DOES INFORMAL WORKPLACE LEARNING CONTRIBUTE TO BURNOUT AND SELF UNDERMINING? THE MODERATING ROLE OF NEGATIVE JOB-RELATED AFFECT AND MINDSETS

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May, 2024

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ABSTRACT

The present research study examined informal workplace learning (IWL) in the context of the Job Demands-Resources Model, and its relationship with the following variables: general self-efficacy (GSE), job crafting (JC), learning goal orientation (LGO), stress-debilitating mindset (SDM), negative job-related affect (NJA), job burnout (B), and self-undermining (SU). The focus of the present study is on IWL and how it may relate to negative health outcomes. In Study 1, hierarchical regression analyses were used to examine JC, GSE, and LGO as antecedents to IWL, and LGO was examined a moderator in the JC-IWL and GSE-IWL relationships. In the quantitative portion of Study 2, hierarchical regression analyses were used to examine B and SU as outcomes of IWL, and the moderating roles of SDM and NJA were also examined in the IWL-B and IWL-SU relationships. The qualitative portion of Study 2 consisted of four open-ended survey questions designed to tease out aspects of IWL, and how often these may contribute to, or be associated with, negative health outcomes. Study 1 results showed that household

income, JC, LGO, and GSE significantly predicted IWL. Moreover, LGO moderated the relationships JC-IWL and GSE-IWL. Study 2 results showed that job tenure, SDM, and NJA significantly predicted B, and SDM was found to significantly moderate the relationship IWL-B but only at lower levels of SDM. On the other hand, when SU was the outcome, age, NJA, and internal locus of control emerged as significant predictors. No interaction effects were found when the outcome was SU. Findings from the qualitative portion of Study 2 indicated several ways in which practitioners could work towards mitigating negative health outcomes by reducing frustrating aspects of IWL. Implications for practitioners and researchers include gaining a more nuanced perspective of learning in the workplace and stress outcomes such that learning and motivation to learn should not always only be expected to produce more positive outcomes.

Does Informal Workplace Learning Contribute to Burnout and Self Undermining? The Moderating Role of Negative Job-Related Affect and Mindsets

A Dissertation

Presented to the Faculty of the Department of Psychology

East Carolina University

In Partial Fulfilment of the Requirements for the Degree

PhD in Health Psychology with a concentration in

Occupational Health Psychology

By

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May, 2024

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Introduction

The focus of this research study is on informal workplace learning (IWL) and its relationships with job crafting (JC), general self-efficacy (GSE), learning goal orientation (LGO), job burnout (B), self-undermining (SU), negative job-related affect (NJA), and stress-debilitating mindset (SDM). Informal workplace learning can be thought of as the more natural everyday workplace learning that occurs as needed during work processes and procedures, which implies pretty much all daily work activities that do not occur in workplace training contexts (where formal learning occurs) (Cerasoli, et al., 2018). In this sense, IWL comprises a much larger portion of work life than formal workplace learning in terms of time and effort spent. Many researchers have argued for the importance of IWL by claiming that it comprises the majority, or more specifically estimates from 70% or higher, of all workplace learning (Clardy, 2018). Regardless of how difficult it is to tease out IWL from the daily activities of work itself, making any estimate very imprecise, research in IWL is crucial for its own sake in that it has the potential to improve our understanding of the very nature of work itself.

There is a tendency to assume and highlight that learning in the workplace is always inherently good and relates to positive outcomes (Fenwick, 2006; Decius, Schaper, & Seifert, 2019; Cerasoli, et al., 2018). For example, opportunities for learning at work have been related to healthy cardiovascular activity and recovery, and some job resources that promote workplace learning have partially buffered negative effects of job demands indicating the possible stress-reducing effects of simply having the opportunity to learn in the workplace (Rau, 2006). However, any kind of learning, including IWL, could be related to positive antecedents and

outcomes as well as negative ones (Noe, Clarke, & Klein, 2014; Decius, Schaper, & Seifert, 2019). Moreover, what employees learn from informal learning (IL) opportunities depends on both organizational (situational) and individual factors. Yet, there are no research studies on the dark side of IWL (Cerasoli, et al., 2018; Decius, Schaper, & Seifert, 2019). There are, however, research findings that suggest that all job demands, regardless of whether they are considered hindrances or challenges, have costs that result in negative health outcomes over time (Mazzola & Disselhorst, 2019). So far as IWL could also be considered a challenge stressor/demand in the Job Demands-Resources model (JD-R), it could be that when IWL stays high over a period of time negative health outcomes are observed.

The main guiding question in the present research study is whether IWL can be related to negative outcomes (such as B and SU), especially when SDM and/or NJA are higher. This question is important for researchers and practitioners alike, in that learning more about how these constructs may relate to IWL could lead to better informed decisions about when, and how to promote, or not, IWL, if the goal is, as it should be, to avoid promoting situations that produce more negative outcomes, such as B and SU in some employees. The JD-R model (Demerouti & Bakker, 2011) provides a good framework from which to research IWL and its possible negative outcomes (such as B and SU) in the workplace context, thus, it is used in the present research as a guiding framework.

According to the JD-R model all jobs have a unique combination of demands and resources and when there are more demands and less resources to support employees over a period of time, B can be the outcome (Bakker & Wang, 2020); and when there are enough or an abundance of resources to support employee demands, job engagement can be the outcome (Bakker & de Vries, 2021). These

represent two different underlying psychological processes, one where B is the outcome of what is called a health impairment pathway which is initiated with job demands, and one where engagement is the outcome in a motivation pathway which is initiated with job resources (Bakker & de Vries, 2021; Bakker & Demerouti, 2006). Furthermore, according to research findings examining the role of coping and recovery in the JD-R model, when workplace demands are sustained for prolonged periods of time without enough successful coping and recovery efforts, employees can develop B (Bakker & Demerouti, 2017). Self-undermining has been thought of as a maladaptive stress coping strategy in the JD-R model where when coupled with high job demands over time can feed a loss spiral which results in higher and higher levels of B (Bakker & de Vries, 2021).

Thus, the present research examined IWL and its relationship with GSE, JC, LGO, SDM, NJA, B, and SU in the context of the JD-R model. More specifically, the present research examined antecedents (including moderators) and outcomes to IWL in two studies. In Study 1, JC and GSE were examined as antecedents to IWL, and LGO was examined as a moderator of these relationships. In the quantitative portion of Study 2, B and SU were examined as outcomes of IWL, and the moderating roles of SDM and NJA were examined in these relationships. The qualitative portion of Study 2 consisted of four open-ended survey questions designed to tease out what aspects of IWL, and how often these may contribute to, or be associated with, negative outcomes. Participants of Study 1 were part of an independent sample collected on Connect by Could Research in July 2023. Participants of Study 2 were part of another independent sample collected on Connect by Cloud Research during November of 2023. In Study 1, positive constructs were examined as possible antecedents to IWL, and the role of growth

mindset (operationalized as LGO) was examined as a moderator of these relationships. On the other hand, in Study 2 negative outcomes of IWL were examined. The quantitative part in Study 2 included examining B and SU as outcomes to IWL and the moderating role of SDM and NJA in these relationships. The qualitative aspect in Study 2 included open-ended survey questions about frustrating aspects related to IWL and was designed with the intent to provide more nuanced information about how IWL may relate to negative outcomes.

Literature Review

Informal Workplace Learning

Conducting research on informal learning is challenging for several reasons, including its dynamic, nonlinear, and tacit nature (Le Clus, 2011), the lack of agreement on how it is defined (Van Noy, James, & Bedley, 2016), and how it overlaps with similar constructs (Sitzmann & Ely, 2011). It is a process that can be thought of as an antecedent and/or and outcome. According to some, IL may occur any time via self-directed, mentoring, coaching, and trial and error activities (Marsick & Watkins, 1990). Some have highlighted how IL is a mixture of intellectual curiosity, self-directedness, and self-efficacy (Beckett & Hager, 2002). Others have written that IL "involves making sense of the daily learning that occurs in organisations and involves examining embedded knowledge and encouraging learners to be self-directed and reflect on their learning experiences" (Le Clus, 2011, p. 359). Highlighting the informal aspects of learning implies a differentiation from learning that is labelled formal, which refers to learning that occurs in classroom-like settings, is instructor-led with pre-set learning objectives, presentation materials, and formal assessments. Formal learning in the context of work refers to learning that occurs in organizationally-led efforts such as trainings that occur in classroom-like settings using classroom-based techniques. In comparison, IL behaviours

> …are non-curricular behaviours and activities pursued in service of knowledge and skill acquisition that take place outside of formally-designated learning contexts. Such activities are predominantly self-directed, intentional, and field based. Informal learning behaviours are not syllabus based, discrete, or linear. (Cerasoli, et al., 2018, p. 204)

Baert (2018) proposed a sliding scale from informal to formal learning in the workplace where “learning by doing”, “learning through looking up information”, and “learning from others”, for example, would be on the IL side of the scale; “learning through coaching and instruction”, “learning through self-analysis and reflection”, and “learning through evaluation” and “feedback” all contain some elements of both formal and informal and are placed in the middle portion of the scale; and “workplace training” and “supervised work placement/internships”, for example, are considered to be more formal learning and are on the formal learning side of the scale. Jacobs & Park (2009) highlight how formal and informal workplace learning each “represent two fundamentally different sets of entering assumptions, prompts about when to engage in the actions, and expectations for the outcomes” (p. 142). Taken together, what matters in terms of IWL when compared to formal workplace learning, is that the distinction refers to the context coupled with the learning behaviour and not just the learning behaviour nor just learning itself (Cerasoli, et al., 2018). In other words, workplace learning itself is neither formal nor informal, the context together with the learning behaviour is what makes it more formal or informal (Manuti, Pastore, Scardigno, Giancaspro, & Morciano, 2015).

The current study operationalizes IWL with the Octagon Model of IWL (OTG model). The OTG model was developed in the context of validating a scale for IWL (Decius, Schaper, & Seifert, 2019). As the name implies, the OTG model contains eight subfactors. These 8 subfactors are the second-order structure, with two factors under each of the four factors in the first-order structure. The first-order structure consists of: (1) *intent to learn*, (2) *experience/action*, (3) *feedback*, and (4) *reflection*. The second-order structure consists of the following 8 subfactors: (1) *trying and applying* and (2) *model learning*, which are subfactors of *experience/action*; (3) *direct*

feedback and (4) *vicarious feedback*, which are subfactors of *feedback*; (5) *anticipatory reflection* and (6) *subsequent reflection*, which are subfactors of *reflection*; and (7) *intrinsic intent to learn* and (8) *extrinsic intent to learn*, which are subfactors of *intent to learn* (Decius, Schaper, & Seifert, 2019) (Decius, Schaper, & Seifert, 2019; Tannenbaum, Beard, McNall, & Salas, 2010). Thus, IWL will be measured with the 24-item scale developed alongside the OTG model (Decius, Schaper, & Seifert, 2019). The OTG model holds that IWL is most effective when all four components of the first-order structure are present and accounts for the dynamic, non-linear nature of IL by assuming the learner may enter the learning process from any one of the four components and may experience one, or more of them, once, or more than once. (Tannenbaum, Beard, McNall, & Salas, 2010; Decius, Schaper, & Seifert, 2019). As can be observed in the IWL scale items (see Appendix A), most of them refer to internal thought processes but some address how the individual interacts with others at work in the context of IWL. More specifically, the second-order subfactors *model learning*, *direct feedback*, and *vicarious feedback* involve asking or observing supervisors or co-workers, while the other five subfactors refer to individuals' thought processes related to IWL.

Job Demands-Resources Model

The JD-R model integrates research on stress with research on motivation (Demerouti & Bakker, 2011; Galanakis & Tsitouri, 2022) and holds that every occupation has its own unique constellation of job characteristics and risk factors associated with workplace stress which are divided into two categories: job demands and job resources (Bakker & Demerouti, 2006). Job demands are physical, psychological, social, or organizational job characteristics that call for prolonged physical and/or psychological (cognitive and emotional) efforts and in turn are related

to certain physical and/or psychological costs (Bakker & Demerouti, 2006). Job resources are physical, psychological, social, or organizational job characteristics that either help employees reach work-related goals, decrease negative effects associated with costs from job demands, or motivate employee learning and development (personal and professional) (Bakker & Demerouti, 2006). The JD-R model proposes that personal resources function in a similar fashion to job resources. Self-efficacy is an example of a personal resource in the JD-R model (Schaufeli, 2017; Demerouti & Bakker, 2011), thus, it likely functions more like a job resource.

