-year symptoms for the Internalizing Disorder Subscreener (IDS) and two past-year symptoms for the Externalizing Disorder Subscreener (EDS). The cut-point for the IDS yielded an incidence of internalizing maladjustment that was consistent with prior literature about African American mothers receiving welfare. However, the initial cut-point for the EDS (two past-year symptoms) indicated a disproportionately high instance of externalizing maladjustment. Thus, a post hoc analysis was conducted in which the operational definition for internalizing maladjustment remained the same, but the cut-point for indicating externalizing maladjustment was increased to three past-year symptoms. Consistent with standards in social science research, statistical significance was established with an alpha level of .05 (Heppner et

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al., 2008) and assumptions of the 2 X 2 ANOVA were tested. Results from addressing research questions with the two-way ANOVA indicated a statistically significant finding in the post hoc analysis, wherein internalizing maladjustment had a direct main effect on vocational interest score differentiation.

In addition to addressing research questions with initial and post hoc analyses, the current study included an examination of O*NET CIP scale scores and frequency distributions for primary RIASEC type. Furthermore, psychometric properties were investigated for the sample. More specifically, archival data enabled an analysis of structural validity for the O*NET CIP as well as an estimation of internal consistency reliability for the GAIN-SS subscales. All results from this study are discussed, beginning with the demographic data collected for the sample.

Discussion of Descriptive Statistics and Sample Demographics

Demographic data was originally collected using a questionnaire. Demographic data was reported to describe the sample (N = 122) of African American mothers receiving welfare in terms of age, marital status, education level, employment status, employment history, and medical impairment status. Furthermore, these demographic variables were examined in relation to the continuous dependent variables (i.e., differentiation, profile elevation) to investigate any possible covariance that could have confounded results in the subsequent analyses of research questions. More specifically, Pearson's *r* was measured for age, which is the only continuous demographic variable included in the current study. Because the remaining demographic variables are categorical, effect sizes were measured using ANOVAs to determine whether further analysis was warranted. The purpose of this section is to discuss the findings related to descriptive statistics of demographic variables as covariation with differentiation and profile elevation.

Age. According to the U.S. Department of Health and Human Services (2017), more than half (53.5%) of mothers on welfare in North Carolina are between the ages of 20 and 29 years. Although ages ranged from 18 to 52 years in the current sample, a majority of the participants were between 20 and 29 years (n = 72; 61.5%) with a mean age of 28 years ($SD = 7.7$). Therefore, findings with respect to age among the current sample are largely consistent with what is reported in the literature about the targeted population.

Scholars have posited that Holland-based score differentiation is a career development variable that is directly associated with age (Holland & Gottfredson, 1976). However, findings related to this supposed relationship have been equivocal (Hirschi, 2009). With respect to the current study, Pearson correlations were conducted to examine for potential covariance between age in years and the study's dependent variables (differentiation, profile elevation). Findings indicated that age was significantly correlated with neither differentiation nor profile elevation. Thus, the assumption that age is associated with differentiation was unsupported in the current study and controlling for age was deemed unnecessary for addressing research questions.

Marital status. According to findings in the relevant literature, approximately 83.4% of mothers on welfare in North Carolina report a marital status of single (U.S. Census Bureau, 2018). Findings for marital status in the current study are similar to those found in the literature, as 89.7% of the sample identified as single. Therefore, the sample was closely representative of the greater population of African American mothers receiving welfare in North Carolina with respect to marital status. Regarding the effect of marital status on the dependent variables, the ANOVA results were non-significant for both differentiation and profile elevation. These findings of statistical non-significance were anticipated, as marital status has rarely, if ever, been a hypothesized covariate for the vocational interest constructs in question.

Education level. According to the U.S. Census Bureau (2018), 13.6% of mothers receiving welfare in North Carolina have at least a high school diploma or GED. However, findings among the current sample were inconsistent with such literature, as a majority (61.21%) of the sample reported their highest level of education as being a high school diploma or GED. While the sample appears to be more educated than the overall population of African American mothers on welfare in North Carolina, they are less educated than the general population of adults in North Carolina (U.S. Census Bureau, 2018).

Researchers have observed significant relations for education level or academic achievement with the vocational interest constructs examined in the current study (Gottfredson & Jones, 1993). Profile elevation, in particular, has been reported within the relevant literature as being a significant positive correlate of academic achievement (as discussed in Chapter 2). However, results of ANOVA in the current study to measure the effect of education level on differentiation and profile elevation were non-significant. In other words, group means for the dependent variables did not significantly differ across levels of education. Therefore, controlling for education level when addressing research questions was deemed unnecessary.

Although statistically non-significant, a closer inspection of the data indicated that mean profile elevation scores were lower among higher levels of education. The directional nature of this relationship between education level and profile elevation is in contrast to positive associations found in studies of other, perhaps more affluent, samples. One possible explanation for the findings observed among the current sample is that mothers at higher levels of education were less likely to endorse O*NET CIP items that were below their educational qualification or desired prestige level, thus ultimately producing lower profile elevation scores. Again, however,

the results were non-significant, meaning the directional aspect of the relationship between education level and profile elevation could have resulted from chance.

Employment status. According to the literature, approximately 65.7% of mothers on welfare in North Carolina are unemployed at a given point in time during receipt of benefits (U.S. Census Bureau, 2018)). However, the unemployment rate for the current sample (94.83%) was much higher. This disparity in unemployment rates is likely a result of welfare-to-work program administrators only referring recipients who are unemployed or menially employed (part-time) to counselors for vocational evaluation and related services (such as those who were referred to the Navigate Counseling Clinic from which archival data was derived for the current study). The remaining portion of the current sample reported working part-time (5.17%), as none of the participants were maintaining full-time employment at time of data collection. Regarding the effect of employment status on the dependent variables of differentiation and profile elevation, only non-significant results were observed. Therefore, controlling for employment status for addressing research questions was deemed unnecessary.

Employment history. A majority of participants (n = 100; 87.72%) in the current study reported having worked in a competitive employment setting at some point in their history. This observation suggests that these mothers have been able obtain employment, but less able to maintain employment. Indeed, the TANF-based literature identifies job instability as a primary concern for mothers on welfare, which is likely a function of barriers to employment success such as psychological maladjustment (Dworsky & Courtney, 2007). In this manner, such findings observed for the current sample are consistent with the literature.

A reasonable hypothesis could be made that those with an employment history would have higher interest score differentiation than those without an employment history. This

assumption is rooted in the notion that as individuals gain more social learning experiences via employment, they acquire a greater distinction, or understanding, between their likes and dislikes regarding work environments (Lent, Brown & Hackett, 1994). Regardless, the group means for differentiation across levels of employment history (yes, no) among the current sample were not statistically different.

In contrast to differentiation, employment history did indeed have a significant effect (in the low range) on profile elevation (.039; $p < .05$). More exactly, those with an employment history (n = 100) had significantly higher mean profile elevation scores (M = 88.94) than those without an employment history (n = 14; $M = 65.93$). The reason for this finding of statistical significance is unclear, and the literature is without studies in which the relationship between employment history and profile elevation has been examined. A possible explanation for the significant result is that, for this population, having a history of employment is indicative of individuals who are willing to engage in occupations that other mothers receiving welfare are not. In this manner, perhaps, mothers with a work history were inclined to endorse more occupational items on the O*NET CIP than their counterparts who had yet to obtain employment. Regardless, the non-significant finding for differentiation, coupled with a low effect size for profile elevation, suggested that controlling for this demographic variable was unwarranted for addressing research questions.

Medical impairment status. As part of the demographic questionnaire, participants were asked whether they had a physical or mental impairment that might significantly impede their ability to obtain or maintain employment. Participants who checked "yes" to this item were asked to describe the nature of their impairment. A vast majority of participants (83.33%) reported having no such medical issue. The remaining portion of the sample who indicated a

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significant medical issue most often reported physical conditions such as asthma, diabetes, and chronic pain. However, exclusively non-significant ANOVA results were observed for mean differentiation and profile elevation scores across levels (yes, no) of medical impairment status, suggesting further analysis of this demographic variable was unwarranted. Noteworthy, though, is that these mothers on welfare rarely listed a mental or behavioral health disorder as constituting an impairment that might impede their attempts toward stable employment, despite many of these respondents being identified by the GAIN-SS as having a probable internalizing or externalizing disorder.

Sample summary. Personal demographic information on the sample of African American mothers receiving welfare was obtained from the Navigate Counseling Clinic questionnaire called My Vocational Background, which was administered to welfare recipients referred for VE services. This data was analyzed in order to describe properly the sample as well as to protect against covariance with the dependent variables used in addressing research questions. Covariance was examined in terms of correlations and effect sizes, which were classified and reported in accordance with Cohen's (1992) parameters for analyzing samples. Findings from demographic data analysis suggested that age, marital status, education level, employment status, and medical impairment had non-significant correlations or effects with differentiation and profile elevation. Although a significant finding was observed for employment history and profile elevation, the low effect size as measured with an ANOVA indicated that controlling for this demographic variable in the analyses of research questions was unwarranted.

Overall, findings from the demographic data indicated that the typical African American mother on welfare in the current study was between the ages of 20 to 29 years, single,

unemployed, and with at least a high school diploma (or GED). Additionally, the typical participant had a history of employment and was medically healthy. In general, demographics of the sample closely resembled what has been reported in the relevant literature for African American mothers receiving welfare. Upon analyzing demographic data, and prior to addressing research questions, descriptive statistics related to RIASEC scale scores and primary Holland types were examined, the results of which are discussed in the next section.

Discussion of Descriptive Statistics Related to RIASEC Scale Scores and Types

As part of the current study, descriptive statistics related to RIASEC scale scores and primary interest types were examined among the sample (N = 122) of African American mothers receiving welfare in North Carolina. From greatest to least, the mean scores across O*NET CIP scales indicated a rank ordering of Social ($M = 21.46$), Conventional ($M = 16.88$), Enterprising ($M = 16.21$), Artistic ($M = 12.95$), Investigative ($M = 10.23$), and Realistic ($M = 8.65$; summarized as S-C-E-A-I-R). Regarding the frequency distribution of primary vocational interest type, approximately half the sample had a high-point code of Social.

These findings very closely replicated those observed in Russell (2005), which is the only other study in which exclusively African American mothers receiving welfare were examined in context of a career theory. More specifically, Russell (2005) examined archival data results from a sample (N = 185) of African American mothers receiving welfare in the state of Florida who were administered the Self-Directed Search (SDS; Holland, 1987). Like the current study, results indicated the S-C-E-A-I-R ordering of mean vocational interest scores. Also similar to the current study, roughly half of the sample indicated a primary Holland-based type of Social.

The relatively high incidence of Social types among African American mothers receiving welfare has similarly been observed in studies of other African American populations (Hager &

Elton, 1971; Doughtie et al., 1976; Kimball et al., 1973; Miller et al., 1998; Ward & Walsh, 1981). Scholars have argued that such findings of a disproportionate distribution across RIASEC types imply bias within Holland's theory. However, Holland maintained that the proclivity of Social types among African Americans (particularly women) is not a result of bias, but rather an accurate representation of their vocational interest structure (Holland, 1976).