It has been established over the past 20 years that, when job demands are continuously high and job resources are continuously low, employees run the risk of developing B (Bakker & Wang, 2020). Moreover, in the JD-R model there are two different psychological processes underlying the development of strain and/or motivation: the health impairment process which contributes to B and the motivation process which contributes to work engagement (Bakker & Demerouti, 2006; Bakker, Demerouti, & Sanz-Vergel, 2014). The health impairment process is instigated by job demands and the motivational process by job resources (Bakker & Demerouti, 2017). More specifically, job demands have been found to be the unique predictors of exhaustion (the main dimension of B in the Maslach Burnout Inventory), and lack of job resources to be the unique predictors of disengagement/cynicism (the other two dimensions of B in the Maslach Burnout Inventory) (Bakker & Demerouti, 2017). Moreover, higher job demands are better predictors of B than lack of job resources (1996, Lee & Ashford, cited in Bakker, Demerouti, & Sanz-Vergel, 2014). Job resources, on the other hand, have been more important predictors of work engagement than job demands (Bakker, Demerouti, & Sanz-Vergel, 2014). The JD-

R model also posits that job resources can buffer the negative impacts of job demands on stress (Bakker & Demerouti, 2017). For example, findings suggest that job control and social support are important job resources to prevent B (Fernet, Austin, Trepanier, & Dussault, 2012). Moreover, the JD-R model holds that job resources affect motivation (engagement) especially when there are high job demands (Bakker & Demerouti, 2017). According to the JD-R model, generally, strain has negative effects on job performance, whereas motivation has positive effects; although evidence has now been found for both causal and reversed causal relationships between job demands, job resources, and well-being outcomes (Bakker & Demerouti, 2017).

Although originally the JD-R model had a top-down organizational-led approach to understanding how these variables could be manipulated, a more recent conception includes how employees themselves may be able to manipulate their work environment and in so doing reach better outcomes for their health and organizations through a process called JC (Bakker & Demerouti, 2017; Bakker, Demerouti, & Sanz-Vergel, 2014). Employees with higher work engagement demonstrate more JC, which results in increasing job resources, which in turn motivates more engagement in a process often referred to as the “gain spiral” of resources (Bakker & Demerouti, 2017; Bakker, Demerouti, & Sanz-Vergel, 2014). The last proposition added to the JD-R model thus far is based on the fact that “findings indicate … employees under stress perceive and create more job demands over time” in a process called SU, and this process could be called the “loss spiral” of job demands and exhaustion (Bakker & Demerouti, 2017, p. 276).

General Self-Efficacy

Findings have shown a positive relationship between GSE and IWL (Noe, Tews, & Marand, 2013; Yoon, Han, Sung, & Cho, 2018). “Employees who sought help proactively and felt more self-efficacious at work reported more opportunities to engage in learning on the job (in particular, they learn more from challenges they encounter in their jobs)” (Jeske & Roßnagel, 2016, pp. 161-162). “Self-efficacy’s influence on learning is likely complex, particularly when considering the different referents for the beliefs… and the idea that some of these beliefs are likely dynamic and perhaps a function of other beliefs” (Vancouver, Halper, & Bayes, 2017, p. 109). General self-efficacy most likely plays a central role in what and how often individuals choose to learn at work, thus, it will be examined as an antecedent to IWL in the current research study. In the context of the JD-R model, GSE could function much like a personal resource. The hypothesis is that GSE will be positively and significantly related to IWL.

Hypothesis 1: General self-efficacy will be positively and significantly related to informal workplace learning.

Job Crafting

Job crafting “involves shaping the task boundaries of the job (either physically or cognitively), the relational boundaries of the job, or both” (Wrzesniewski & Dutton, 2001, p. 179). When employees are confronted with job demands and resources they can alter/craft certain aspects of the job to better suit their needs and interests with what is called JC (Tims, Bakker, & Derks, 2013). Job crafting refers to employees engaging in job design by changing physical aspects of job tasks, cognitions/thoughts associated with job tasks, and/or the social interactions necessary to accomplish job tasks. The reason employees JC is to alter job aspects to be more aligned with their own needs and preferences.

The current research will use the JC questionnaire (JCQ) which accounts for the three different ways that employees can craft their jobs (Slemp & Vella-Brodrick, 2013). The three ways that employees can alter their jobs are physical changes in job tasks, changes to social interactions necessary to accomplish job tasks, and/or changes to cognitions/thoughts associated with job tasks, and these are reflected in the three factors of the JCQ. The current research will investigate if JC influences IWL. The hypothesis is that JC will relate positively and significantly to IWL.

Hypothesis 2: Job crafting will be positively and significantly related to informal workplace learning.

Learning Goal Orientation

Goal orientations have been proposed as a way to conceptualize and operationalize mindset beliefs about the extent of the plasticity of their own and others' traits/abilities/intelligence. Mindsets are mental frames or lenses people use to make sense of the world, these help individuals select and organize information which serve as guides toward specific understandings influencing judgements, behaviors, and health outcomes (Crum, Salovey, & Achor, 2013). Dweck proposed the theory of implicit intelligence which was first conceptualized as implicit beliefs that people held about whether their own (and others') traits/abilities/intelligence could change over time with effort, or whether they stay mostly the same throughout a lifetime, regardless of effort. These differing mindsets were placed on a continuum where one end represents individuals holding "incremental theories" (beliefs that traits/abilities/intelligence are malleable) and the other "entity theories" (beliefs that traits/abilities/intelligence are mostly fixed). Dweck later conceptualized these theories as "growth mindset" and "fixed mindset", respectively. Although individuals gravitate or tend towards one or the other end of the continuum (from growth to fixed

mindset), these occur with equal frequency in most populations, are not predicted by personality traits, ability levels, education, or cognitive complexity, and individuals can hold different mindsets for different things (Helsin, 2010).

In sum, Dweck called them theories (incremental theories vs. entity theories) at first and then mindsets (growth mindset vs. fixed mindset) (Han & Stieha, 2020). Mindset studies were about examining motivational processes and this research led to learning about how mindsets relate to goal orientations (Han & Stieha, 2020). Mastery-oriented patterns of behavior versus helpless patterns of behavior are associated with different goal orientations and perceptions of ability, such that, generally, a growth mindset relates to mastery-oriented patterns and a fixed mindset relates to helpless patterns (Dweck, 2006). More specifically, in terms of goal orientation, entity theorists (individuals holding fixed mindsets) are oriented towards performance goals and incremental theorists (individuals holding growth mindsets) hold goals related to learning and improving. Individuals with performance goals seek mainly positive feedback and avoid negative judgments. Either type of goals can be associated with high or low perceptions of ability (Dweck & Leggett, 1988; Han & Stieha, 2020). Mindset and goal orientation relate to self-efficacy (Han & Stieha, 2020). Entity theorists (individuals holding a fixed mindset) who perceive their ability to be high engage in mastery-oriented behavior patterns (i.e., challenge seeking with persistence). On the other hand, entity theorists (individuals holding a fixed mindset) who perceive their abilities to be low engage in helpless behavior patterns (i.e., avoid challenges). Furthermore, individuals with learning and development goals view themselves and others as constant works-in-progress and may accept negative feedback as opportunities to improve instead of as a final criticism of who they are as individuals (Dweck & Leggett, 1988). The predicted

behavior patterns of those that hold judgement goals versus development goals also differ in the affect experienced. Developmental goals lead to empathy as opposed to evaluative affect (example: contempt) as produced by judgement goals (Dweck & Leggett, 1988). Based on a scoping review, common characteristics of a growth mindset include learning from mistakes and accepting feedback, including criticism (Han & Stieha, 2020).

Mindsets in the context of traits/abilities/intelligence can be operationalized as goal orientations and as having three factors: learning goal orientation (LGO) and performance goal orientation, which is subdivided into performance avoid goal orientation and performance prove goal orientation orientations (Attenweiler, 2006). Goal orientations have been found to be relatively stable and independent dispositional variables (Attenweiler, 2006). Learning goal orientation has been found to correlate positively with IWL (Decius, Schaper, & Seifert, 2021). The goal orientation/mindset that is most relevant to the present study is LGO, thus, this is the orientation included in this study. The hypothesis in the present study is that LGO will positively and significantly relate to IWL.

> Hypothesis 3: Learning goal orientation will be positively and significantly related to informal workplace learning.

Furthermore, LGO will moderate the relationships between GSE and IWL, and between JC and IWL, such that LGO will enhance these relationships.

> Hypothesis 4: Learning goal orientation will moderate by enhancing the relationships between general self-efficacy and informal workplace learning and between job crafting and informal workplace learning.

Job Burnout

Followed by a period of more qualitative-like research in the human health services professions (in the 1970s), burnout research took on a more empirical and quantitative approach in the 1980s when the development of statistically validated scales became the research endeavor (Maslach, Schaufeli, & Leiter, 2001). During this time, the previous clinical and social psychology perspectives of burnout were complemented with an industrial/organizational psychology one. Although there was no clear consensus on the definition or conceptualization of burnout at the time "there was actually an underlying consensus about three core dimensions of the burnout experience" (Maslach, Schaufeli, & Leiter, 2001, p. 402). These three core dimensions were first developed into the Maslach Burnout Inventory (MBI – Maslach & Jackson, 1981 cited in Maslach et al., 2001) for workers in the human services professions. Researchers using the MBI to measure B conceptualize it as "a prolonged response to chronic emotional and interpersonal stressors on the job, and … [operationalize it with] the three dimensions of exhaustion, cynicism, and inefficacy" (Maslach, Schaufeli, & Leiter, 2001, p. 397). The three dimensions of B have been described in the following ways (Maslach, Schaufeli, & Leiter, 2001). The first dimension of the MBI refers to an experience of overwhelming exhaustion and is considered to be the individual stress component of B. The second dimension, cynicism (also referred to as depersonalization or detachment from work), highlights the interpersonal aspect of B which entails a negative, calloused, detachment towards people and aspects of the job. The third dimension refers to the self-evaluation component of B and pertains to experiencing a lack/loss of efficacy in performing one's role at work.

In the 1990s statistical methods, such as Structural Equation Modeling, allowed for researchers to explore relationships between the three dimensions of B

and possible antecedents as well as possible outcomes to job burnout (Maslach, Schaufeli, & Leiter, 2001). During this time B, as operationalized by the MBI, was extended to include education professionals (measured with the MBI-ES, Educator Survey) and then to include all professionals (measured with the MBI-GS, General Survey). Of import to note is that researchers conducting reviews and meta-analysis consistently report finding that the MBI has been much more widely used in research than any other measure of B (Shoman, Marca, Bianchi, Godderis, & van der Molen, 2020; Meier & Kim, 2021; Aronsson, et al., 2017). The MBI's three dimensions are regarded as the most commonly discussed conceptualization of B in theory research (Meier & Kim, 2021). Furthermore, the World Health Organization added MBI's three dimensions of B as a work phenomenon (not a medical condition) to its 11th International Categorization of Diseases in 2019 (Demerouti, Bakker, Peeters, & Breevaart, 2021) suggesting it may be the most widely recognized conceptualization of B. Thus, the current research study uses the MBI-GS to measure job burnout (in Study 2).

"The most frequently used theory to explain the causes and consequences of burnout is arguably Job Demands-Resources (JD-R) theory (Demerouti et al., 2001; Bakker & Demerouti, 2017)." (Demerouti, Bakker, Peeters, & Breevaart, 2021, p. 687), thus, the current research used the JD-R as a guiding theory to examine and explore the role that IWL may play in the health impairment pathway of the model.

Hypothesis 5: Informal workplace learning will be positively and significantly related to job burnout.