As for the potential reasons for the preponderance of Social types observed among African American women, some scholars have surmised that this population perceives Social occupations as being less discriminatory and more accessible to them than other work environments (Miller et al., 1988). An alternative explanation has been provided by Cheatham (1990), who speculated that the tendency to endorse Social environments can be traced back to the work African American women performed during slavery. More specifically, African American women during this time were held responsible for domestic tasks that are related to Social activities, such as performing the role of caretaker and nanny. Furthermore, these women perceived this work as being more desirable and prestigious than agricultural duties, which required intense manual labor (Russell, 2005).

Regardless of the reasons for why African American women are disproportionately represented with the Social type, the resemblance of findings between the current sample and Russell's (2005) sample supports the generalizability of findings from this study. This statement is at least true with respect to the vocational interests of African American mothers receiving welfare. The implications of findings related to the descriptive statistics observed for O*NET scale scores and primary RIASEC type are further discussed in a later section of this chapter. Discussed next are the findings related to research questions.

Discussion of Findings Related to Research Questions

The primary purpose of the current study was to examine the influence of internalizing and externalizing maladjustment on Holland-based interest differentiation and profile elevation among African American mothers receiving welfare ($N = 122$). For analyzing research questions, a series of 2 X 2 factorial ANOVAs were conducted. Whereas O*NET CIP differentiation and profile elevation served as the continuous dependent variables, GAIN-SS internalizing maladjustment level (i.e., yes, no) and externalizing maladjustment level (i.e., yes, no) were the independent factors, or grouping variables.

As predetermined in Chapter 3, certain GAIN-SS cut-points were used for identifying those with and without internalizing maladjustment (cut-point of three past-year symptoms) and externalizing maladjustment (cut-point of two past-year symptoms). However, the initial cut-point of two past-year symptoms for the Externalizing Disorder Subscreener of the GAIN-SS identified a disproportionately high incidence of externalizing maladjustment among the sample than what could be expected from literature about adult female populations. Therefore, statistical analyses were conducted using the predetermined cut-points for the initial analysis as well as an adjusted (heightened) cut-point for externalizing maladjustment in the post hoc analysis. More exactly, the cut-point for the GAIN-SS Externalizing Disorder Subscreener was increased from two past-year symptoms to three past-year symptoms for identifying those with externalizing maladjustment. The incidence of maladjustment for the sample was more consistent with prior literature upon increasing the cut-point to three past-year symptoms for indicating a probable externalizing disorder. Findings from the initial and post hoc analyses are discussed below with respect to each research question.

Discussion of Findings for Research Question One

The first research question was: What is the effect of internalizing maladjustment level (yes, no) on vocational interest score differentiation among African American mothers receiving welfare? Results from the *initial* analysis indicated that the isolated effect of internalizing maladjustment on interest score differentiation approached significance (p = .055), but did not exceed alpha at .05. In other words, the estimated marginal mean (EMM) differentiation scores were non-significantly different between those with internalizing maladjustment (*EMM* = 19.97) and without internalizing maladjustment (*EMM* = 17.60). However, after using a heightened cut-point for indicating externalizing maladjustment in the post hoc analysis, the EMM differentiation scores for the "Yes Internalizing" and "No Internalizing" groups changed to 19.76 and 15.73, respectively. Accordingly, results of the post hoc analysis did indeed indicate a statistically significant effect for internalizing maladjustment on interest score differentiation (p = .016). The remaining portion of this subsection includes a discussion of: (a) how findings from addressing this first research question compare to Holland's theoretical assumption related to differentiation; (b) certain factors to consider when interpreting the statistically significant post hoc result; and (c) a possible explanation for this unexpected finding of statistical significance.

From a theoretical standpoint, the statistically significant post hoc finding contradicts Holland's (1985) assumption pertaining to differentiation and psychological maladjustment. More specifically, Holland posited that *lower* interest score differentiation is indicative of clients with psychological maladjustment. However, results from the current study indicated that those with internalizing maladjustment had, on average, *higher* interest score differentiation.

Prior to a more in-depth discussion on the possible reasons for the unexpected finding of a direct main effect of internalizing maladjustment on differentiation, there are certain factors

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that deserve consideration with respect to this statistically significant finding observed in the post hoc analysis, including: (1) effect size, (2) power estimation, and (3) issues of clinical significance. First, the effect size of internalizing maladjustment on interest differentiation (.048) was *small* according to Cohen's (1992) parameters. More specifically, level of internalizing maladjustment accounted for only 4.8% of the variance in differentiation scores. This finding implies that a vast majority of the variance in differentiation scores was unexplained by the variables included in the current study. Secondly, the estimated power (.68) was below .80, meaning the risk of a Type I error (i.e., rejecting the null hypothesis when the null is in fact true) was higher than what is considered acceptable in social sciences research (Kraemer & Thiemann, 1987). Thirdly, the actual degree of separation between mean differentiation scores for those with internalizing maladjustment (*EMM* = 19.76) and without internalizing maladjustment (*EMM* = 15.73) was rather small from a practical standpoint, especially considering the standard deviations (*SD* > 6) are larger than the difference between the two means. Simply put, the statistically significant effect of internalizing maladjustment could be considered *clinically* non-significant. Counselors are encouraged, therefore, to refrain from interpreting internalizing maladjustment from interest score differentiation among African American mothers receiving welfare, regardless of whether profiles are undifferentiated or well-differentiated.

Though perhaps *clinically* non-significant, the statistically significant result for those with internalizing maladjustment having a higher mean differentiation score than those without internalizing maladjustment raises important questions regarding Holland's (1985, 1997) theory. For example: Is internalizing maladjustment related positively to Holland's (1968, 1994) high-low index across different populations? Researchers who previously examined the topic among various sample sets have mostly observed non-significant findings for the relationship between

internalizing disorders or symptoms and interest score differentiation (i.e., Buboltz & Woller, 1998; Chason, 2010; Davis, 2007; Hartley, 2009; Loughead & Reardon, 1989). However, none of these researchers used Holland's (1968, 1994) high-low index for operationally defining interest differentiation. Therefore, a *significant and positive* relationship between internalizing maladjustment and Holland's (1968, 1994) high-low index remains a possibility across all populations. Indeed, more research is needed to examine whether the relationship observed in the current study is idiosyncratic to African American mothers receiving welfare, or if this phenomenon is consistent across groups varying in terms of sex, race, and socioeconomic status.

If more highly differentiated interest scores are only suggestive of internalizing maladjustment among African American mothers receiving welfare or similarly disadvantaged populations, then this phenomenon might reasonably be assumed to result from the unique set of psychosocial factors or constraints such populations encounter. African American mothers receiving welfare experience a multitude of psychosocial barriers to employment success, such as sexism, racism, and classism (Russell, 2005). These and other more practical career barriers (e.g., lack of transportation, minimal education, and childcare responsibilities) drastically reduce opportunities for achieving economic self-sufficiency through employment. Perhaps, then, a well-differentiated interest score pattern for an African American mother on welfare is maladaptive, as having such a distinct interest or personality type may serve as yet another limiting force in terms of the number of RIASEC-based work environments that would be considered suitable for achieving job satisfaction, stability, and achievement.

In other words, a well-defined interest or personality type for these mothers might produce a restrictive effect on the number of suitable work environments that is already severely limited by the assortment external factors or barriers they experience. Consequently, mothers

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with a distinct interest or personality type may become discouraged, or feel *trapped* in terms of how they fit, or rather struggle to fit, in a world of work that is made significantly smaller for them than for more affluent, barrier-free populations. This struggle to find an appropriate fit within the world of work may lead these mothers on welfare to internalize their situation, thus producing symptoms of depression or anxiety. Alternatively, a mother on welfare with an undifferentiated profile may be more flexible with respect to the number of RIASEC work environments that could produce desirable outcomes. In this manner, perhaps an undifferentiated profile among African American mothers receiving welfare is more suggestive of heightened adaptability to the environment, thus better psychological health. Again, this explanation is merely speculative and is in need of further examination, as discussed in a later section of this chapter about recommendations for future research.

Discussion of Findings for Research Question Two

The second research question was: What is the effect of externalizing maladjustment level (yes, no) on vocational interest score differentiation among African American mothers receiving welfare? Results indicated that the effect of externalizing maladjustment on Holland's (1968, 1997) high-low index of differentiation was non-significant in both the initial and post hoc analyses ($p = .977$ and $p = .187$, respectively). In other words, the "Yes Externalizing" and "No Externalizing" groups did not significantly differ in terms of mean differentiation scores. The remaining portion of this subsection includes a discussion of: (a) how findings from addressing this second research question compare to Holland's theoretical assumption related to differentiation; (b) how findings from addressing this research question compare to prior literature on the topic; and (c) how counselors should interpret these results.

From a theoretical standpoint, Holland never distinguished psychological maladjustment in terms of its two primary disorder dimensions (internalizing, externalizing). Thus, Holland never made explicit a hypothesis for the relationship between externalizing maladjustment and interest score differentiation. However, upon compiling and synthesizing Holland's lifelong work, this researcher concluded that differentiation is theoretically linked to internalizing maladjustment, but unrelated to externalizing maladjustment (see Chapter 1). Indeed, this notion is supported by the results from addressing the first two research questions in the current study. More exactly, a significant finding was observed for the effect of internalizing maladjustment on interest score differentiation, but a non-significant finding was observed for the effect of externalizing maladjustment on the same vocational interest construct.

This non-significant finding is consistent with a study by Gottfredson and Jones (1993), which represents the only other scholarly effort to compare differentiation with forms of externalizing maladjustment. Gottfredson and Jones (1993) observed exclusively non-significant results for the relationships between interest score differentiation (using Holland's [1968, 1994] index as well as Iachan's [1984] index) and the externalizing symptoms of misconduct and delinquency among a sample of seventh graders. These findings in combination with those from the current study support the notion that interest score differentiation is unrelated to externalizing maladjustment.

To date, counselors have little, if any, empirical evidence for inferring externalizing maladjustment (e.g., conduct disorders, impulsivity, ADHD) from vocational interest score differentiation. In other words, there is insufficient evidence to suggest that externalizing maladjustment and interest score differentiation are related. Thus, counselors are encouraged to refrain from interpreting externalizing maladjustment from the interest differentiation scores of

clients, particularly African American mothers receiving welfare, until the literature contains sufficient evidence to suggest otherwise.

Discussion of Findings for Research Question Three

The third research question was: What is the interaction effect between levels of internalizing and externalizing maladjustment on vocational interest score differentiation among African American mothers receiving welfare? To address this question, a 2 X 2 factorial ANOVA was conducted. Results indicated that the interaction between internalizing and externalizing maladjustment had a non-significant effect on Holland's (1968, 1997) high-low index of differentiation for both the original and post hoc analyses ($p = .493$ and $p = .315$, respectively). In other words, the observed effect for internalizing maladjustment did not dependent upon either level of externalizing maladjustment (and vice versa). Regardless, this study represents the first in which a potential interaction effect between the primary dimensions of psychological maladjustment was examined for interest score differentiation.

In both the initial and post hoc analyses of this research question, the factor cell with the highest EMM differentiation score was Group 3 (i.e., Yes Internalizing, No Externalizing) at 20.41 in the initial analysis and 20.03 in the post hoc analysis. The factor cell with the lowest mean differentiation score (*EMM* = 17.19) in the initial analysis was Group 1 (i.e., No Internalizing, No Externalizing). Contrastingly, for the post hoc analysis, the factor cell with the lowest mean differentiation score (*EMM* = 13.80) was Group 2 (i.e., No Internalizing, Yes Externalizing). However, results pertaining to the post hoc analysis should be interpreted with caution, as Group 2 contained only 5 cases, and assumptions testing revealed two outliers.

Regardless, results from the current study have helped to enhance the interpretability of the differentiation construct. More exactly, findings from the current study appear to suggest that

lower interest differentiation scores are indicative of neither internalizing nor externalizing maladjustment, at least among African American mothers receiving welfare. Thus, on the basis of these findings, psychological maladjustment appears to be an invalid interpretation of low differentiation scores among African American mothers receiving welfare.

Discussion of Findings for Research Question Four

The fourth research question was: What is the effect of internalizing maladjustment level (yes, no) on vocational interest score profile elevation among African American mothers receiving welfare? Results of the 2 X 2 ANOVA were non-significant for both the initial and post hoc analyses ($p = .77$ and $p = .325$, respectively). The difference in EMMs for profile elevation scores between those with and without internalizing maladjustment ranged from approximately 2 in the initial analysis to approximately 10 in the post hoc analysis. The initial analysis indicated that those with internalizing maladjustment had non-significantly *higher* mean profile elevation scores than those without internalizing maladjustment. Contrastingly, the post hoc analysis suggested that those with internalizing maladjustment had non-significantly *lower* mean profile elevation scores than those without internalizing maladjustment. Regardless, standard deviations for profile elevation in each factor were quite large ($SD > 30$) and overlapped the mean scores for the opposing groups. The remaining portion of this subsection includes a discussion of: (a) how findings from addressing this fourth research question compare to Holland's hypotheses related to profile elevation; (b) how findings from addressing this research question compare to prior literature on the topic; and (c) how counselors should interpret these results.

From a theoretical standpoint, Holland et al. (1994) hypothesized that profile elevation could be used as an index for purposes of evaluating psychological health. Furthermore, Fuller,

Holland, and Johnston (1999) asserted that "counselors should view [profile elevation] as an indicator that the client may have adjustment or psychological issues that need to be addressed" (p. 122). However, results from the current study did not support such an interpretation, as mean profile elevation scores were non-significantly different between those with and without internalizing maladjustment.

As previously discussed, researchers have examined relationships between profile elevation and internalizing forms of maladjustment on six occasions within the last three decades. More specifically, profile elevation has been compared to depression (Davis, 2007; Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994; Smisson, 2009), commitment anxiety (Chason, 2010; Kronholz, 2017; Smisson, 2009), obsessive-compulsiveness (Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994), and paranoia (Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994). However, results have been equivocal for the relations between these variables. For example, whereas researchers in two studies (Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama. 1994) observed significant negative associations (in the moderate range) between profile elevation and depression, researchers from two other studies (Davis, 2007; Smisson, 2009) observed only non-significant findings. Thus, findings from the current study are consistent with prior research endeavors wherein scholars observed non-significant findings for the relationship between internalizing forms of maladjustment (e.g., depression, anxiety) and profile elevation.

Based on the equivocal nature of these findings, the evidence appears to be insufficient and too inconclusive for counselors to justify interpreting internalizing maladjustment from profile elevation scores. Thus, counselors are encouraged to refrain from inferring aspects of internalizing maladjustment from this vocational interest construct (particularly among clients

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who are African American mothers receiving welfare) until there is strong enough evidence to suggest otherwise.

To date, the best evidence for the meaningfulness of profile elevation is derived from studies (Bullock & Reardon, 2008; De Fruyt & Mervielde, 1997; Gottfredson & Jones, 1993; Gottfredson, Jones, & Holland, 1993; Fuller, Holland, & Johnston, 1999; Hirschi, 2009; Holland, Johnston, & Asama, 1994) in which this construct is examined in relation to non-pathological personality traits as defined in the Five Factor Model (FFM) of personality. Across these studies, correlation analyses suggest that profile elevation is associated positively with Extraversion, Openness, and, to a lesser degree, Conscientiousness. Correlations are generally stronger (in the moderate range) for Extraversion. Such findings indicate that lower profile elevation scores are associated with Introversion. This relationship with Introversion is important to note, as practitioners have long surmised that low profile elevation scores are related to depression and subdued levels of affectivity (Holland et al., 1994). However, findings with respect to the FFM personality traits, coupled with findings from the current study, could indicate that practitioners are confusing an introverted disposition with depression or other forms of internalizing maladjustment.

Discussion of Findings for Research Question Five

The fifth research question was: What is the effect of externalizing maladjustment level (i.e., yes, no) on vocational interest score profile elevation among African American mothers receiving welfare? Results of the 2 X 2 factorial ANOVA for both the original and post hoc analyses were non-significant ($p = .255$ and $p = .407$, respectively) for the effect of externalizing maladjustment on profile elevation. Though non-significant, mean profile elevation scores were lower for those with externalizing maladjustment than those without externalizing

maladjustment. More exactly, African American mothers receiving welfare with externalizing maladjustment had mean profile elevation scores that were roughly 10 points lower than those without externalizing maladjustment in both the initial and post hoc analyses.

Results from the current study are in contrast to previous research endeavors wherein higher, not lower, profile elevation scores were suggestive of externalizing maladjustment. As previously discussed, profile elevation has been compared to impulsivity (i.e., Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994), hysteria (i.e., Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994), antisocial personality (i.e., Holland, 1965), behavioral misconduct (i.e., Gottfredson & Jones, 1993), oppositional personality (i.e., Chadick, 2017), and narcissism (i.e., Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994). Where statistical significance has been observed, findings exclusively described positive associations between profile elevation and externalizing forms of maladjustment among adult women.

One possible explanation for why the results in the current study are inconsistent with prior findings relates to differences in the incentive, or disincentive, for sample participation in the assessment process across studies. Whether participants were incentivized or dis-incentivized to participate might have altered the manner in which externalizing maladjustment was expressed or manifested within the study. For example, African American mothers receiving welfare examined in the current study were *required* to participate in the vocational evaluation screening program in order to avoid sanctions on their TANF-based benefits. Because those in the current study were mandated to undergo assessment, and because those with externalizing maladjustment tend to react negatively to social norms and rules, these individuals might have externalized in a fashion that exhibited a degree of noncompliance towards the assessment

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process itself, or the world of work in general, by endorsing fewer items. In contrast, respondents in other studies were presented with an *incentive* for undergoing assessment. For example, Chadick (2017) observed a significant and direct association for oppositional personality and profile elevation among a sample of university students who were offered payment for participation. Therefore, those with externalizing maladjustment in Chadick's (2017) study might have exhibited an *impulsive* endorsement of items instead of expressing an *oppositional* attitude towards items.

Again, however, the results of the two-way ANOVA for the effect of externalizing maladjustment on profile elevation were non-significant in both the initial and post hoc analyses. Thus, the finding that profile elevation scores were approximately 10 points lower for those with externalizing maladjustment could have resulted from chance. Perhaps these findings of non-significance are the result of profile elevation being related to non-pathological personality traits as opposed to psychological maladjustment. As previously discussed, the best evidence from the literature for the meaningfulness of profile elevation is derived from studies (e.g., Bullock & Reardon, 2008; De Fruyt & Mervielde, 1997; Fuller, Holland, & Johnston, 1999) in which profile elevation is shown to correlate positively with certain traits (i.e., Extraversion, Openness, Conscientiousness) as defined in the Five Factor Model (FFM) of personality. Indeed, more research is needed for specifically examining whether profile elevation is related to these FFM personality traits among African American mothers receiving welfare.

Discussion of Findings for Research Question Six

The sixth research question was: What is the interaction between levels of internalizing and externalizing maladjustment on vocational interest score profile elevation among African American mothers receiving welfare? An interaction effect was anticipated, as prior research

efforts suggest that profile elevation has opposing directional relations with the two primary dimensions of psychological maladjustment among adult women. However, results from the 2 X 2 ANOVA in the current study were non-significant for both the original and post hoc analyses ($p = .533$ and $p = .135$, respectively). In other words, the effect one dimension of maladjustment had on interest score profile elevation was independent of levels of the opposing dimension of maladjustment. Regardless, this is the first study in which the interaction effect between the two primary dimensions of psychological maladjustment has been examined for interest score profile elevation.

For the initial analysis, the cell with the highest mean profile elevation was Group 1 (i.e., No Internalizing, No Externalizing) and the cell with the lowest mean profile elevation was Group 2 (i.e., No Internalizing, Yes Externalizing). However, after adjusting the externalizing cut-point for the post hoc analysis, Group 2 had the *highest* mean profile elevation score. These results, though, should be interpreted with caution, as Group 2 in the post hoc analysis contained only 5 cases. Another difference between the original analysis and the post hoc analysis was observed for the group with the lowest mean profile elevation score. In contrast to the original analysis wherein Group 2 had the lowest profile elevation score, the cell with the lowest mean profile elevation in the post hoc analysis was Group 4 (i.e., Yes Internalizing, Yes Externalizing).

Once again, however, these results were non-significant. In sum, these non-significant findings for the effect of internalizing and externalizing maladjustment on profile elevation contradict Holland et al.'s (1994) and Fuller et al.'s (1999) speculation that counselors could use profile elevation as an indicator of psychological maladjustment. Currently, however, counselors

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are without sufficient evidence for justifying an interpretation of psychological maladjustment from profile elevation scores, at least among African American mothers receiving welfare.

Discussion of Psychometric Properties of Instrument Data for Sample

As previously alluded, the psychometric properties of assessment instruments have rarely been examined for African American mothers receiving welfare. To help address this gap, the psychometric properties of instruments used in the current study (i.e., O*NET CIP, GAIN-SS) were examined for the sample ($N = 122$). Ideally, an examination of both reliability and validity for each instrument would have been conducted. However, the evaluation of psychometric properties was limited to the type of data provided in the archival set. For example, the archival data set provided RIASEC scale scores from the O*NET CIP, but was without participant responses for each item, thus prohibiting the ability to conduct the item-by-item analysis required for estimating internal consistency reliability. Nonetheless, the type of data provided in the archival set allowed for the examination of structural validity for the O*NET CIP as well as an estimate of internal consistency reliability for the GAIN-SS. The purpose of this section is to highlight and discuss findings with respect to psychometric properties of instrument data among the current sample of African American mothers receiving welfare.