Self-Undermining

Self-undermining refers to responses individuals can have to strain at work and the term refers to creating more obstacles that get in the way of achieving work-

related goals, and in the context of the JD-R model SU also increases job demands (Bakker & Demerouti, 2017). Self-undermining is distinct from self-handicapping in that SU is not a conscious response to stress employed with the intent to protect self-esteem from possible failure, as is the case with self-handicapping (Bakker & Wang, 2020). Self-undermining is a reaction to chronic strain that does not have a functional purpose and undermines the individual's functioning well at work. Individuals who self-undermine "communicate poorly, make more mistakes and create more conflict, which add up to the already high demands" (Bakker & Demerouti, 2017).

According to a version of the JD-R model where self-regulation has been integrated B when demands are high for some time coupled with low resources and failed adaptive coping strategies are employed more often than not (Bakker & de Vries, 2021). In this version of the JD-R model, SU is included as a maladaptive stress coping strategy where when coupled with high job demands over time can feed a "loss spiral" in the health impairment process and eventually lead to higher levels of B (Bakker & de Vries, 2021).

Hypothesis 6: Informal workplace learning will be positively and significantly related to self-undermining.

Stress-Debilitating Mindset

Stress mindset (SM) refers to the role of mindset in stress (Crum, Salovey, & Achor, 2013). Stress mindset is

> … the extent to which one holds the belief that stress has enhancing consequences for various stress-related outcomes such as … health and wellbeing, and learning and growth (referred to as 'stress-enhancing mindset') or holds the belief that stress has debilitating consequences for those

> outcomes (referred to as 'stress-debilitating mindset') (Crum, Salovey, & Achor, 2013, p. 716).

Findings have shown that SMs affect changes in levels of cortisol (representing the extent to which stress is psychologically felt) and the desire for feedback (Crum, Salovey, & Achor, 2013). Moreover, SM is conceptually distinct from other constructs known to influence stress; it is different from ability to cope with stress, amount of stress, and appraisal of stress; and SM is an important variable in determining responses to stress (Crum, Salovey, & Achor, 2013). Study 2 focuses on exploring how IWL may lead to negative outcomes, thus, it is thought that a stress-debilitating mindset, measured with 4 items, will be most relevant to negative outcomes. The hypothesis is that high levels of SDM will be related positively and significantly to more B and SU, such that as SDM increases so does B and SU.

> Hypothesis 7: Stress-debilitating mindset will be positively and significantly related to job burnout and self-undermining.

The hypothesis is also that SDM will moderate the relationships between IWL and B, and IWL and SU by enhancing these relationships.

> Hypothesis 8: Stress-debilitating mindset will moderate, by enhancing, the relationship between informal workplace learning and job burnout, and informal workplace learning and self-undermining.

Negative Job-Related Affect

In another version of the JD-R model, job-related affect (negative and positive) was added and negative affect moderated the relationship between job demands and counterproductive work behaviors while positive affect moderated the relationship between job resource and engagement (Balducci, Schaufeli, & Fraccaroli, 2011). In other words, in this version of the JD-R model,

counterproductive work behavior was conceptualized as a behavioral outcome to stress in the health-impairment path, instead of B. In the present study it is hypothesized that NJA will be positively and significantly related to the negative outcomes, such as B and SU.

Hypothesis 9: Negative job-related affect will be positively and significantly related to job burnout and self-undermining.

Furthermore, it is hypothesized that NJA will moderate the relationships between IWL and B, and IWL and SU, such that it will enhance these relationships.

Hypothesis 10: Negative job-related affect will moderate, by enhancing, the relationships between informal workplace learning and job burnout, and informal workplace learning and self-undermining.

Job Demands-Resources Model, Job Burnout, Self-Undermining, and Workplace Learning

According to Bakker et al., (2014), in the context of the JD-R model, the definition of job resources includes the words *growth* and *learning and development* within it suggesting that workplace learning may play a role similar to that of job resources. This means that IWL may function more like a job resource than a job demand in that it could increase motivation (as JD-R's motivation process would predict) and/or possibly buffer negative outcomes related to demands associated with workplace learning. Thus, IWL could be hypothesized to play a moderating role that buffers the effects of job demands on strain, and possibly also on B and SU.

According to Rozkwitalska (2019), Panari et al. (2010) was the first to link workplace learning to job demands and resources (conceived of as control/autonomy) arguing that the combination of high job demands with high job control (as a resource) offered the conditions that predicted the highest levels of

learning motivation. Also related to workplace learning in the context of the JD-R model, findings have shown that certain job resources promote workplace learning which in turn partially mediate the relationship between job demands and emotional exhaustion suggesting that workplace learning can, at least in some ways and in some contexts, play a stress-reducing role at work (Van Ruysseveldt, Verboon, & Smulders, 2011).

Another study about workplace learning and health outcomes showed that workplace learning opportunities, conceptualized as personal development, were related to objective health outcomes (using cardiovascular parameters) but, interestingly, not subjective ones (Rau, 2006). In Rau's research, higher levels of learning opportunity at work related to increased nocturnal recovery of blood pressure and heart rate during the period from end of work to beginning of next day's work and no relationship was found between subjective measures of health and learning opportunities. Other researchers explored the relationship between stress and learning performance and the mediating role of exhaustion and motivation to learn on this relationship (LePine, LePine, & Jackson, 2004).

LePine et al. (2004) found that stress related to hindrances in learning contexts had a negative relationship with learning performance while stress associated to challenges in learning contexts had a positive relationship. However, this line of research which uses the idea that demands appraised as challenges lead to engagement while demands appraised as hindrances lead to job burnout may need to be interpreted with caution. More specifically, it seems that for practical purposes, according to findings from a meta-analysis, even when job demands are appraised as challenging and there is an increase in job engagement (in the short

run) there are energy costs in the long run (Mazzola & Disselhorst, 2019). Thus, for researchers and practitioners

> …to suggest that CS [challenge stress] should be increased (as some researchers have stated, e.g., Cavanaugh et al., 2000; LePine et al., 2005) is currently unwarranted. The findings do not consistently show that CS provide any benefit to organizations and overwhelmingly show consistent positive relationship with strains. Thus, the potential negative outcomes of CS would far outweigh any potential gains. (Mazzola & Disselhorst, 2019, p. 956).

In conclusion, based on these findings and in the context of the JD-R model, it is hypothesized that workplace learning, more specifically IWL may function more like a resource, in the short term, when it leads to increases in motivation and engagement, and more like a demand, in the long run, because even demands appraised as challenging (or in a more positive light) in the short run may relate to energy and health costs over a longer period of time. Due to logistical and practical reasons the present study's research design was not longitudinal, which would have allowed for testing this idea, however, it is acknowledged that the procedural (development and change over time) aspects of B and IWL itself complicate a clear interpretation of the cross-sectional nature of these findings.

Methods

This research consisted of two studies. Study 1, examined GSE, JC, and LGO as antecedents of IWL, and whether LGO moderated the GSE-IWL and the JC-IWL relationships. Study 2 was designed with a quantitative portion and a qualitative one. The quantitative part of Study 2 examined B and SU as outcomes of IWL, and whether SDM and NJA moderated the IWL-B and IWL-SU relationships while the qualitative part of Study 2 explored frustrating aspects of IWL. Study 1 and the quantitative part of Study 2 were designed to include data using statistically validated surveys. The qualitative part of Study 2 was designed with open-ended survey questions with the intent to tease out what aspects of IWL may contribute to, or be associated with, negative outcomes in the workplace.

Analyses and Investigation Methods

Study 1 and the qualitative part of Study 2 comprised of a series of regression analyses that controlled for demographic and other variables. More specifically, age, gender, race, household income, industry, number of employees at current job, job tenure in number of months, and weekly hours worked were included as covariates in Studies 1 and 2, and in Study 2 learning disability and internal locus of control were added as covariates. Regression and moderation analyses were used in Studies 1 and 2. In Study 1 regressions were used to test relationships between JC-IWL and GSE-IWL and moderation analyses were used to test if a growth mindset (operationalized as LGO) mediated each of the aforementioned relationships. See Appendix A for scale items used in Study 1. The quantitative portion of Study 2 consisted of regression analyses to test relationships between IWL-B and IWL-SU and moderation analyses to test SDM and NJA as individual moderators in both

aforementioned relationships. The qualitative portion of Study 2 consisted of thematic text analysis. See Appendix A for scale items, and Appendix B for open-ended survey questions, used in qualitative portion of Study 2.

In the design of the qualitative part of Study 2 the focus was to select methods that allow for more nuanced, albeit less precise, findings about IWL and its possible relationships with negative outcomes; more nuanced than what can be gained from using quantitative statistically validated scales that measure a construct. More specifically, open-ended survey questions were designed to elicit information about the aspects and amount of IWL in their jobs that may be related to negative health and personal outcomes. See Appendix B for questions used in the qualitative part of Study 2.

Measures

Informal Workplace Learning. Informal workplace learning was measured with the OTG Measure (OTGM) which contains 24 items, three items under each of the eight subfactors. This scale has four factors in a first-order structure, and eight subfactors (two under each of the four factors) in a second-order structure. The four first-order structure factors are *experience/action*, *feedback*, *reflection*, and *intent to learn*. The eight second-order structure factors are *trying and applying own* and *model learning* (both load onto experience/action), *direct feedback* and *vicarious feedback* (both load onto feedback), *anticipatory reflection* and *subsequent reflection* (both load onto reflection), and *extrinsic intent to learn* and *intrinsic intent to learn* (both load onto intent to learn). The OTGM be found in Appendix A.

General Self-efficacy. General self-efficacy was measured with the 8-item General Self-Efficacy Scale (GSES) with one factor (Chen, Gully, & Eden, 2001). The GSES can be found in Appendix A.

Learning Goal Orientation. Learning goal orientation was measured with the first 8-items of the goal orientation scale which in its entirety consists of 24 items with three factors (Attenweiler, 2006). The three goal orientations measured in this scale are *learning*, *performance prove*, and *performance avoid* orientations. The shortened version of the scale with only the learning goal orientation will be referred to as the LGO Scale (LGOS). The LGOS can be found in Appendix A.

Job Crafting. Job crafting was measured with Slemp & Vella-Brodrick's 15-item JC Questionnaire (JCQ). This scale contains three factors, the first one refers to crafting (changes employees make to tasks to better suit their needs and preferences) at the task level, the second one refers to cognitive crafting (changing the thoughts associated with the task), and the last refers to changes in social interaction related to job tasks (Slemp & Vella-Brodrick, 2013). The JCQ can be found in Appendix A.

Job Burnout. Job burnout was measured with the Maslach Burnout Inventory for general working populations (MBI-GS). This scale consists of three dimensions: *exhaustion*, *cynicism*, and *loss of professional efficacy*. The MBI-GS can be found in Appendix A.

Self-undermining. Self-undermining was measured with the 6-item, one dimension, SU scale (SUS) (Bakker & Wang, 2020). The SUS uses a 7-point scale to measure how often the statement in the items are true for individuals, from never to always. The SUS can be found in Appendix A.

Stress-Debilitating Mindset. Stress-debilitating mindset was measured using the four items of the 8-item stress mindset measure (SMM) that relate to stress-debilitating mindset. The SMM has two dimensions, one relates to beliefs about stress being negative and harmful (stress-debilitating mindset) and the other

about it being positive and invigorating (stress-enhancing mindset) (Crum, Salovey, & Achor, 2013). The four items measuring SDM can be found in Appendix A and this shortened version of the scale measuring stress-debilitating mindset will be referred to as (SDMM).

Negative Job-related Affect. Negative job-related affect was measured with the 12-item portion of the job-related affective wellbeing scale (JAWS) focusing on negative affect (van Katwyk, Spector, Fox, & Kelloway, 2000). The shortened version of the scale measuring negative job-related affect will be called NJAS and can be found in Appendix A.