Structural Validity of the O*NET CIP

For examining the structural validity of the O*NET CIP among the sample of African American mothers receiving welfare, statistical methods and procedures used in Rounds et al.'s (1999) psychometric investigation of the O*NET CIP with the original norming sample were similarly replicated. Correlations between the six RIASEC subscales were measured. These correlations were then compared to Holland's (1997) structural hypothesis (i.e., R-I-A-S-E-C

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ordering and interrelation of types). After examining the correlation matrix, structural validity was further examined using multidimensional scaling (MDS).

Overall, the correlational patterns between RIASEC scale scores approximated those of the hypothesized RIASEC structure. In other words, interest scales that are closer in proximity according to Holland's hexagonal model were more strongly associated than scales that are theoretically further apart. However, analysis did reveal a departure from Holland's calculus assumption with respect to the Enterprising scale. The Enterprising scale was more strongly associated with the Realistic scale than what would be expected from Holland's calculus assumption. This finding closely mirrors results from Rounds et al.'s (1999) investigation of psychometric properties of the O*NET CIP among the original norming sample.

Similar to the above findings, the MDS solution was mostly consistent with the hypothesized structure and ordering of RIASEC types. Once again, however, there was a notable departure from the hypothesized structure with respect to the Enterprising scale, which was located towards the center of the model where it was closer in proximity to the Realistic and Investigative scales than would be expected from Holland's structural hypothesis (see Figure 18). Indeed, issues with the Enterprising scale were similarly observed by instrument developers who investigated the psychometric properties of the O*NET CIP and O*NET IP (paper-pencil version of the CIP) with their respective norming samples (Rounds et al., 1998; Rounds et al., 1999). Authors who developed these instruments suggested that problems of positioning and proximity for the Enterprising scale is likely a result of the diverse range of prestige and educational levels that are represented in its items, "thereby introducing more variability and perhaps less conceptual unity into the Enterprising category" (Rounds et al., 1999, p. 10-11).

Authors referred to the Enterprising scale's failure to conform to Holland's structural hypothesis as *the low-prestige problem* (Rounds et al., 1998, p. 8). More specifically, instrument developers sought to include items for each respective education level or prestige level. Therefore, the O*NET CIP incorporated multiple Enterprising items that are reflective of lower level occupations that may have been confounded, to a large degree, by other RIASEC types. For example, item 57 is represented by "salesperson at a music store," which likely responds not only to the Enterprising scale, but also the Artistic, Social, and Conventional scales (Rounds et al., 1998). In contrast, items at the highest level of training such as item 129 (i.e., "Represent a client in a lawsuit") were less confounded by other RIASEC scales and was more strongly representative of the Enterprising dimension. However, in sum, the O*NET CIP appears to have some structural validity with respect to Holland's calculus assumption among African American mothers receiving welfare. As such, this instrument is recommended for further use with this population.

Reliability Estimates of the GAIN-SS Internalizing and Externalizing Subscreeners

The archival data set for the sample of African American mothers receiving welfare enabled examination of internal consistency reliabilities for the GAIN-SS subscreeners. Internal consistency is often assessed with some form of correlation analysis and refers to whether items within a given inventory or subscale measure the underlying construct they are designed to measure (Heppner et al., 2008). In accordance with *rule-of-thumb* guidelines for describing internal consistency, the Cronbach's alpha test statistic for the internalizing and externalizing subscales of the GAIN-SS were within the *questionable* range for the current sample. In other words, internal consistency estimates for the respective GAIN-SS subscreeners were lower than desired, which is a limitation of the current study that is discussed in the following section of this

chapter. Nonetheless, the internal consistency estimates approached the *acceptable* range, which could be deemed impressive considering the limited number of items used in order to represent entire dimensions of psychological maladjustment. Regardless, counselors should interpret results of the GAIN-SS with caution when administered to African American mothers receiving welfare. Perhaps the full-length version of the GAIN would be more suitable for this client population, as the increased number of items represented in the full GAIN would likely produce higher estimates of internal consistency reliability.

Limitations

Like any other research endeavor, the current study consisted of limitations. These limitations mostly pertain to the research design, sampling, instrumentation, and statistical analyses or methods. Each of these limitations are discussed prior to outlining the implications of study findings.

Limitations of research design. Employed in the current study was a quantitative, *ex post facto* examination of archival data. Accordingly, there are certain threats to validity. First, this research design prohibited the ability to infer cause-effect relationships between variables (Heppner et al., 2008). Causal inferences could not be made in the current examination because time effects were not taken into account like how they are in studies implementing longitudinal or experimental designs (Hulley, Cummings, Browner, Grady, & Newman, 2007). Regardless, the *ex post facto* research design employed in the current study for examining archival data has certain advantages, including low cost and quick results.

A second limitation of the research design pertains to the use of archival information and, thus, issues associated with secondary data analysis. Notably, secondary data analysis was conducted without access to the original O*NET CIP inventories and item-by-item responses

(only scale scores were provided). This lack of access to the original inventories is problematic, as information pertaining to the original surveys were lost, inhibiting an examination of internal consistency reliability. Furthermore, there was the threat of human-made errors with respect to archival data input, or the transferal of data from the original surveys to a computerized information management system. Any such error would be difficult to trace. In ameliorating this threat, competent graduate-level students were hired for handling, securing, and storing data using clear policies and procedures for directing such courses of action.

Limitations of sampling. The current study had limitations with respect to sampling. These limitations involved a lack of random selection, missing data, and the degree of population representativeness. Indeed, the sample was non-randomly selected. Without random selection, the sample could be biased, which threatens the validity of study findings.

In addition to missing random selection, there was missing data. Of a potential 160 participant cases that met demographic-based inclusion criteria for the current study, 38 cases were without complete data for *all* O*NET CIP scores, GAIN-SS scores, or both. As a result, the 38 cases with missing data were removed from the study with listwise deletion, reducing the final sample size to 122 participant cases. Therefore, there is a possibility that the final sample was biased, or significantly different from the 38 cases that were excluded from the study. In addition to potential sampling error or bias, having fewer cases potentially lowered effect sizes and power estimates. Accordingly, imputation of missing data was considered. However, listwise deletion was chosen because it has been demonstrated to outperform mean imputation and regression imputation a medium sample size with a high percentage of missing data is examined with a two-way ANOVA (Cheema, 2014). Furthermore, Cheema (2014) asserted that "missing data imputation is not always an improvement over non-imputation and… some missing data

imputation methods can actually cause more harm than benefit" (p. 70). Simply put, imputing missing data was deemed inappropriate for purposes of the current study because the potential *harms* (bias, error) of imputation outweighed the potential benefits (increased power).

Another sampling limitation in the current study pertains to the representativeness of the sample compared to the population (i.e., African American mothers receiving welfare in North Carolina). More specifically, the sampled data was derived from the Vocational Evaluation (VE) screening results of African American mothers living in Eastern North Carolina. Because there are potentially significant differences between those living in separate regions of the state, a randomized sampling of participants from the entire population would have been better for the generalizability of findings. However, considering the dearth of research pertaining to this population, a study with non-random sampling is an improvement over no such study at all. Furthermore, the demographic data for the sample of African American mothers receiving welfare in North Carolina closely mirrored the characteristics of this population as reported in the literature.

In addition to potentially being unrepresentative of the population based on regional differences within the state, findings from the sample may lack generalizability because it was limited to those: (a) who were referred for the VE screening program; and (b) who *completed* the VE screening program. The sample, consequently, was perhaps underrepresented by African American mothers receiving welfare in North Carolina who were *not* referred for the VE screening program as a result of meeting TANF requirements elsewhere (e.g., through gainful employment). Furthermore, the sample may lack generalizability to the greater population because the African American mothers receiving welfare who began the VE program without completing the program were absent from the study. Simply put, there are potentially significant

differences between those who were and were not referred for VE services, and between those who did and did not complete the VE screening program. Again, however, much of the demographic data for the sample closely resembled that of the population as reported in the TANF-based literature. Thus, confidence was maintained for the sample being representative of the population.

Limitations of instrumentation. There are significant limitations associated with the instruments used in collecting data for the current study. Namely, scores for the O*NET CIP and GAIN-SS rely on methods of self-report. Self-report inventories are highly corruptible to inaccurate or socially desirable responding, which threatens the validity of such data. This threat to validity is especially relevant to the current study, as welfare recipients who completed the VE program were mandated to do so in order to avoid sanctions on their TANF benefits. In other words, the study participants might have been more inclined to respond in a socially desirable manner on the O*NET CIP and GAIN-SS in the current study than individuals who would have completed these inventories voluntarily. Although little can be done with respect to ameliorating inaccurate responding, the self-report method of data collection has certain advantages. For example, self-report inventories reflect *real world* counseling practices in that clinicians commonly use such measures to easily obtain data on clients for diagnosing or better understanding their situation. Furthermore, by allowing clients to provide a personal response to items or questions, the phenomenological perspective is emphasized as well as the ethical notion that clients in counseling are the preeminent experts over their own lives.

In addition to issues of self-report, psychometric properties of the instruments used in the current study were examined among the current sample, exposing limitations related to the reliability or validity of instrument data. Psychometric properties examined for the current

sample were structural validity of O*NET CIP data and internal consistency reliability of GAIN-SS data. Overall, results suggested that O*NET CIP data had evidence of structural validity, consisting of only minor departures from Holland's (1997) calculus assumption, or structural hypothesis. Results from psychometric examination of GAIN-SS data, however, were less promising. Although the GAIN-SS exhibited good-to-excellent internal consistencies among the instrument's original norm group (Dennis, Feeney, & Titus, 2013), Cronbach's alpha for the Internalizing Disorder Subscreener (IDS) and Externalizing Disorder Subscreener (EDS) among the current sample was .68 and .65, respectively. Therefore, internal consistency reliabilities were in the *questionable* range, which could be considered unacceptable for purposes of social science research (Heppner et al., 2008). In other words, the IDS and EDS might not have been measuring accurately enough the underlying constructs they are reported to measure, at least among African American mothers receiving welfare. Thus, the cut-points used for indicating a probable internalizing or externalizing disorder in the current study might have been faulty, threatening the validity of findings.

Ideally, validity of GAIN-SS data would have also been examined for the current sample, but such examination was not made possible with the sort of data provided in the archival data set. The absence of available data for assessing GAIN-SS validity among the sample is especially problematic, as this tool was the only assessment method used for indicating a probable diagnosis. More exactly, the current study used data derived solely from the GAIN-SS for indicating those with and without a diagnosable form of internalizing or externalizing maladjustment. However, in practical settings, counselors and related practitioners are ethically obligated to "use multiple forms of assessment, data, and/or instruments in forming… diagnoses" (ACA Code of Ethics, 2014, p. 11). The use of multiple instruments and methods of data

collection (e.g., interviewing, observation, testing) allows for cross-validation, or corroborating evidence to support any conclusions made regarding a mental or behavioral health disorder to avoid misdiagnoses. Accordingly, there exists a threat to the validity of findings observed in the current study because: (a) only one instrument (GAIN-SS) was used for suggesting psychological maladjustment; and (b) the available data did not allow for psychometric examination of instrument validity.

Another limitation pertaining to instrumentation relates to the sensitivity of GAIN-SS cut-points for indicating those with and without a probable internalizing or externalizing diagnosis. Ideally, instruments used for the purpose of identifying a diagnosable condition exhibit rates of sensitivity (i.e., the instrument's ability to identify accurately those with a disorder) and specificity (i.e., the instrument's ability to identify accurately those without a disorder) of at least 90% (Dennis, Feeney, & Titus, 2013). However, according to the GAIN-SS manual, the cut-points used in the current study for the IDS and EDS subscales of the GAIN-SS do not meet this standard for sensitivity, which is a limitation. With that said, the established cut-points were indeed reported in the manual as exhibiting excellent specificity among adults at 97% for the IDS and 100% for the EDS (Dennis, Feeney, & Titus, 2013).

A final limitation with respect to instrumentation involves the reading level of the O*NET CIP. This instrument requires a sixth-grade reading level for the results to be assumed reliable and valid. Considering that roughly a quarter of the current sample were without a high school diploma, there is a possibility that some participants were unable to read adequately or comprehend items on the O*NET CIP. In potentially mitigating this limitation, African American mothers receiving welfare in the current study were assessed for reading level prior to administration of the interest inventory. Those with a reading level below a sixth-grade

equivalency were provided the option of having the items read aloud by a Navigate Counseling Clinic practitioner.

Limitations of the primary statistical analyses. The primary statistical procedure used to address research questions for the current study was the 2 X 2 factorial ANOVA. In order for the results of a 2 X 2 ANOVA to be considered valid, there are several assumptions that the data must meet (see Chapters Three and Four). If there are violations to one or more of these assumptions, the validity of resultant findings might be considered questionable or inadequate. With respect to the current study, assumptions testing revealed a single violation of assumptions in the initial analyses of research questions (using pre-established GAIN-SS cut-points) and post hoc analyses of research questions (using a heightened GAIN-SS cut-point for externalizing maladjustment), respectively. These violations are discussed, beginning assumptions testing for the initial analysis.

Overall, the data for the initial analyses of research questions generally met the primary assumptions of a two-way ANOVA (i.e., no outliers, a normal distribution of the dependent variable across levels of the independent variables, homogeneity of variance). There was, however, a violation of the normality assumption. More exactly, the dependent, continuous variable of interest differentiation was non-normally distributed across the factor cell labelled Group 4 (i.e., Yes Internalizing, Yes Externalizing). Although this is a noteworthy limitation, the two-way ANOVA is *remarkably robust* against violations of normality (Good & Lunneborg, 2006, p. 41). As demonstrated by Jagers (1980), the F-ratio is quite frequently near exact in situations wherein the data is non-normal. Therefore, confidence was maintained for the accuracy of results observed in the current study.

In contrast to data in the original analysis of research questions, the data in the post hoc analyses of research questions indicated normal distributions of dependent variables (differentiation, profile elevation) across each level of the independent variables. However, the assumption of no outliers went unmet. More specifically, Group 2 (i.e., No Internalizing, Yes Externalizing) contained 2 outliers with respect to interest score differentiation. Indeed, outliers can skew the results of an ANOVA and is therefore a significant limitation of the current study. Furthermore, Group 2 failed to meet the *rule of thumb* concerning minimum cell count. The limited number of cases that comprised this group may have decreased effect sizes and power estimates. Nevertheless, the data met assumptions adequately enough to proceed with post hoc analyses of research questions.

Implications and Contributions

Despite the previously described limitations, findings from the current study have several contributions and implications for the fields of counseling, vocational psychology, and counselor education. These contributions and implications mostly pertain to matters of practical and ethical importance. Discussed below are such contributions and implications that are relevant to counseling practitioners, educators, and researchers.

Practical Implications for Counselors

As previously discussed, counselors have long been known to infer psychological maladjustment from vocational interest score differentiation and profile elevation (Gottfredson & Jones, 1993). Considering the empirical evidence that counselors also have a tendency to over-pathologize impoverished African Americans (Suite et al., 2007), the practice of inferring psychological maladjustment from vocational interest scores could be more pronounced among clients who are African American mothers receiving welfare. However, as a consequence of

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findings from the current study, counselors have empirical evidence against identifying psychological maladjustment as a valid interpretation of low interest score differentiation and profile elevation with this client population. More specifically, Tables 15 and 24 provide counselors with mean scores for vocational interest differentiation and profile elevation across four groups of African American mothers receiving welfare: (1) those without internalizing and externalizing maladjustment; (2) those without internalizing maladjustment, but with externalizing maladjustment; (3) those with internalizing maladjustment, but without externalizing maladjustment; and (4) those with both internalizing and externalizing maladjustment. Results from the series of 2 X 2 ANOVAs indicated that the two dimensions of psychological maladjustment (i.e., internalizing, externalizing) accounted for a *clinically* non-significant amount of variance in both differentiation and profile elevation. Accordingly, counselors are without sufficient empirical evidence for interpreting psychological maladjustment from these vocational interest constructs, at least among African American mothers receiving welfare.

If the findings from the current study are made known to the field, then counselors and administrators could expend clinical resources in a more efficient manner. Whereas counselors may before have felt a duty to refer African American mothers receiving welfare for further mental health assessment or treatment based on low scores for secondary interest constructs (which would be in accordance with Holland's [1994] diagnostic scheme), this study's findings suggested that such a plan of action would be empirically unfounded. Considering that counselors are ethically obligated to interpret assessment results in a manner that is consistent with research evidence (ACA, 2014), findings from the current study indicated that counselors should refrain from referring African American mothers receiving welfare for

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additional mental health assessment or treatment on the basis of their vocational interest score differentiation and profile elevation. This interpretation, if followed, could make scarce clinical resources more available to those who truly need help with overcoming psychological maladjustment, and also help practitioners avoid the traditional pitfalls (e.g., heightened mistrust with the mental health system) associated with referring African American women for unwarranted mental or behavioral health services.

In addition to the implications of findings with respect to primary research questions, the descriptive statistics provided in the current study have practical implications that could improve counseling-based services to African American mothers receiving welfare. For example, the mean vocational interest scores across RIASEC-based scales as measured with the O*NET CIP were reported for each of the following four groups of African American mothers receiving welfare: (1) those without both internalizing and externalizing maladjustment; (2) those without internalizing maladjustment, but with externalizing maladjustment; (3) those with internalizing maladjustment, but without externalizing maladjustment; and (4) those with both internalizing and externalizing maladjustment. Results indicated marginal differences between the four groups in terms of mean vocational interest scores. In other words, psychological maladjustment appeared to have little influence on vocational interest assessment results among African American mothers receiving welfare.

This observation is particularly relevant to mental health counselors who struggle in determining the appropriateness of referring a client with psychological maladjustment for vocational interest assessment. Indeed, there is ongoing debate as to whether clients with psychological maladjustment would benefit from vocational interest assessment. For example, some counselors might argue that a client who is significantly depressed or anxious would not

benefit from vocational interest assessment without first managing the disorder, as someone with these internalizing forms of maladjustment are posited as having a distorted or *blurred* perception of their interests. However, results from the current study indicated that African American mothers receiving welfare generally had well-defined interest score patterns, regardless of maladjustment type or level. In fact, those with higher interest score differentiation were more prone to internalizing maladjustment. Therefore, mental health counselors are encouraged to refer clients with psychological maladjustment for career assessment services if the client so desires, as obtaining employment that is consistent with the individual's interests might help alleviate the client's degree of psychological maladjustment (Murphy & Athanasou, 1999).

Another practical implication of the descriptive statistics for mean vocational interest scores across RIASEC-based scales is for career counseling practitioners and administrators of job placement services. African American mothers receiving welfare tended to endorse items in the Social, Enterprising, and Conventional scales more frequently than they endorsed items in the Realistic, Investigative, and Artistic scales. Thus, counselors are equipped with knowing that African American mothers receiving welfare in North Carolina, as a population, are more likely to achieve job satisfaction, stability, and achievement in work environments that are Social, Enterprising, or Conventional. Counselors and counseling administrators who deliver services to African American mothers receiving welfare are encouraged to tailor or prepare interventions and strategies in accordance with these Holland codes to enhance occupational outcomes for these clients (see Reardon and Lenz [2015] for a list of interventions based on RIASEC type). Developing training programs or employment opportunities in work environments that are

Social, Enterprising, or Conventional for these clients would also be wise based on results of the current study.

Ethical Implications for Counselors

In addition to practical contributions regarding the efficiency and effectiveness of services provided to African American mothers receiving welfare, the current study has ethical contributions for counselors. Most notably, findings from the current study can be used to enhance multicultural competence of counselors in terms of assessing vocational interest among African American mothers receiving welfare. Multicultural competence, more exactly, refers to the application of diversity awareness and knowledge of effective service delivery to clients and client groups that vary in terms of demographic variables (ACA, 2014, p. 20). Towards this end, counselors are expected to "recognize the effects of… gender, race… and socioeconomic status on test administration and interpretation" (ACA, 2014, p. 11). Indeed, the American Counseling Association (ACA) 2014 Code of Ethics strongly emphasize multicultural competence in assessment. Prior to the current study, however, career assessment instruments and their conceptual underpinnings had rarely, if ever, been validated for African American mothers receiving welfare. Consequently, counselors were without the empirical evidence needed in order to understand the appropriateness of Holland's (1997) theory and related instruments with this client population. This lack of research has also been problematic because counselors with multicultural competence are expected to understand the psychometric data of instruments for different client populations (Drummond, Sheperis, & Jones, 2016). Without such an understanding, counselors are at risk of administering instruments that are unreliable and inaccurate for the client's demographic group, leading to ineffective treatments or unnecessary courses of action with respect to the counseling process.

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As a result of this study, counselors can enhance their multicultural competence with respect to assessing African American mothers receiving welfare by analyzing results related to research questions, descriptive statistics, and psychometric properties of instrument data among the current sample. Although Holland's (1997) theoretical assumptions pertaining to differentiation, profile elevation, and psychological maladjustment were mostly unsupported in the current study, the theorist's structural hypothesis (i.e., calculus assumption) was validated among the sample of African American mothers receiving welfare. More specifically, results from the multidimensional scaling (MDS) of data collected from the O*NET CIP indicated that interest scores of African American mothers receiving welfare closely approximated the RIASEC ordering and hexagonal proximity of types (see Figure 18). Therefore, the O*NET CIP can be considered an appropriate instrument for counselors aiming to select an interest inventory that is at least partially validated among African American mothers receiving welfare. In addition to these implications for counseling practitioners, there are contributions from the current study for counseling educators.