Internal Locus of Control. Internal locus of control (ILC) was added in Study 2 as a covariate in the regression analyses because important aspects of IWL, such as intrinsic intent to learn and the learner-led aspects of IWL, are similar to ILC. Adding ILC as a covariate allowed for controlling the effects of ILC in the outcomes measured. Internal locus of control was measured with the 4-item scale (Nießen, Schmidt, Groskurth, Rammstedt, & Lechner, 2022). The items for this scale can be found in Appendix A.

Study 1

The theory used as framework for the present research study was the JD-R model. General self-efficacy, JC, and LGO were examined as antecedents to IWL in Study 1. Self-efficacy is understood to be a personal resource in the JD-R model and in this study, thus, GSE was examined as an antecedent to IWL. Job crafting is understood as a coping strategy in the JD-R model and in this research study, thus, JC was examined as an antecedent to IWL. Learning goal orientation was also included as antecedent to IWL and as a moderator of the GSE-IWL and JC-IWL relationships. Hypotheses 1, 2, 3, and 4 were tested in Study 1.

Regression analyses were used to examine the relationships between GSE-IWL, and JC-IWL. Moderation analyses were used to examine the moderating role of LGO on the GSE-IWL and JC-IWL relationships. The following measures were used in Study 1: JCQ, LGOS, OGTM, and GSES.

Participants

Sample 1, which comprised of participants of Study 1 (N= 346), was collected in July of 2023 through Connect by Cloud Research. Participant requirements included working at least 35 hours per week, being over 18 years of age, and working in the United States of America. Sample 1 reached the size of 346 cases after a total of six cases were removed. Two cases were removed for missing more than one of the validation check questions and the remaining four for not meeting the requirement of working 35 hours or more per week (all of the removed cases were reports of working less than 30 hours a week). Participants in Study 1 were first presented a consent form, then the scale items, followed by a debriefing statement. Study 1 consisted of a series of scales presented to participants in the following order: Slemp & Vella-Brodrick's 15-item job crafting questionnaire (Slemp & Vella-Brodrick, 2013), Attenweiler's 12-item learning goal orientation scale (Attenweiler, 2006), the 24-item Octagon Model Measure of IWL (Decius, Schaper, & Seifert, 2019), and the 8-item General Self-Efficacy Scale (Chen, Gully, & Eden, 2001). Study 1 comprised of a total of 55 scale items plus five validation check questions scattered among these. In Study 1 participants received US$2.00 for taking the survey that took about 15 minutes to complete. Responses were requested before going to next page and a mobile version was provided.

Study 2

Study 2 consisted of a quantitative portion followed by a qualitative one. The quantitative portion consisted of statistically validated surveys and the qualitative portion consisted of four open-ended survey questions designed specifically for this research study. In the quantitative portion, regression analyses were used to examine the relationships between IWL-B, and IWL-SU. Moderation analyses were used to examine if SDM and NJA change the relationships between IWL-B and IWL-SU. The scales used for this portion of Study 2 were OTGM, MBI-GS, SUS, SDMM, and NJAS.

The overarching theme of the questions in the qualitative portion of Study 2 was "frustrating aspects of IWL". This study examined how IWL may relate to negative health outcomes (B) and negative stress coping strategies (SU) in the context of the JD-R model. Hypotheses 5, 6, 7, 8, 9, and 10 were tested in Study 2. The main objective of the qualitative portion of Study 2 was to explore the relationships between IWL and negative outcomes using methods that allow for finding more nuanced, albeit, less precise, findings; more nuanced and less precise than what can be measured with statistically validated scales used in the quantitative portion of Study 2. The question guiding this portion was: what job aspects and conditions of IWL might relate to frustrating experiences and more negative outcomes in the workplace. An inductive qualitative method was chosen to allow for worldviews and other contextual aspects influencing responses to emerge more easily (Pratt & Bonaccio, 2016). The method chosen for data collection, also based on the feasibility, was to use open-ended survey questions. The design of the questions followed the 15 rules of open-ended questions that Bernard presents in his book starting on page 270 (Bernard, 2006).Method of analyses for the qualitative portion included a thematic text analysis. The open-ended questions used can be found in

Appendix B. No hypotheses were provided for this portion of Study 2, which is in line with research methods that tend more towards the qualitative end of a continuum in which quantitative methods would be on the other end. At the most qualitative end, researcher's preconceived notions about the research are not understood as elements that could be removed and as such should be acknowledged as much as possible because of their high potential for tainting/influencing research findings. Based on the topic of the questions the thematic analyses included the pre-determined primary theme of *Frustrating Aspects of IWL.*

Participants

Sample 2, which comprised of participants of Study 2 (N= 294), was collected in November of 2023 through Connect by Cloud Research. Participant requirements included working at least 35 hours per week, being over 18 years of age, and working in the United States of America. Participants in Study 2 were first presented a consent form, then the scale items, followed by four open-ended survey questions, and a debriefing statement. Study 2 participants were presented the scales in the following order: the 24-item Octagon Model Measure of IWL (Decius, Schaper, & Seifert, 2019), the 16-item Maslach Burnout Inventory – General Scale (Maslach, Jackson, Leiter, Schaufeli, & Schwab, 2020), Bakker & Wangs 6-item self-undermining scale (Bakker & Wang, 2020), Crum et al.'s 8-item stress-debilitating mindset measure (Crum, Salovey, & Achor, 2013), and van Katwyk et al.'s 12-item negative job-related affect (van Katwyk, Spector, Fox, & Kelloway, 2000). Study 2 comprised of 68 scale items plus five validation check questions peppered among them. Immediately after being presented the items on the scales, participants of Study 2 were presented the four open-ended survey questions. In Study 2 participants received US$2.50 to answer the survey questions that took around 20

minutes. Responses were requested before going to next page and a mobile version was provided.

Results

Data Analyses Software

In Studies 1 and 2, SPSS version 29.0.0.0 (171) was used for linear hierarchical multiple regression analyses and PROCESS v4.2 by Andrew Hayes was used for more detailed results of the moderation analyses. In this PROCESS version, Model 1 (simple moderation) was selected for the analyses. In the qualitative portion of Study 2, NVivo Version 14.23.1 (38) was used to analyze the open-ended survey questions.

Study 1

Means, standard deviations, and correlation results for Study 1 sample (N = 346) are presented in Table 1. Internal consistency levels for scales used in Study 1 for this sample were excellent. Cronbach's Alpha (α) and McDonald's Omega (ω) levels showed all scales' internal consistency levels to be excellent (JCQ α= .940 and ω= .940; LGOS α= .942 and ω= .944; OTGM α= .936 and ω= .934; and GSES α= .934 and ω= .934).

To test predictions, hierarchical multiple regression analyses with four blocks of variables were conducted. The first block (model 1) included the following variables as predictors of IWL: employee age, gender (1 = male, 2 = female), household income (1 = 0-19,999, 2 = 20,000-29,999, 3 = 20,000-39,999, 4 = 40,000-49,999, 5 = 50,000-59,999, 6 = 60,000-69,999, 7 = 70,000-79,999, 8 = > 80,000), job tenure in number of months, and average hours worked per week.

Table 1
Mean Standard Deviation, and Correlation Table for Sample Participants in Study 1

	M	*SD*	1	2	3	4	5	6	7	8	9
1. Age	37.65	9.96	1.00								
2. Gender	1.63	.57	-.07	1.00							
3. Income	5.98	2.11	-.01	.12*	1.00						
4. Tenure	74.49	108.59	.22**	-.02	.09	1.00					
5. Hours	41.84	7.04	-.03	.07	.07	.05	1.00				
6. JC	3.85	1.02	-.05	-.01	.15**	-.02	.01	1.00			
7. LGO	5.59	1.03	.09*	-.03	.07	.07	.03	.54**	1.00		
8. GSE	3.98	.70	.07	.08	.16**	.16**	.03	.41**	.53**	1.00	
9. IWL	3.86	.59	.00	-.05	.02	-.02	-.01	.67**	.70**	.53**	1.00

Notes. N = 346; *M* = mean; *SD* = standard deviation; Age = participant's age; Gender = 1 (male), 2 (female); Income = 1 (0-19,999), 2 (20,000-29,999), 3 (20,000-39,999), 4 (40,000-49,999), 5 (50,000-59,999), 6 (60,000-69,999), 7 (70,000-79,999), 8 (>80,000); Tenure = number of months at current job; Hours = number of hours per week at current job; JC = job crafting; LGO = learning goal orientation; GSE = general self-efficacy; IWL = informal workplace learning;* = $p<0.05$; ** = $p<0.01$.

The second block (model 2) included JC, GSE, and LGO, also as predictors of IWL. To test moderation effects, the third block (model 3a) included the interaction effect of LGO with JC, while the fourth block (model 3b) included the interaction effect of LGO with GSE. See Table 2 for regression analysis results.

Table 2
Regression Analyses Results for Models with Informal Workplace Learning as Outcome Table

						95% *CI*	
Model	Variable	*β*	*se*	*t*	*p*	lower	upper
1	Age	.00	.00	.04	.970	-.01	.01

	Gender	-.05	.06	-.91	.362	-.16	.06
	Income	.01	.02	.46	.644	-.02	.04
	Tenure	.00	.00	-.34	.730	.00	.00
	Hours	.00	.00	-.13	.894	-.01	.01
2	Age	.00	.00	-.68	.497	-.01	.00
	Gender	-.04	.03	-1.04	.301	-.10	.03
	Income	-.03**	.01	-2.69	.007	-.04	-.01
	Tenure	.00	.00	-1.57	.118	.00	.00
	Hours	.00	.00	-.68	.494	-.01	.00
	JC	.22**	.02	9.60	<.001	.18	.27
	LGO	.24**	.02	9.62	<.001	.19	.28
	GSE	.16**	.03	4.65	<.001	.09	.22
3a	Age	.00	.00	-.78	.434	-.01	.00
	Gender	-.04	.03	-1.04	.297	-.10	.03
	Income	-.02**	.01	-2.68	.008	-.04	-.01
	Tenure	.00	.00	-1.54	.126	.00	.00
	Hours	.00	.00	-.50	.615	-.01	.00
	JC	.39**	.08	4.66	<.001	.23	.56
	LGO	.33**	.05	6.50	<.001	.23	.43
	GSE	.17**	.03	4.91	<.001	.10	.23
	JC x LGO	-.03	.01	-2.11	.035	-.06	.00
3b	Age	.00	.00	-.54	.592	.00	.00
	Gender	-.03	.03	-.96	.340	-.10	.03
	Income	-.03**	.01	-2.87	.004	-.05	-.01
	Tenure	.00	.00	-1.67	.094	.00	.00
	Hours	.00	.00	-.80	.427	-.01	.00
	JC	.22**	.02	9.34	<.001	.17	.26
	LGO	.10	.07	1.49	.137	-.03	.24
	GSE	-.02	.10	-.24	.807	-.21	.16
	GSE x LGO	.04*	.02	2.01	.045	.00	.07

Notes. N = 346; dependent variable = informal workplace learning; Gender = 1 (male), 2 (female); Income = 1 (0-19,999), 2 (20,000-29,999), 3 (20,000-39,999), 4 (40,000-49,999), 5 (50,000-59,999), 6 (60,000-69,999), 7 (70,000-79,999), 8 (>80,000); Tenure = number of months at current job; Hours = average number of hours per week at current job; JC = job crafting; LGO = learning goal orientation; GSE = general self-efficacy; JC x LGO = JC and LGO interaction effect; GSE x LGO = GSE and LGO interaction effect; * = p<0.05; ** = p<0.01.

Overall, the results showed that the first model was not significant. The second model, which included LGO, GSE, and JC, was significant (F(3, 337)= 76.79, R2= .64, p< .001) and explained 64% of the variance observed in IWL. In Model 2, household income (*β*= -.03, t= -2.69, p= .01), JC (*β*= .22, t= 9.60, p<. 001), LGO (*β*= .24, t= 9.62, p< .001), and GSE (*β*= .16, t= 4.65, p< .001) significantly predicted IWL. These results indicated that JC, GSE, and LGO were positively and significantly related to IWL, thus confirming Hypotheses 1, 2 and 3.