Implications for Counseling Educators

Because of the current study, counseling educators now have empirical, population-specific research evidence that can be used for teaching aspiring counselors about a client group, African American mothers receiving welfare, with respect to psychological maladjustment and vocational interest assessment. There are numerous topics covered in the current study that could be used as content for lecture or as points for discussion in order to enhance students' understanding. These content areas or discussion points for educators include, but are not limited to, the following:

- Issues of multicultural competence and diversity awareness in the assessment of African American mothers receiving welfare;

- Applicability of Holland's (1997) core theoretical assumptions among African American mothers receiving welfare;

- Suitability of the O*NET CIP for assessing the vocational interests of African American mothers receiving welfare;

- Interpretability of vocational interest score differentiation;

- Interpretability of vocational interest score profile elevation;

- Appropriateness of vocational interest assessment among those with psychological maladjustment;

- Appropriateness of the GAIN-SS for assessing psychological maladjustment among African American mothers receiving welfare;

- Rates of internalizing and externalizing maladjustment among African American mothers receiving welfare;

- Effective counseling-based strategies or interventions for helping clients address internalizing and externalizing maladjustment, respectively.

In addition to using results of the current study to foster learning, educators are encouraged to provide graduate-level students the opportunity to exercise counseling-based practices and assessment strategies among adults receiving welfare. More specifically, academic administrators are recommended to pursue grants and other resources to develop an on-campus clinic that provides accessible services to adults on welfare. For universities that already have an established clinic for purposes of student training and research, administrators are recommended to contact local TANF offices and explore the possibility of serving those in receipt of welfare.

Such action on behalf of administrators could serve to enhance student competency with respect to serving a disadvantaged client group. Furthermore, such action could lead to more research and understanding of how counselors can best help adults on welfare achieve their desired vocational and psychosocial outcomes.

Implications for Counseling Researchers

In addition to counselors and counseling educators, findings from the current study have several implications for counseling researchers. These implications mostly pertain to research gaps that have been addressed with the current study and are most relevant for researchers aiming to examine the relationships between psychological maladjustment and Holland's secondary interest constructs of differentiation and profile elevation. As discussed below, implications pertain to: (a) the vocational literature on African American mothers receiving welfare; (b) the literature on maladjustment and interest score differentiation; and (c) the literature on maladjustment and interest score profile elevation.

Vocational Literature on African American mothers receiving welfare. Prior to the current study, the literature in which African American mothers receiving welfare had been examined through the conceptual prism of a career theory consisted of only one study, a dissertation by Russell (2005). The contribution the current study makes to such a limited body of literature helps establish a scholarly line of inquiry that is needed for improving counseling services and outcomes for the client population in question. Researchers can expand upon a number of findings reported in this study about African American mothers receiving welfare, including, but not limited to, the following topics: (1) demographic variables in relation to interest differentiation and profile elevation; (2) mean interest scores across O*NET CIP scales; (3) primary RIASEC-based interest types; (4) incidence of internalizing and externalizing

maladjustment among the population; (5) the influence of internalizing and externalizing maladjustment on vocational interest constructs; and (6) psychometric properties of the O*NET CIP and GAIN-SS. Findings related to these topics as reported in the current study provide a foundation for a wealth of future research regarding the career development of African American mothers receiving welfare. Specific recommendations for such research are outlined in a later section of this chapter.

Literature on maladjustment and differentiation. Prior to the current research endeavor, the literature contained six studies wherein the relationships between psychological maladjustment and vocational interest score differentiation were examined (Buboltz & Woller, 1998; Chason, 2010; Davis, 2007; Gottfredson & Jones, 1993; Hartley, 2009; Loughead & Reardon, 1989). Across these studies, reported findings were almost exclusively non-significant. However, with the exception of Gottfredson & Jones (1993) who compared differentiation to externalizing forms of maladjustment, these researchers operationalized differentiation in a manner that is inconsistent with Holland's (1968, 1994) recommendation of taking the difference between the respondent's highest and lowest RIASEC scale scores. The use of differentiation indices that are alternative to Holland's recommendation has been problematic. More specifically, counselors are instructed in major interest inventory manuals to compute differentiation using Holland's (1968, 1994) high-low index (e.g., SDS, Holland, Fritzsche, & Powell, 1994). In other words, researchers examining the influence of internalizing maladjustment on vocational interest scores had yet to operationalize differentiation the way it is computed and interpreted in practical settings.

This gap in research was addressed with the current study, which was the first to examine internalizing maladjustment in relation to Holland's (1968, 1994) high-low index of

differentiation. Contrary to the popular assumption among counselors that low differentiation scores are suggestive of maladjustment (Gottfredson & Jones, 1993), results from the current study indicated that *higher*, not lower, interest score differentiation was indicative of internalizing maladjustment among the sample. Because there was a significant finding observed for internalizing maladjustment, researchers in subsequent studies related to this topic are further justified in operationally defining differentiation using Holland's (1968, 1994) high-low index.

In addition to concerns of how differentiation has traditionally been operationalized in the literature, there was a problem with how two of the relevant peer-reviewed studies (i.e., Buboltz & Woller, 1998; Loughead & Reardon, 1989) conceptualized psychological maladjustment. More specifically, these researchers confounded the two primary dimensions of psychological maladjustment, as scale scores for symptoms of internalizing and externalizing maladjustment were unified into a single composite score for representing the overarching construct of *psychological maladjustment*. However, this decision is problematic, as differentiation is theoretically linked to internalizing maladjustment more so than externalizing maladjustment. As a result, potentially significant findings for differentiation and internalizing maladjustment in the aforementioned peer-reviewed studies were perhaps confounded by non-significant relations with the externalizing scales also used in producing composite scores. Therefore, the literature contained a gap in research regarding the isolated effect each dimension of psychological maladjustment had on interest score differentiation until the current study. Indeed, findings supported the notion that differentiation is linked to internalizing maladjustment, but unrelated to externalizing maladjustment.

The current study is the first in which the influence of the two respective dimensions of psychological maladjustment (internalizing, externalizing) were examined in relation to

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vocational interest score differentiation. Distinguishing the two disorder dimensions in the current study enabled observation of the previously mentioned significant effect of internalizing maladjustment on Holland's (1968, 1994) high-low index. If the GAIN-SS subscales had instead been confounded into a single composite score for representing the overarching construct of psychological maladjustment (as had been done in prior studies), the significant finding would likely have been lost. Thus, such an approach for operationally defining the construct of psychological maladjustment would have provided minimal information about the true relationships between these variables. Therefore, researchers are justified in distinguishing psychological maladjustment in terms of internalizing and externalizing disorders in future examinations of Holland-based interest constructs, including profile elevation.

Literature on maladjustment and profile elevation. A clear interpretation for profile elevation as it relates to psychological maladjustment has been difficult for scholars to establish, but distinguishing psychological maladjustment in terms of the two primary disorder dimensions in the current study helped to organize the voluminous literature pertaining to the clinical interpretability of this vocational interest construct. For example, researchers have linked profile elevation to a myriad of mental or behavioral health disorders. However, findings are equivocal and non-exclusively significant. When significance has been observed, the strength of associations are fluctuated, ranging from weak to moderate correlations. More evident, though, has been the nature of associations (i.e., direct, inverse) between profile elevation and the two primary disorder dimensions. Whereas profile elevation has generally exhibited inverse (i.e., negative) associations with symptoms of internalizing maladjustment, the vocational interest construct has typically had direct (i.e., positive) associations with symptoms along the externalizing spectrum of maladjustment, particularly among women. This observation was

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made explicit, for the first time, with the literature review contained in the current study. In this manner, the current study has helped to distinguish or organize the literature on profile elevation and psychological maladjustment, ultimately helping researchers to understand the meaningfulness of this interest construct.

In addition to helping conceptualize the profile elevation literature as it relates to maladjustment, the current study helped address research gaps. Efforts made in the current study broadened the scope of profile elevation research to involve African American mothers receiving welfare. Furthermore, the current study represents the first in which an interaction effect between internalizing and externalizing maladjustment was examined for profile elevation. Although statistically non-significant, findings indicated that profile elevation is inversely associated with both internalizing and externalizing maladjustment, at least among African American mothers receiving welfare. Indeed, the findings are consistent with previous research trends for internalizing disorders, but inconsistent with such trends for externalizing disorders. More specifically, findings from the current study indicated that *lower* as opposed to higher profile elevation scores were evident among those with externalizing maladjustment. Once again, however, this relationship was non-significant and could have resulted from chance. Regardless, the current study added a degree of both organization as well as nuance to the existing body of literature for researchers to build upon in future scholarly efforts to unveil the meaningfulness of profile elevation. Specific recommendations for such future research are discussed in the following section.

Recommendations for Future Research

There is a multitude of recommendations for future research that can be made on the basis of findings observed in this study. However, in remaining loyal to the scope of the current

research endeavor, recommendations hereafter are specifically provided to scholars aiming to examine the relationships between psychological maladjustment and the vocational interest constructs of differentiation and profile elevation. Recommendations are explained for future scholarship pertaining to: (a) psychological maladjustment in relation to vocational interest score differentiation; and (b) psychological maladjustment in relation to vocational interest score profile elevation.

Recommendations for Comparing Maladjustment to Differentiation Scores

The purpose of the current study was to examine the influence of internalizing and externalizing maladjustment on Holland-based interest score differentiation and profile elevation, respectively, among African American mothers receiving welfare. From this examination, the only statistically significant finding observed was for the effect of internalizing maladjustment on Holland's (1968, 1994) high-low index of differentiation. Although the internalizing dimension of maladjustment had a direct effect on differentiation, the specific type of internalizing disorder or symptom most responsible for this effect remains unclear. Therefore, researchers are encouraged to investigate Holland's (1968, 1994) high-low index in relation to common and specifically defined internalizing disorders such as anxiety or depression. Indeed, previous examinations along this line of inquiry have mostly yielded non-significant results among other samples; however, in none of these previous studies was differentiation made operational using Holland's (1968, 1994) high-low index.

The statistically significant result for internalizing maladjustment having a significant effect on differentiation partially supported the common assumption that these variables are linked; however, the directional nature of the relationship contradicts Holland's (1985) more specific assertion. Whereas Holland (1985) posited that *lower* interest score differentiation is

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indicative of psychological maladjustment, results from the current study indicated that *higher* interest score differentiation was suggestive of internalizing maladjustment. This discrepancy raises an important question regarding Holland's theory: Is internalizing maladjustment *directly* related to Holland's (1968, 1994) high-low index across populations?

Indeed, more research is needed to examine whether the direct relationship observed in the current study is idiosyncratic to African American mothers receiving welfare, or if this phenomenon is observable among groups that vary in terms of sex, race, and socioeconomic status. If well-differentiated interest profiles are indeed suggestive of psychological maladjustment for more affluent populations in addition to other economically disadvantaged populations, then Holland's theoretical assumptions pertaining to differentiation and maladjustment are in need of revision.