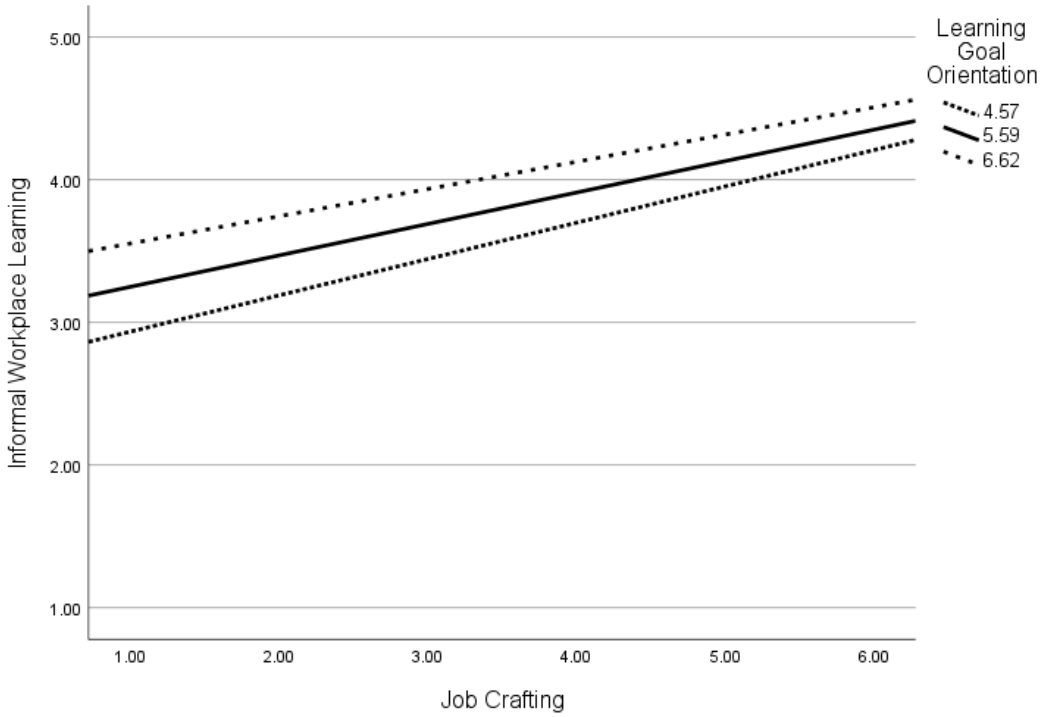
In model 3a, LGO was examined as a moderator of the JC and IWL relationship. The addition of the interaction effect (JC x LGO) explained a significant increase in variance in IWL over the previous model, ΔR2= .004, ΔF(9, 336)= 4.46, p= .035. Specifically, this model explained 65% of variance in IWL, R2= .65, F (9, 336)= 69. All slopes were significant at all levels of LGO examined (at mean, one standard deviation below the mean, and one standard deviation above the mean) and steeper slopes were found when LGO levels were lower to moderate. This finding suggests that when JC occurs, individuals reporting LGO levels that are low to moderate are more likely to report higher levels of IWL than individuals reporting higher levels of LGO. Thus, LGO was identified as a significant moderator in the JC and IWL relationship, partially confirming Hypothesis 4. See Table 3 and Figure 1.

Table 3
Conditional Effects of Job Crafting on Informal Workplace Learning at Different Levels of Learning Goal Orientation Table

					95% *CI*	
LGO	Effect	*se*	*t*	*p*	lower	upper
4.57	.25	.03	9.23	.000	.20	.31
5.59	.22	.02	9.67	.000	.18	.27
6.62	.19	.03	7.00	.000	.14	.24

Notes. LGO = learning goal orientation; Levels of learning goal orientation correspond to levels at -1 standard deviation of sample mean (4.57), at sample mean (5.59), and at +1 standard deviation of mean (6.62); effect = levels of conditional effects of JC on IWL at different levels of LGO.

Figure 1
Conditional Effects of Job Crafting on Informal Workplace Learning at Different Levels of Learning Goal Orientation Figure



Notes: Levels of learning goal orientation are shown at the levels corresponding to minus 1 standard deviation of sample mean, sample mean, and plus one standard deviation of mean.

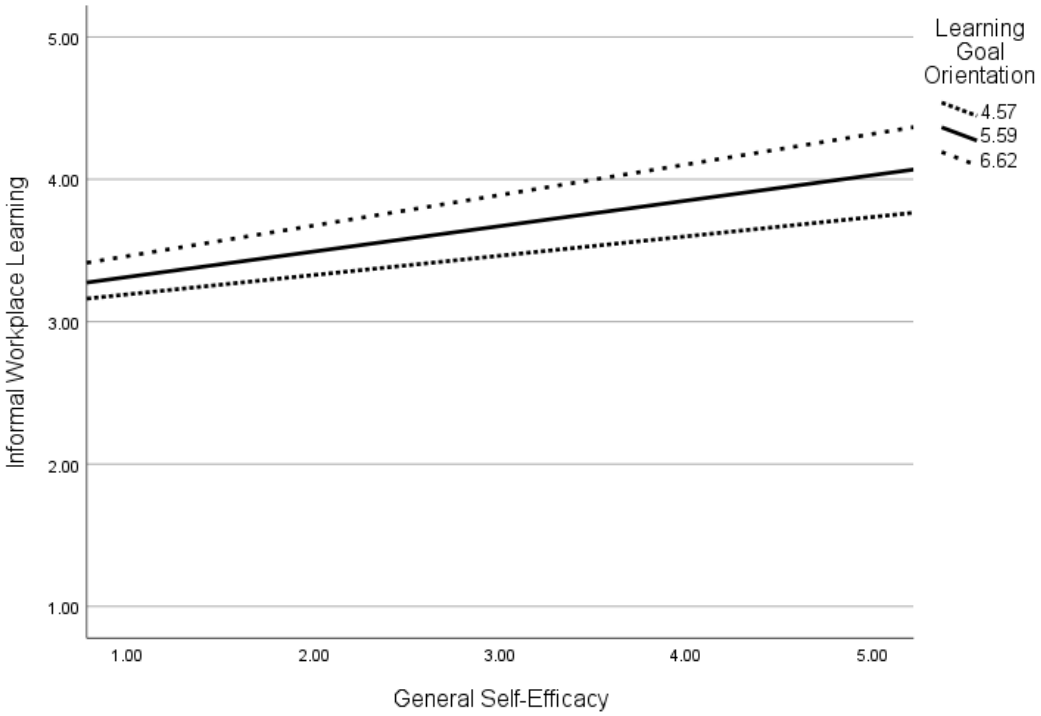
In model 3b, LGO was examined as a moderator of the GSE and IWL relationship. The addition of the interaction effect (GSE x LGO) explained a significant increase in variance in IWL over model 2, $\Delta R2 = .004$, $\Delta F(9, 336) = 4.04$, $p = .05$. Specifically, this model explained 65% of variance in IWL, $R2 = .65$, $F(9, 336) = 69.33$. The simple slopes of GSE on IWL were significant at the three levels of LGO examined (the mean, one standard deviation above the mean, and one standard deviation below the mean), and steeper slopes were found when LGO levels were moderate to high. This finding suggests that when GSE is present, individuals reporting moderate to higher levels of LGO are also more likely to report higher levels of IWL. See Table 4 and Figure 2. Thus, LGO was a significant moderator in the GSE and IWL relationship, confirming the other part of Hypotheses 4.

Table 4
Conditional Effects of General Self-Efficacy on Informal Workplace Learning at Different Levels of Learning Goal Orientation Table

					95% *CI*	
LGO	Effect	*se*	*t*	*p*	lower	upper
4.57	.14	.03	4.03	.000	.07	.21
5.59	.18	.03	5.04	.000	.11	.24
6.62	.21	.04	4.88	.000	.13	.30

Notes. LGO = learning goal orientation. Levels of learning goal orientation correspond to levels at -1 standard deviation of sample mean (4.57), at sample mean (5.59), and at +1 standard deviation of mean (6.62); effect = levels of conditional effects of general-self-efficacy on informal workplace learning at different levels of LGO.

Figure 2
Conditional Effects of General-Self Efficacy on Informal Workplace Learning at Different Levels of Learning Goal Orientation Figure



Notes: Levels of learning goal orientation are shown at the levels corresponding to minus 1 standard deviation of sample mean, sample mean, and plus one standard deviation of mean.

Study 2

Means, standard deviations, and correlation results for sample participants of Study 2 (N =294) are presented in Table 5. Cronbach's Alpha (α) and McDonald's Omega (ω) levels showed all scales' internal consistency levels to be good to excellent in this sample (OTGM α= .919 and ω= .916; MIS-GS α= .837 and ω= not

able to calculate; SUS α= .882 and ω= .885; SDMM α= .892 and ω= .892, and NJA α= .953 and ω= .954).

Table 5
Means, Standard Deviations, and Correlation Table for Variables Included in Sample Participants of Study 2

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	37.78	10.24	1.00											
2. Gender	1.41	.49	.07	1.00										
3. Income	6.21	2.16	.03	-.02	1.00									
4. Tenure	75.23	73.68	.42**	-.11*	.07	1.00								
5. Hours	41.18	6.66	.05	-.19**	.07	.11*	1.00							
6. LD	1.02	.14	-.11*	-.02	.00	-.08	.10*	1.00						
7. IWL	3.96	.54	-.06	-.11*	.19**	-.01	.14**	.09	1.00					
8. SDM	3.72	.90	-.08	.10*	.04	-.06	.01	.01	.11*	1.00				
9. NJA	2.09	.79	-.11*	.06	-.03	-.10*	-.01	-.02	-.07	.34**	1.00			
10. ILC	2.86	.57	-.03	-.07	.02	.02	-.01	-.03	.23**	.02	.17**	1.00		
11. B	4.45	.97	.03	.11*	-.07	.04	.00	-.04	-.01	.34**	.70**	.06	1.00	
12. SU	2.15	.90	-.19**	-.07	-.00	-.11*	-.05	-.00	.01	.10*	.55**	.33**	-	1.00

Notes. N = 294; *M* = sample mean; *SD* = standard deviation; Age = participant's age; Gender = 1 (male), 2 (female); Income = 1 (0-19,999), 2 (20,000-29,999), 3 (20,000-39,999), 4 (40,000-49,999), 5 (50,000-59,999), 6 (60,000-69,999), 7 (70,000-79,999), 8 (>80,000); Tenure = number of months at current job; Hours = average number of hours per week at current job; LD = learning disability = 1 (yes), 2 (no); IWL = informal workplace learning; SDM = stress-debilitating mindset; NJA = negative job-related affect; ILC = internal locus of control; B = job burnout; SU = self-undermining; * = $p<0.05$; ** = $p<0.01$.

To test predictions in the quantitative portion of Study 2, two hierarchical multiple regression analyses, each with four blocks of variables, were conducted: one regression included B as the outcome variable, and the other SU. Results for the first regression analyses are in Table 6 and include models where B was the outcome variable. Results for the second regression analyses are in Table 8 and include models where SU was the outcome variable.

In the regression analyses, where B was the outcome variable, the first block (model 1) included age, gender (1 = male, 2 = female), household income, (1 = 0-19,999, 2 = 20,000-29,999, 3 = 20,000-39,999, 4 = 40,000-49,999, 5 = 50,000-59,999, 6 = 60,000-69,999, 7 = 70,000-79,999, 8 = > 80,000), job tenure in number

of months, average hours worked per week, and learning disability (1 = yes, 2 = no). Informal workplace learning, SDM, NJA, and ILC were added to the second block (model 2) of predictors. The third block (model 3a) included the interaction effect of SDM and IWL, and the fourth block (model 3b) included the interaction effect of NJA with IWL, each of these also with B as the dependent variable.

Table 6
Regression Analyses Results for Models with Job Burnout as the Outcome Table

						95% *CI*	
Model	Variable	*β*	*se*	*t*	*p*	lower	upper
1	Age	.00	.01	-.05	.960	-.01	.01
	Gender	.24*	.12	2.01	.046	.00	.47
	Income	-.03	.03	-1.23	.219	-.08	.02
	Tenure	.00	.00	.75	.451	.00	.00
	Hours	.00	.01	.40	.693	-.01	.02
	LD	-.26	.40	-.65	.515	-1.06	.53
2	Age	.01	.00	1.54	.124	.00	.02
	Gender	.13	.08	1.51	.133	-.04	.29
	Income	-.03	.02	-1.77	.078	-.07	.00
	Tenure	.00*	.00	2.03	.043	.00	.00
	Hours	.00	.01	.01	.990	-.01	.01
	LD	-.17	.28	-.59	.553	-.73	.39
	IWL	.13	.08	1.68	.093	-.02	.29
	SDM	.11*	.05	2.32	.021	.02	.20
	NJA	.85**	.06	15.37	<.001	.74	.95
	ILC	-.13	.07	-1.76	.099	-.27	.02
3a	Age	.01	.00	1.46	.146	.00	.01
	Gender	.12	.08	1.48	.140	-.04	.29
	Income	-.04*	.02	-1.99	.047	-.07	.00
	Tenure	.00*	.00	2.06	.040	.00	.00
	Hours	.00	.01	-.42	.674	-.01	.01
	LD	-.14	.28	-.49	.625	-.69	.42
	IWL	.70**	.25	2.86	.005	.22	1.18
	SDM	.75**	.26	2.82	.005	.22	1.27
	NJA	.85**	.05	15.54	<.001	.74	.96
	ILC	-.15*	.07	-2.00	.047	-.29	.00
	IWL x SDM	-.16*	.07	-2.44	.015	-.29	-.03
3b	Age	.01	.00	1.52	.130	.00	.02
	Gender	.13	.08	1.54	.126	-.04	.29
	Income	-.03	.02	-1.76	.079	-.07	.00
	Tenure	.00*	.00	2.04	.042	.00	.00
	Hours	.00	.01	.10	.919	-.01	.01
	LD	-.17	.28	-.60	.548	-.73	.39
	IWL	.04	.20	.20	.840	-.36	.44
	SDM	.11*	.05	2.31	.022	.02	.20
	NJA	.65	.39	1.67	.097	-.12	1.42
	ILC	-.13	.07	-1.80	.073	-.28	.01
	IWL x NJA	.05	.10	.50	.615	-.14	.24

Notes. N = 297; Dependent Variable = job burnout; Age = participant's age; Gender = 1 (male), 2 (female); Income = 1 (0-19,999), 2 (20,000-29,999), 3 (20,000-39,999), 4 (40,000-49,999), 5 (50,000-59,999), 6 (60,000-69,999), 7 (70,000-79,999), 8 (>80,000); Tenure = number of months at current job; Hours = number of hours per week at current job; LD = learning disability = 1 (no), 2 (yes); IWL = informal workplace learning; SDM = stress is debilitating mindset; NJA = negative job-related affect; ILC = internal locus of control; IWL x SDM = IWL and SDM interaction effect; IWL x NJA = IWL and NJA interaction effect; * = p<0.05; ** = p< 0.01.

Overall, results showed that the first model was not significant. The second model, which included IWL, SDM, NJA, and ILC was significant (F(4, 283) = 31.88, p<.001) and explained 53% of variance in B. Also, in model 2, job tenure (β = .00, t= 2.03, p= .04), SDM (β = .11, t= 2.32, p= .02), and NJA (β = .85, t= 15.37, p<.001) significantly predicted IWL. Although the relationship between IWL and B was positive, it was not significant, confirming only part of Hypothesis 5. Part of Hypotheses 7 and 9 were confirmed in that the relationships SDM-B and NJA-B were positive and significant, as predicted.

In model 3a, SDM was examined as a moderator of the IWL and B relationship. The addition of the interaction effect (IWL x SDM) explained a significant amount of variance in B, ΔR2= .01, ∆F(1, 282)= 5.95, p= .015. Simple slopes for a levels of SDM examined (the mean, one standard deviation below the mean, and one standard deviation above the mean) were only significant at the lowest level. This finding suggests that when IWL occurs, individuals reporting lower levels of SDM are more likely to also report higher levels of B. This model confirmed part of Hypothesis 8 in that SDM was found to significantly moderate the IWL- B relationship but only at the lower level. See Table 7 and Figure 3.

Table 7
Conditional Effects of Informal Workplace Learning on Job Burnout at Different Levels of Stress-Debilitating Mindset Table

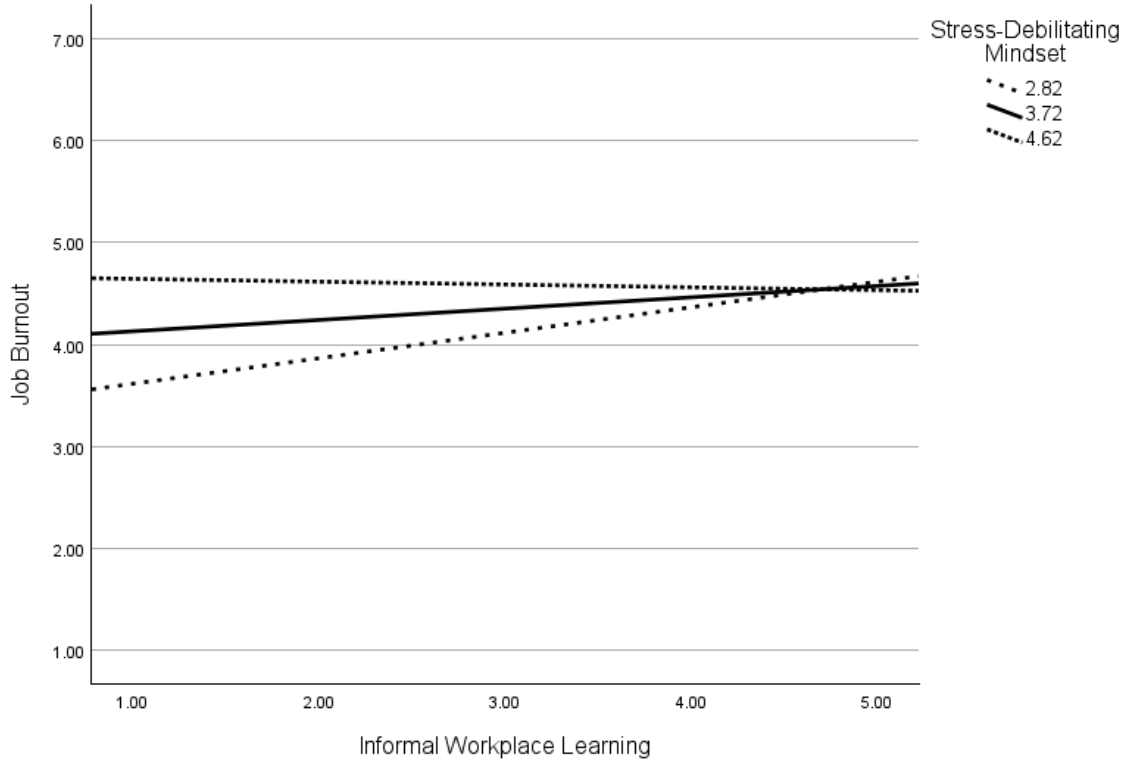
					95% *CI*	
SDM	effect	*se*	*t*	*p*	lower	upper
2.83	.25	.09	2.73	.007	.07	.44
3.72	.11	.08	1.38	.173	-.05	.27

4.62	-.03	.10	-.31	.744	-.24	.17

Notes. SDM = stress-debilitating mindset; Levels of SDM are shown at the levels corresponding to minus 1 standard deviation of sample mean (2.82), sample mean (3.72), and plus one standard deviation of mean (4.62); effect = conditional effects of informal workplace learning on burnout at different levels of SDM.

Figure 3

Conditional Effects of Informal Workplace Learning on Job Burnout at Different Levels of Stress-Debilitating Mindset Figure



Notes. Levels of Stress-Debilitating Mindset are shown at the levels corresponding to minus 1 standard deviation of sample mean (2.82), sample mean (3.72), and plus one standard deviation of mean (4.62).

In the regression analyses where SU was the outcome variable the first block (model 1) included age, gender (1 = male, 2 = female), household income, job tenure in number of months, average hours worked per week, and learning disability (1 = yes, 2 = no). Informal workplace learning, SDM, NJA, and ILC were added to the second block (model 2) of predictors. The third block (model 3a) included the interaction of SDM and IWL, and the fourth block (model 3b) included the interaction of NJA with IWL, each of these also with SU as the dependent variable.

Table 8
Regression Analyses Results for Models with Self-Undermining as Outcome Table

						95% CI	
Model	Variable	*β*	*Se*	*T*	*p*	*Lower*	*Upper*
1	Age	-.01**	.01	-2.47	.014	-.03	.00
	Gender	-.13	.11	-1.18	.239	-.34	.09
	Income	.00	.02	.12	.907	-.04	.05
	Tenure	.00	.00	-.74	.459	.00	.00
	Hours	-.01	.01	-.88	.382	-.02	.01
	LD	-.12	.37	-.32	.751	-.85	.61
2	Age	-.01*	.00	-2.11	.036	-.02	.00
	Gender	-.15	.09	-1.64	.103	-.32	.03
	Income	.01	.02	.43	.665	-.03	.05
	Tenure	.00	.00	-.48	.634	.00	.00
	Hours	-.01	.01	-1.05	.294	-.02	.01
	LD	.03	.30	.11	.910	-.56	.63
	IWL	-.03	.08	-.36	.722	-.20	.14
	SDM	-.08	.05	-1.61	.109	-.18	.02
	NJA	.59**	.06	10.16	<.001	.48	.71
	ILC	.37**	.08	4.70	<.001	.21	.52
3a	Age	-.01*	.00	-2.08	.039	-.02	.00
	Gender	-.14	.09	-1.62	.106	-.32	.03
	Income	.01	.02	.50	.618	-.03	.05
	Tenure	.00	.00	-.48	.631	.00	.00
	Hours	-.01	.01	-.89	.372	-.02	.01
	LD	.02	.30	.08	.938	-.57	.62
	IWL	-.23	.26	-.86	.392	-.74	.29
	SDM	-.30	.28	-1.06	.291	-.86	.26
	NJA	.59**	.06	10.14	<.001	.48	.71
	ILC	.37**	.08	4.75	<.001	.22	.53
	IWL x SDM	.05	.07	.78	.434	-.08	.19
3b	Age	-.01*	.00	-2.11	.036	-.02	.00
	Gender	-.15	.09	-1.64	.103	-.32	.03
	Income	.01	.02	.43	.667	-.03	.05
	Tenure	.00	.00	-.48	.633	.00	.00
	Hours	-.01	.01	-1.05	.295	-.02	.01
	LD	.03	.30	.11	.909	-.56	.63
	IWL	-.01	.21	-.48	.962	-.43	.41
	SDM	-.08	.05	-1.61	.110	-.18	.02
	NJA	.64	.42	1.5	.127	-.18	1.45
	ILC	.37**	.08	4.70	<.001	.21	.52
	IWL x NJA	-.01	.10	-2.11	.920	-.21	.19

Notes. N = 297; Dependent Variable = self-undermining; Age = participant's age; Gender = 1 (male), 2 (female); Income = 1 (0-19,999), 2 (20,000-29,999), 3 (20,000-39,999), 4 (40,000-49,999), 5 (50,000-59,999), 6 (60,000-69,999), 7 (70,000-79,999), 8 (>80,000); Tenure = number of months at current job; Hours = number of hours per week at current job; LD = learning disability = 1 (yes), 2 (no); IWL = informal workplace learning; SDM = stress-debilitating mindset; NJA = negative job-related affect; ILC = internal locus of control; IWL x SDM = IWL and SDM interaction effect; IWL x NJA = IWL and NJA interaction effect, * = $p<0.05$; ** = $p<0.01$.