A final consideration for studying interest score differentiation as it relates to maladjustment among African American mothers receiving welfare involves a variable that was absent from the current study, but is in need of attention in subsequent scholarship. More specifically, researchers should make an effort to determine the point in time in which mothers on welfare are assessed (for psychological maladjustment and vocational interests) relative to when their welfare benefits are due for termination. As previously mentioned, those with internalizing maladjustment had higher differentiation scores than those without internalizing maladjustment. However, a possibility remains that these mothers with higher interest score differentiation were nearing the end of their two-year cap on benefits, contributing to feelings of anxiousness or depression about the prospects of having to become economically self-sufficient through employment. Concurrently, the process of transitioning from welfare benefits to economic independent via employment could have prompted these mothers to respond to the

O*NET CIP in a more earnest and discerning fashion, ultimately leading to a more highly distinct or differentiated interest score pattern. This explanation of a time-related, mediating variable for the observed effect of internalizing maladjustment on differentiation is conjecture, which is exactly why further examination is needed.

Recommendations for Comparing Maladjustment to Profile Elevation Scores

Among the more important findings from the current study relates to the non-significant effect of externalizing maladjustment on profile elevation. Though non-significant, mean profile elevation scores were lower for those with externalizing maladjustment than those without externalizing maladjustment. More exactly, African American mothers receiving welfare who were identified as having a probable externalizing disorder in both the initial and post hoc analyses had an average profile elevation score that was approximately 9 points lower than those without externalizing maladjustment.

Although these findings partially support the notion that lower profile elevation scores are indicative of psychological maladjustment, results from the current study are in contrast to previous research endeavors wherein higher, not lower, profile elevation scores were found to be suggestive of externalizing maladjustment among adult women. As previously discussed, profile elevation has been compared to impulsivity (i.e., Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994), hysteria (i.e., Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994), antisocial personality (i.e., Holland, 1965), behavioral misconduct (i.e., Gottfredson & Jones, 1993), oppositional personality (i.e., Chadick, 2017), and narcissism (i.e., Fuller, Holland, & Johnston, 1999; Holland, Johnston, & Asama, 1994). Where statistical significance has been observed, findings exclusively described positive associations between profile elevation and externalizing forms of maladjustment among adult women.

One possible explanation for why the results in the current study are inconsistent with prior findings is related to differences in the incentive, or disincentive, for sample participation between studies. Whether participants were incentivized or dis-incentivized to participate might have altered the manner in which externalizing maladjustment was expressed or manifested within the study. For example, African American mothers receiving welfare for purposes of the current examination were *required* to participate in the vocational evaluation (VE) screening program in order to avoid sanctions on their TANF-based benefits. Because those in the current study were mandated to undergo assessment, and because those with externalizing maladjustment tend to react negatively to social norms and rules, these individuals might have externalized in a fashion that resembles a degree of noncompliance towards the assessment process itself, or the world of work in general, by endorsing fewer items. In contrast, respondents in other studies were presented with an *incentive* for undergoing assessment. For example, Chadick (2017) observed a significant and direct association for oppositional personality and profile elevation among a sample of university students who were offered payment for participation. Therefore, those with externalizing maladjustment in Chadick's (2017) study might have exhibited an *impulsive* endorsement of items instead of expressing an *oppositional* attitude towards the assessment process (impulsivity is a comorbid symptom of oppositional defiance and related conduct disorders).

Indeed, more research is needed in order to substantiate such an explanation of these seemingly contradictory findings between the current study and prior research showing a direct association with forms of externalizing maladjustment among women. Thus, researchers are recommended to employ a research design wherein women with externalizing maladjustment are assigned to an incentive group and a disincentive group for participating in vocational interest

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assessment. The incentive group would be posited by this researcher as having significantly higher profile elevation scores than the disincentive group for the reasons previously discussed. Confirming such a hypothesis would further enhance the clinical interpretability of profile elevation as it relates to psychological maladjustment.

Conclusion

The purpose of this study was to examine the influence of internalizing and externalizing maladjustment on vocational interest score differentiation and profile elevation among a sample (N = 122) African American mothers receiving welfare. Towards this end, six research questions were developed and analyzed using a series of 2 X 2 ANOVAs. In addition to addressing research questions, descriptive statistics were reported for RIASEC-based O*NET CIP scale scores and primary Holland codes. Furthermore, psychometric properties were evaluated for the O*NET CIP and GAIN-SS data among the sample. All findings were discussed, including (a) limitations, (b) implications, and (c) recommendations for future research.

There were multiple limitations identified in the current study. These limitations were relevant to the research design, sampling procedure, instrumentation, and statistical analyses. The research design employed in the current study was a quantitative, *ex post facto* examination of archival data. Accordingly, limitations included issues related to secondary data analysis and the inability to make causal inferences. Regarding the sampling procedure, limitations involved the generalizability of findings as well as bias that may have occurred from a listwise deletion of missing data. Limitations to instrumentation mostly pertained to issues of self-report measures, psychometric properties as examined among the current sample, and the use of only one instrument for indicating a diagnostic impression. Lastly, limitations regarding statistical analyses of research questions included a violation 2 X 2 ANOVA assumptions in the initial

analysis and post hoc analysis, respectively. Additionally, for the post hoc analysis, one of the groups as defined by levels of the independent factors failed to meet *a rule of thumb* for minimum cell counts.

Although there were limitations, findings from the current study have critical implications for counseling practitioners, educators, and researchers. As previously discussed, counselors have long been known to infer psychological maladjustment from vocational interest score differentiation and profile elevation (Gottfredson & Jones, 1993). Considering the empirical evidence that counselors also have a tendency to over-pathologize disadvantaged African Americans (Suite et al., 2007), the practice of inferring psychological maladjustment from vocational interest scores could be more pronounced among clients who are African American mothers receiving welfare. However, as a consequence of findings from the current study, counselors appear to have empirical evidence against identifying psychological maladjustment as a valid interpretation of low interest score differentiation and profile elevation with this client population.

Furthermore, results from the descriptive data on mean RIASEC-based O*NET CIP scale scores indicated marginal differences between the four maladjustment groups in terms of vocational interest scores. This observation is particularly relevant to mental health counselors who struggle in determining the appropriateness of vocational interest assessment among clients with psychological maladjustment. For example, some counselors might argue that a client who is depressed or anxious would not benefit from interest assessment without first managing the disorder, as someone with these internalizing forms of maladjustment might have a distorted or *blurred* perception of their interests. However, results from the current study indicated that African American mothers receiving welfare generally had well-defined interest score patterns,

regardless of maladjustment type or level. Therefore, mental health counselors are encouraged to refer clients with psychological maladjustment for career assessment services if the client so desires, as obtaining employment that is consistent with the individual's interests might help alleviate the client's degree of psychological maladjustment (Murphy & Athanasou, 1999).

Findings from the current study also have theoretical implications. More specifically, there was a statistically significant main effect observed for the influence of internalizing maladjustment on vocational interest score differentiation. This finding contradicts the theoretical assumption that *lower* differentiation scores are indicative of clients with psychological maladjustment, as results indicated that *higher* interest score differentiation was suggestive of internalizing maladjustment (see the section of this chapter entitled "Discussion of Findings for Research Question One" for a plausible explanation of this unexpected finding). This discrepancy raises an important question regarding Holland's theory: Is internalizing maladjustment *directly* related to Holland's (1968, 1994) high-low index across populations? Researchers who previously examined the topic among more diverse sample sets have mostly observed non-significant findings for the relationship between internalizing symptoms and interest score differentiation (e.g., Davis, 2007, Hartley, 2009). However, none of these researchers used Holland's (1968, 1994) high-low index for operationally defining interest score differentiation. Therefore, a *significant and direct* relationship between internalizing maladjustment and Holland's (1968, 1994) high-low index remains a possibility across all populations.

Researchers, therefore, are recommended to examine whether the statistically significant main effect observed in the current study is idiosyncratic to African American mothers receiving welfare, or if this phenomenon can be observed among groups that vary in terms of sex, race, and

socioeconomic status. If well-differentiated interest profiles are indeed suggestive of internalizing maladjustment for more affluent populations in addition to other economically disadvantaged populations, then Holland's theoretical assumptions pertaining to differentiation and maladjustment are in need of revision. Researchers aiming to examine the relationships between vocational interest constructs and psychological maladjustment are encouraged to use Holland's (1968, 1994) index for computing differentiation. Furthermore, researchers are encouraged to operationally define aspects of psychological maladjustment in terms of either: (a) the primary dimensions of internalizing and externalizing, or (b) specifically defined mental health disorders (e.g., anxiety, depression).

Lastly, researchers are encouraged to expand upon the literature in which African American mothers receiving welfare are investigated in context of a career theory. Currently, research along this line of inquiry consists entirely of the current study as well as Russell's (2005) examination. More scholarship is needed in which common career assessment instruments, constructs, and their theoretical underpinnings are examined among African American mothers receiving welfare. Such research would not only serve to enhance multicultural competence among counselors, but also serve to help a client population that is in need of proper assistance in vocational and mental health settings.

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East Carolina University

Informed Consent to Participate in Research
Information to consider before taking part in research that has no more than minimal risk.

Title of Research Study: Effects of Counseling Interventions with Clients Receiving Counseling at the Navigate Clinic
Principal Investigator: Stephen Leierer, PhD
Institution/Department or Division: Department of Addictions and Rehabilitation Studies
Address: 4410 Health Sciences Building, Mail Stop 677, East Carolina University, Greenville, NC 27858
Telephone #: (252) 744-0328

Researchers at East Carolina University (ECU) and the Navigate Counseling Clinic in the Department of Addictions and Rehabilitation Studies study problems in society, health problems, environmental problems, behavior problems and the human condition. Our goal is to try to find ways to improve the lives of you and others. To do this, we need the help of volunteers who are willing to take part in research.

Why is this research being done?
The purpose of this research is to evaluate the effectiveness of counseling services as provided by the Navigate Counseling Clinic. The decision to take part in this research is yours to make. By doing this research, we hope to learn more about counseling outcomes and processes including client attendance, therapeutic homework completion, and client satisfaction with counseling services.

Why am I being invited to take part in this research?
You are being invited to take part in this research because you have chosen to receive counseling related services at the Navigate Counseling Clinic. If you volunteer to take part in this research, you will be one of an estimated 200 people to do so from the Navigate Counseling Clinic.

Are there reasons I should not take part in this research?
I understand I should not volunteer for this study if I am under 18 years of age, am seeking couples counseling, medically unstable, or am actively experiencing psychotic symptoms (e.g. delusions, hallucinations).

What other choices do I have if I do not take part in this research?
You can choose not to participate. If you choose not to participate, you can continue to receive services from the Navigate Counseling Clinic.

Where is the research going to take place and how long will it last?
The research procedures will be conducted at the Navigate Counseling Clinic on the 4th floor of the Allied Health Building and at the Brody School of Medicine in the Department of Obstetrics and Gynecology. You will need to come to Room 4410 at your scheduled counseling appointment during the study in the Allied Health Building or to Module B in the Department of Obstetrics and Gynecology if you are a

pregnant woman with a history of substance use. An estimated two hours of services is expected beyond normally scheduled counseling. Counseling will begin and end based on individual client needs. The total amount of time you will be asked to volunteer for this study is approximately two hours for research and evaluation activities beyond normally conducted counseling.

What will I be asked to do?
You are being asked to do the following:
- Complete the GAIN assessment during intake to the counseling clinic. The GAIN is a verbally administered assessment containing questions on one's history pertinent to counseling including school, career, life stressors, crime/violence, substance use, life satisfaction, physical and mental health, and risky behavior.
- Complete the GAIN assessment following discharge.
- Participate in counseling sessions in which the counselor is video recorded. As a client, only voice will be recorded.
- A client may opt out of participation in research (video recording) while still receiving counseling services. All clients regardless of research participation will be administered the GAIN as part of an intake assessment.
- Video recordings will be collected and stored via a fully HIPAA compliant, encrypted, and password protected video recording system.
- GAIN Data Management Services (Chestnut Health Systems, 448 Wylie Drive, Normal, IL) will have access to your de-identified data.

What possible harms or discomforts might I experience if I take part in the research?
It has been determined that the risks associated with this research are no more than what you would experience in everyday life.

What are the possible benefits I may experience from taking part in this research?
We do not know if you will get any benefits by taking part in this study. This research might help us learn more about how counseling services work to benefit clients. There may be no personal benefit from your participation beyond that normally received from counseling related services, but the information gained by doing this research may help others in the future.

Will I be paid for taking part in this research?
We will not be able to pay you for the time you volunteer while being in this study.

What will it cost me to take part in this research?
You will be asked to pay for counseling services based on a sliding scale fee. Should you be unemployed or unable to pay, you will not be turned away for services.

Who will know that I took part in this research and learn personal information about me?
To do this research, ECU and the people and organizations listed below may know that you took part in this research and may see information about you that is normally kept private. With your permission, these people may use your private information to do this research:
- Any agency of the federal, state, or local government that regulates human research. This includes the Department of Health and Human Services (DHHS), the North Carolina Department of Health, and the Office for Human Research Protections.
- The University & Medical Center Institutional Review Board (UMCIRB) and its staff, who have responsibility for overseeing your welfare during this research, and other ECU staff who oversee this research.

How will you keep the information you collect about me secure? How long will you keep it?
Recordings will be kept until the study is closed at which point all recordings will be completely erased from the video recording system. Video recordings will be used only for research and clinical supervision purposes. Client paperwork and records will be stored in a locked filing cabinet with access given only to clinic staff. GAIN data will be stored in encrypted HIPAA compliant form.

What if I decide I do not want to continue in this research?
If you decide you no longer want to be in this research after it has already started, you may stop at any time. You will not be penalized or criticized for stopping. You will not lose any benefits that you should normally receive.

Who should I contact if I have questions?
The people conducting this study will be available to answer any questions concerning this research, now or in the future. You may contact the Principal Investigator, Stephen Leierer, PhD, at (252) 744-6298, Monday-Thursday, 7am-9am.

If you have questions about your rights as someone taking part in research, you may call the Office for Human Research Integrity (OHRI) at phone number 252-744-2914 (days, 8:00 am-5:00 pm). If you would like to report a complaint or concern about this research study, you may call the Director of the OHRI, at 252-744-1971

I have decided I want to take part in this research. What should I do now?
The person obtaining informed consent will ask you to read the following and if you agree, you should sign this form:

- I have read (or had read to me) all of the above information.
- I have had an opportunity to ask questions about things in this research I did not understand and have received satisfactory answers.
- I know that I can stop taking part in this study at any time.
- By signing this informed consent form, I am not giving up any of my rights.
- I have been given a copy of this consent document, and it is mine to keep.

_____   _____
Participant's Name (PRINT)   **Signature**   **Date**

- **Person Obtaining Informed Consent**: I have conducted the initial informed consent process. I have orally reviewed the contents of the consent document with the person who has signed above, and answered all of the person's questions about the research.

_____
Person Obtaining Consent (PRINT)   **Signature**   **Date**

_____
Principal Investigator   (PRINT)   **Signature**   **Date**
(If other than person obtaining informed consent)

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board
4N-64 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** ·
www.ecu.edu/ORIC/irb

Notification of Continuing Review Approval: Expedited

From: Biomedical IRB
To: Stephen Leierer
CC:

Date: 7/2/2019
Re: CR00007819
            UMCIRB 12-000419
            Effects of Counseling Interventions with Clients Receiving Counseling at the Navigate Clinic

The continuing review of your expedited study was approved. Approval of the study and any consent form(s) is for the period of 7/1/2019 to 6/30/2020. This research study is eligible for review under expedited category #5,6,7. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

GAIN CLIENT SATISFACTION 1.0.3(0.01)	Standardized/Non-Standardized Instruments/Measures
GAIN TxSI(0.01)	Surveys and Questionnaires
GAIN)SHORT_SCREENER_2.0.3(0.01)	Standardized/Non-Standardized Instruments/Measures
GAIN-Q3-Standard(0.01)	Surveys and Questionnaires
GAIN-Q3-Standard(0.01)	Standardized/Non-Standardized Instruments/Measures
GAIN-SS(0.01)	Surveys and Questionnaires
GPRA Tool.docx(0.01)	Surveys and Questionnaires
Group Intake Demographics Using GAIN-Q(0.01)	Interview/Focus Group Scripts/Questions
Navigate main site informed consent(0.02)	Consent Forms
Navigate MCT Focus Interview(0.01)	Interview/Focus Group Scripts/Questions
Navigate MCT Focus Interview Follow-Up(0.01)	Interview/Focus Group Scripts/Questions
Navigate MCT specific protocol Oct 2014(0.03)	Study Protocol or Grant Application
Navigate-MCT informed consent revised OCt 2013(0.02)	Consent Forms
Neurobehavioral Symptom Inventory(0.01)	Surveys and Questionnaires
Neurobehavioral Symptom Inventory(0.01)	Standardized/Non-Standardized Instruments/Measures
ORNC RR specific protocol 05152013.docx(0.01)	Study Protocol or Grant Application
ORNC: R&R informed consent(0.01)	Consent Forms

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

GAIN Short Screener (GAIN-SS)
Version [GVER]: GAIN-SS ver. 3.0.1

What is your name? a._____ b. _____ c. _____
(First name)   (M.I.)   (Last name)

What is today's date? (MM/DD/YYYY) |__|__| / |__|__| / 20 |__|__|

The following questions are about common psychological, behavioral, and personal problems. These problems are considered **significant** when you have them for two or more weeks, when they keep coming back, when they keep you from meeting your responsibilities, or when they make you feel like you can't go on. After each of the following questions, please tell us the last time, if ever, you had the problem by answering whether it was in the past month, 2 to 3 months ago, 4 to 12 months ago, 1 or more years ago, or never.	Past month	2 to 3 months ago	4 to 12 months ago	1+ years ago	Never
	4	3	2	1	0

IDScr 1. **When was the last time** that you had **significant** problems with…
a. feeling very trapped, lonely, sad, blue, depressed, or hopeless about the future?.....4   3   2   1   0
b. sleep trouble, such as bad dreams, sleeping restlessly, or falling asleep during the day? 4   3   2   1   0
c. feeling very anxious, nervous, tense, scared, panicked, or like something bad was going to happen?................4   3   2   1   0
d. becoming very distressed and upset when something reminded you of the past?.....4   3   2   1   0
e. thinking about ending your life or committing suicide?................4   3   2   1   0
f. seeing or hearing things that no one else could see or hear or feeling that someone else could read or control your thoughts? 4   3   2   1   0

EDScr 2. **When was the last time** that you did the following things **two or more times**?
a. Lied or conned to get things you wanted or to avoid having to do something.......4   3   2   1   0
b. Had a hard time paying attention at school, work, or home. 4   3   2   1   0
c. Had a hard time listening to instructions at school, work, or home. 4   3   2   1   0
d. Had a hard time waiting for your turn. 4   3   2   1   0
e. Were a bully or threatened other people.................4   3   2   1   0
f. Started physical fights with other people 4   3   2   1   0
g. Tried to win back your gambling losses by going back another day. 4   3   2   1   0

SDScr 3. **When was the last time** that…
a. you used alcohol or other drugs weekly or more often?................4   3   2   1   0
b. you spent a lot of time either getting alcohol or other drugs, using alcohol or other drugs, or recovering from the effects of alcohol or other drugs (e.g., feeling sick)? 4   3   2   1   0
c. you kept using alcohol or other drugs even though it was causing social problems, leading to fights, or getting you into trouble with other people? 4   3   2   1   0
d. your use of alcohol or other drugs caused you to give up or reduce your involvement in activities at work, school, home, or social events?........................ 4   3   2   1   0
e. you had withdrawal problems from alcohol or other drugs like shaky hands, throwing up, having trouble sitting still or sleeping, or you used any alcohol or other drugs to stop being sick or avoid withdrawal problems?.............4   3   2   1   0

(Continued) After each of the following questions, please tell us the last time, if ever, you had the problem by answering whether it was in the past month, 2 to 3 months ago, 4 to 12 months ago, 1 or more years ago, or never.	Past month	2 to 3 months ago	4 to 12 months ago	1+ years ago	Never
	4	3	2	1	0

CVScr 4. **When was the last time** that you…

    a. had a disagreement in which you pushed, grabbed, or shoved someone?..............4   3   2   1   0

    b. took something from a store without paying for it? 4   3   2   1   0

    c. sold, distributed, or helped to make illegal drugs? 4   3   2   1   0

    d. drove a vehicle while under the influence of alcohol or illegal drugs?..................4   3   2   1   0

    e. purposely damaged or destroyed property that did not belong to you?..................4   3   2   1   0

5. Do you have other **significant** psychological, behavioral, or personal problems that you want treatment for or help with? **(Please describe)** ....   <u>Yes</u>   <u>No</u>
    1   0

    v1. _____

    _____

6. What is your gender? (If other, please describe below)   1 - Male   2 - Female   99 - Other

    v1. _____

7. How old are you today? |__|__| Age

7a. How many minutes did it take you to complete this survey? |__|__|__| Minutes

Staff Use Only
8. Site ID [XSITE]: _____   Site name v. _____
9. Staff ID [XSID]: _____   Staff name v. _____
10. Client ID [XPID]: _____   Comment v. _____
11. Mode: 1 - Administered by staff   2 - Administered by other   3 - Self-administered
13. Referral: MH ____ SA ____ ANG ____ Other ____ 14. Referral codes: _____
15. Referral comments: v1. _____
Observation Value [XOBS]: _____ Local Site Name [XSITEa]: _____

Scoring				
Screener	**Items**	**Past month** **(4)**	**Past 90 days** **(4, 3)**	**Past year** **(4, 3, 2)**	**Ever** **(4, 3, 2, 1)**
IDScr	1a – 1f				
EDScr	2a – 2g				
SDScr	3a – 3e				
CVScr	4a – 4e				
TDScr	1a – 4e				