Overall, results showed that the first model was not significant. The second model, which included IWL, SDM, NJA, and ILC, was significant ($F(4, 283)= 31.88$, $p< .001$), and explained 38% of variance in SU. Also, in model 2, age ($\beta = -.01$, $t = -2.47$, $p= .01$), NJA ($\beta = .59$, $t = 10.16$, $p< .001$), and ILC ($\beta = .37$, $t= 4.70$, $p< .001$) significantly predicted SU. These results did not confirm Hypothesis 6 because IWL was negatively and not significantly related to SU. These results confirmed the other parts of Hypotheses 7 and 9, because SDM and NJA positively and significantly related to SU.

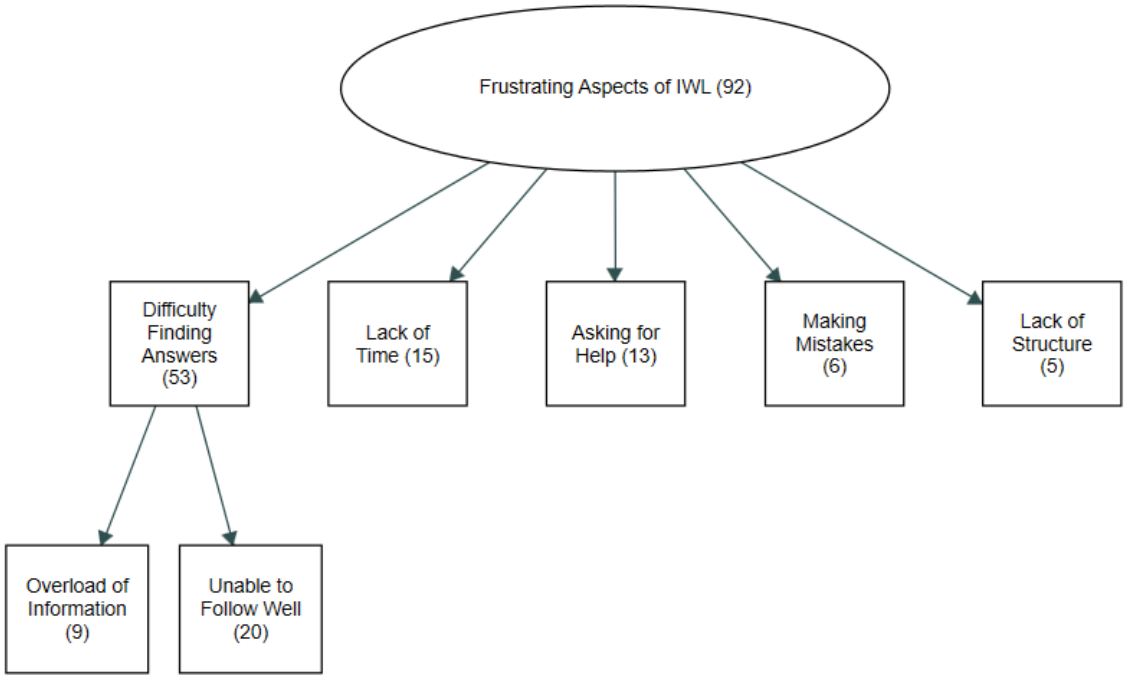
In model 3a, SDM was examined as a moderator of the IWL and SU relationship and the interaction was not found to be significant. The interaction of IWL and NJA calculated in model 3b was also not found to be significant. Thus, Hypotheses 10 was not confirmed.

As stated above, the qualitative portion of Study 2 had as its main objective to explore the relationship between IWL and negative outcomes using methods that allow for finding more nuanced, albeit, less precise, findings; more nuanced and less precise than what can be measured with statistically validated scales (as in the case of Studies 1 and 2). The primary question guiding this part of Study 2 was: What job aspects and conditions of IWL might be associated with frustrating experiences which could lead to negative health outcomes in the workplace. An inductive qualitative method was chosen to allow for worldviews and other contextual aspects influencing responses to emerge more easily (Pratt & Bonaccio, 2016). This inductive approach was used to identify themes, that emerged in the text, under the pre-identified primary theme of *Frustrating Aspects of IWL*. To this end, a thematic text analysis of answers to open-ended survey questions was conducted.

Several different aspects of IWL that can be associated with frustrating experiences were identified in this study and these included *Difficulty Finding Answers* (with two sub-themes: *Unable to Follow Well* and *Overload of Information*), *Lack of Time*, *Asking for Help*, *Making Mistakes*, and *Lack of Structure*. The sample participants in this study consisted of 297 cases of which answers from 92 participants were coded with the themes mentioned above. See Figure 4 for themes, hierarchy of themes, and number of references coded to each theme.

Figure 4

Frustrating Aspects of Informal Workplace Learning Themes Figure



Under the primary theme of *Frustrating Aspects of IWL* several sub-themes emerged starting with *Difficulty Finding Answers* which encompassed two themes: *Unable to Follow Well* and *Overload of Information.* This category had 53 cases with 20 under *Unable to Follow Well*, nine under *Overload of Information*, and the remaining 24 cases referred to struggles with finding “good” information that

answered the question that inspired the IWL behaviors. The next most commonly coded theme was *Lack of Time* and 15 cases mentioned this as being most frustrating aspect in IWL. With 13 cases as examples, *Asking for Help* was not far behind in frequency to the previous theme. Cases coded to this category mentioned some frustration related to asking others for help in their IWL experiences. The next two most common themes were *Making Mistakes* and *Lack of Structure* with six and five cases coded to each respectively. The *Making Mistakes* theme included cases that mentioned the value in it but nonetheless being frustrated with having to go through the process. The theme of *Lack of Structure* is interesting because lack of pre-defined structure is a characteristic of IWL itself.

Table 9

Themes and Examples of Frustrating Aspects of Informal Workplace Learning Table

Theme	Sub-theme	Examples of Participant's Answers (2 examples)
Difficulty Finding Answers	General Difficulty Finding Answers	1. I feel frustration when I am not able to access the information I need, or when instructions are unclear so I am unable to know what additional information I should seek out. 2. If I cannot find an answer online it can be frustrating.
	Unable to Follow Well	1. I'm frustrated when I don't know how to do something and engineers' explanations go over my head. I'm also frustrated when I don't understand something to begin with. That unknown generally just is bothersome and makes me feel like I can't do my job. 2. I feel frustrated when I can't understand a process of how to get things done. I always feel bad about myself because that it is something that I should be able to figure out.
	Overload of Information	1. Online Research: Information overload or conflicting sources can be frustrating. 2. It's frustrating to have to learn something new every time we get a new system which is much more often than it should be. We have to memorize so much it's like there's no more room in my brain for it all.
Lack of Time		1. One aspect is the time constraints of balancing informal learning with daily job responsibilities. It can be challenging to find enough time to dedicate to learning without feeling overwhelmed. 2. I sometimes feel frustrated because I don't feel like I have enough time to spend on career development.
Asking for Help		1. When I get stuck on a problem at work I become frustrated because I don't want to ask other people

	for help so I try to find ways on my own to solve the problem. 2. I feel annoyed that I do not feel comfortable asking for help, because I know the office will judge when I ask for help.
Making Mistakes	1. Making mistakes are frustrating. It's part of learning so it can't be avoided but it still sucks if it's noticed by others. 2. When learning something new I often make mistakes and that can be frustrating. I have to solve tough and new problems.
Lack of Structure	1. Learning software ad-hoc from colleagues is frustrating because it's unstructured and informed by constant needs rather than a thoughtful lesson plan meant to prepare someone to do tasks effectively. 2. Sometimes I am frustrated because I wish there was a set procedure because your gut instinct is not always the best and I do not want to make mistakes.

Notes. The primary theme is *Frustrating Aspects of Informal Workplace Learning*. This table presents the identified themes (all under the primary theme) and two examples of text coded under each theme.

Discussion

The overall objective of the present research was to investigate how certain factors relate to IWL either as antecedents or outcomes. In Study 1, the aim was to investigate factors generally associated with positive experiences as antecedents of IWL (i.e., JC, GSE, and LGO, which was also tested as a moderator). In the quantitative portion of Study 2, the aim was to examine possible associations of IWL with negative outcomes (i.e., B and SU) and negative moderators (i.e., SDM and NJA) to the IWL- B and IWL-SU relationships. Study 2 had a second portion which was qualitative and consisted of four open-ended survey questions. The aim in the second portion of Study 2 was to explore frustrating aspects of IWL in more depth. Employing both quantitative and qualitative methodologies provided a more comprehensive understanding of the relationships between these factors.

In Study 1, hierarchical multiple regression analyses revealed significant predictors of IWL. Household income, JC, LGO, and GSE were found to significantly influence IWL. These relationships were positive, such that as household income brackets increased so did levels of IWL; as JC levels increased so did levels of IWL; as levels of LGO increased so did levels of IWL; and, as levels of GSE increased so did levels of IWL. These findings are in line with previous research that showed positive relationships between LGO and IWL (Decius, Schaper, & Seifert, 2021) and between GSE and IWL (Noe, Tews, & Marand, 2013; Yoon, Han, Sung, & Cho, 2018).

Moreover, the moderation analyses in Study 1 indicated that LGO significantly moderated the relationships between JC and IWL, as well as between GSE and IWL. When JC occurred, employees reporting low to moderate levels of LGO were more

likely to report higher levels of IWL. By contrast, when GSE was present, employees reporting moderate to high levels of LGO were more likely to report higher levels of IWL. Altogether, these findings suggest that levels of growth mindset (operationalized as LGO) may moderate the relationships of other antecedents in more complex ways than expected. It is possible that the results are reflecting that lower levels of LGO may imply higher levels of performance goal orientations. That is, the higher effect of interaction at the lower levels of LGO may be reflecting an interaction of higher levels of one of the other goal orientations (performance avoid or performance prove), which was not measured in this research study and could not be verified here.

In the quantitative portion of Study 2, IWL, SDM, and NJA were examined as predictors of negative outcomes, specifically B and SU. Regression results indicated that job tenure, SDM, and NJA significantly predicted B, whereas age, and ILC significantly predicted SU. Previous research found that negative affect moderated the relationship between job demands and negative outcomes (operationalized as counter productive work behaviour) in the JD-R model (Balducci, Schaufeli, & Fraccaroli, 2011). The current research confirmed that NJA plays a moderating role in the JD-R model between a job demand and B but not between a job demand and SU. The findings that SDM and NJA emerged as significant predictors of B but not of SU may be reflecting that SU functions quite differently than B as a process and as an outcome even though both are negative outcomes and have been related to each other in the JD-R model. Job burnout, in the JD-R model, is the outcome of the health impairment pathway, and SU has been found to be a maladaptive stress coping strategy that when used often enough over time leads to a loss spiral leading to more and more B (Bakker & de Vries, 2021). It is possible that longitudinal data

could help explain why B was predicted by SDM and NJA while SU was not by providing information on when and how SU develops and interacts with SDM and NJA in the B process.

Additionally, the interaction effects between SDM and IWL showed that lower levels of SDM significantly moderated the relationship between IWL and B. In other words, when IWL was present, employees reporting lower levels of SDM were significantly more likely to also report higher levels of B, while employees with moderate to high levels of SDM were not more likely to report more B. The finding that only low levels of SDM moderated the relationship between IWL and B could imply that perhaps moderate to higher levels of SDM relate to some other overall strategies of behaviours at work that minimize B somehow. Stress-debilitating mindset did not moderate the relationship between IWL and SU suggesting that its moderating role in relationships between demands and SU is more complex than expected and/or SU is more present at earlier stages of B. It is important to note that had the levels of B and SU been higher overall in the sample, such as may be observed in certain industries and professions, results may have been quite different.

In the second portion of Study 2 *Frustrating Aspects of IWL* was the pre-defined larger category that guided the thematic text analysis conducted. The largest category that emerged under the primary theme was *Difficulty Finding Answers* and these cases included online and in person examples of frustration experienced when there was conflicting, confusing, or an overload of information involved in trying to get an answer needed for work. The theme *Lack of Time* included cases that mentioned frustration related to balancing other work or life duties with IWL. The *Asking for Help* theme included cases that mentioned frustration when feeling that asking questions makes them look inferior in front of others. The theme of *Making*

Mistakes was also identified as a frustrating aspect of IWL and these cases mentioned feeling embarrassed or worrying about possible consequences to mistakes. The theme *Lack of Structure* contained text referring to frustration related to outside sources not setting more structure for IWL, which is highlighting that IWL is frustrating when more outside structure is preferred by learner, for this obvious and inherent aspect of IWL, mainly that it means learning structure is more learner-led.

Implications

The findings in these studies have several implications for both research and practice. First, they contribute to the understanding of the complex relationships between individual characteristics, work-related factors, and informal learning processes in the workplace. Understanding these relationships can inform the development of strategies aimed at enhancing formal and informal learning in the workplace while also mitigating negative outcomes such as B and SU.

When JC occurred, LGO and IWL interacted significantly, and when GSE was present LGO and IWL interacted significantly, indicating that LGO was a significant moderator of the relationships between JC and IWL, and GSE and IWL. Interestingly, the levels of LGO that showed the highest interaction effects were not the same for both relationships. More specifically, when JC occurred, employees reporting lower levels of LGO were more likely to also report higher levels of IWL, and when GSE was present, employees reporting higher levels of LGO were more likely to also report higher levels of IWL. The counter-intuitive part of these findings is that, when predicting IWL, lower levels of LGO interacted more strongly with JC than higher levels of LGO. One implication for research is that, when studying IWL, LGO may have complex interaction effects with different variables. A larger implication for

researchers is that when evaluating moderating effects of a variable that has several factors such as mindsets or goal orientations it may be difficult to tease out lower levels of one with higher levels of the other, thus, adding the entire measure when resources allow could be beneficial. One implication for practitioners is that promoting higher levels of LGO does not necessarily mean also promoting IWL, such as when JC is occurring (as the present research findings suggest).

Moreover, when IWL occurred, employees reporting lower levels of SDM were also more likely to report higher levels of B. Identifying SDM as a significant moderator of IWL and B but only at lower levels of SDM is interesting. Overall, the findings in the present research related to mindsets (LGO and SDM) are counter-intuitive suggesting that, at least when IWL is in the equation, factors such as these may interact with other variables in complex ways that may or may not lead to expected outcomes. As mentioned above, it may be that these stronger moderation effects at lower levels of the moderator are reflecting higher levels of another related variable, such that low levels of LGO could be reflecting high levels of one of the other two goal orientations and low levels of SDM could be reflecting high levels of stress-enhancing mindset, for example. Not verifiable with the data collected here, stress-mindset may serve a buffering effect on the IWL and B relationship. The implication is that the interaction effects found in this research study may be reflecting something that was not measured, thus complicating any interpretation.

Furthermore, from the second portion of Study 2, findings suggest that organizations seeking to create and support a culture of collaboration, growth, and learning while mitigating negative outcomes could benefit from addressing the following frustrating aspects of IWL identified in this study. First, knowledge management systems and any learning platforms used by employees in IWL are

most effective when they are well organized and user-friendly, with easily accessible relevant detailed documentation, and with clear procedures on how and when to access this information. Second, organizations could include time management support in the form of workshops that provide effective skills in managing a healthier work-life balance, and/or in the form of more flexible work arrangements that allows for employees to prioritize their professional development while mitigating the feeling of getting behind on work tasks. Third, building a culture of collaboration where open communication is fostered could help alleviate the stress related to asking for help. Fourth, promoting a company culture where mistakes are treated by all as learning opportunities and not failures (i.e., promoting growth mindsets) could help mitigate the frustration with making the mistake in the first place, ultimately helping employees learn more and perform at higher levels. Finally, these findings suggest that organizations could benefit by adding some kind of structure to the unstructured nature of IWL with the intent to enhance organizationally-led formal learning goals during employee initiated IWL events. The structure added could include organizationally sponsored time set aside to review and explore questions related to learning goals established in formal training and/or related to work goals established in work-related mentorship relationships, for example.

A larger implication of the present study is how it highlights the importance of adopting a more holistic approach to employee professional development, where consideration of both individual and organizational factors is necessary in order to assess whether the outcomes are likely to be positive or negative for each individual employee under their specific circumstances.

Limitations and Future Research

Despite the contributions of this research study, several limitations should be acknowledged. First, the reliance on self-report measures may introduce common method bias and social desirability bias, potentially affecting the validity of the results. Future research could utilize multi-source data collection methods to mitigate some of these biases, such as adding biological markers to measure stress levels for example. Moreover, future research could measure all types of goal orientations and stress mindsets and examine their moderating effects on the relationships tested here. This would allow for the possibility that the interactions at lower levels of LGO and SDM found here are actually reflecting possible higher levels of the other types of the construct. Also, researchers could further explore the relationships between all of these variables using one sample so that relationships between IWL, LGO, and SDM, or IWL, JC, and NJA could be examined.

Additionally, the cross-sectional nature of these studies limits the ability to establish causality. Clearly, longitudinal studies would provide more robust evidence regarding the temporal relationships between the variables studied. Future research could integrate what is known about the process of B and how it may develop over time within the JD-R model with longitudinal studies that explore how IWL may relate to stress at work. For example, one line of research could use the JD-R model to examine how IWL may relate to SU and B over time. Self-undermining may develop later or earlier in the B process and this would have different implications for how practitioners could work towards mitigating B and SU while also promoting IWL.

Furthermore, the qualitative part of Study 2, while providing rich insights into the nuanced aspects of IWL, may lack generalizability due to its qualitative nature and self-selection aspects involved in the data collection platform used (Connect by Cloud Research). Additionally, to learn more about the complex ways in which IWL

may relate to the myriad of other variables involved in the development of B and SU, future research could employ qualitative methods where researcher and participant engage in ethnographic techniques and have a more in-depth exchange of experiences.

Of great import, these findings open research avenues for exploring negative outcomes to IWL and strategies to mitigate them. Future research could study how other aspects of IWL relate to other negative employee outcomes as well as explore strategies that could mitigate these negative outcomes.

In conclusion, the present research sheds light on the multifaceted nature of IWL and its implications for employee well-being and organizational outcomes. By considering individual characteristics, work-related factors, and their interactions, organizations can better support employees' learning and development, ultimately leading to improved organizational performance and higher employee satisfaction.

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Appendix A: Measures used in Studies 1 and 2.

Octagon Informal Workplace Learning Scale (OIWLS)
24 items – 4 factors on first-order and 8 factors on second-order structure
(Decius, Schaper, & Seifert, 2019)

Please indicate the extent to which you agree, or disagree, with the following statements on a 5-point scale, from 1 (strongly disagree) to 5 (strongly agree).

Response options: 1 (strongly disagree), 2 (disagree), 3 (neither agree nor disagree), 4 (agree), 5 (strongly agree)

1. I try different methods to solve new tasks at work.
2. I try out my own ideas for new tasks at work.
3. I use my own ideas to improve tasks at work.
4. I observe how others work in the company to improve my work
5. I observe how my colleagues work so I do not make the same mistakes as they do.
6. At work I try things out that I have learned from observing my colleagues.
7. I ask my supervisor for feedback on how well I have performed.
8. I ask my supervisor for feedback when I am unsure about how well I have performed.
9. I ask my colleagues for feedback when I am unsure about how well I have performed.
10. I ask my colleagues about their experience at work.
11. I ask my colleagues about the methods and tricks they use at work.
12. I obtain tips and hints about work from my colleagues.
13. Before starting a new task, I think about how I can best do my work.
14. Before work, I think about how I can prepare my workplace (e.g., desk or other work area).
15. Before starting a new task, I think about the things I need to pay attention to.
16. When I have finished a new task, I think about how well I have performed.
17. When I have finished a new task, I think about what I could do better next time.
18. When I have finished a new task, I think about the quality of my work.
19. I want to learn something new at work for myself because this can help me grow my career in the organization.
20. I want to learn something new for myself because then I can be better at work than my colleagues.
21. I want to learn something new at work for myself because then my supervisor can be impressed with me.
22. I want to learn something new for myself because then I can feel more capable in dealing with difficulties at work.
23. I want to learn something new for myself because then I can solve problems at work faster.
24. I want to learn something new for myself because then I can perform well in my job even when the tasks or instructions are difficult.

Note: The 8 subfactors in the second-order structure are (1) trying and applying – items 1-3, (2) model learning – items 4-6, (3) direct feedback – items 7-9, (4) vicarious feedback – items 10-13, (5) anticipatory reflection – items 14-16, (6)

subsequent reflection – items 17-19, (7) extrinsic intent to learn – items 20-21, and (8) intrinsic intent to learn – items 22-24.

Job Crafting Questionnaire (JCQ)
15 items – 3 factors
(Slemp & Vella-Brodrick, 2013)

Please indicate the extent to which you engage in the following behaviours on a scale from 1 (hardly ever) to 6 (very often).

Response options: 1 (hardly ever), 2 (once in a while), 3 (sometimes), 4 (somewhat often), 5 (pretty often), 6 (very often – as often as possible in your work)

1. Introduce new approaches to improve your work
2. Change the scope or types of tasks that you complete at work
3. Introduce new work tasks that you think better suit your skills or interests
4. Choose to take on additional tasks at work
5. Give preference to work tasks that suit your skills or interests
6. Think about how your job gives your life purpose
7. Remind yourself about the significance your work has for the success of the organization
8. Remind yourself of the importance of your work for the broader community
9. Think about the ways in which your work positively impacts your life
10. Reflect on the role your job has for your overall well-being
11. Make an effort to get to know people well at work
12. Organize or attend work related social functions
13. Organize special events in the workplace (e.g., celebrating a co-worker's birthday)
14. Choose to mentor new employees (officially or unofficially)
15. Make friends with people at work who have similar skills or interests

Note: the 3 factors are (1) task crafting – items 1-5, (2) cognitive crafting – items 6-10, and relational crafting – items 11-15.

New General Self-Efficacy Scale (NGSES)
8 items – 1 factor
(Chen, Gully, & Eden, 2001)

Please indicate the extent to which you agree, or disagree, with the following statements on a scale of 1 (strongly disagree) to 5 (strongly agree).

Response options: 1 (strongly disagree), 2 (disagree), 3 (neither agree nor disagree), 4 (agree), 5 (strongly agree)

1. I will be able to achieve most of the goals that I have set for myself.
2. When facing difficult tasks, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me.
4. I believe I can succeed at most any endeavour to which I set my mind.
5. I will be able to successfully overcome many challenges.
6. I am confident that I can perform effectively on many different tasks.
7. Compared to other people, I can do most tasks very well.
8. Even when things are tough, I can perform quite well.

Learning Goal Orientation Scale (LGOS)
First 8 items in the Goal Orientation Scale (GOS)
(Attenweiler, 2006)

Please indicate the extent to which you agree, or disagree, with the following statements on a scale of 1 (strongly disagree) to 7 (strongly agree).

Response options: 1 (strongly disagree), 2 (disagree), 3 (somewhat disagree), 4 (neither agree nor disagree), 5 (somewhat agree), 6 (agree), 7 (strongly agree)

1. I enjoy challenging and difficult tasks where I learn new skills.
2. I want to learn as much as possible.
3. The opportunity to learn new skills and knowledge is important to me.
4. I prefer to work on tasks that force me to learn new things.
5. The opportunity to extend the range of my abilities is important to me.
6. I like best when something I learn makes me want to find out more.
7. When I fail to complete a difficult task, I plan to try harder the next time I work on it.
8. The opportunity to learn new things is important to me.

Maslach Burnout Inventory – General Scale
(Maslach, Jackson, Leiter, Schaufeli, & Schwab, 2020)
16 items – 3 factors

The following 16 statements refer to job-related feelings. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, select the number "0" (zero). If you have had this feeling, indicate how often you feel it by selecting the number (from 1 to 6) that best describes how frequently you feel that way. Please indicate how often the following statements are true for you, on a scale of 1 (never) to 7 (every day).

Response options: 0 (never), 1 (a few times a year or less), 2 (once a month or less), 3 (a few times a month), 4 (once a week), 5 (a few times a week), 6 (every day)

1. I feel emotionally drained from my work.
2. I feel used up at the end of the workday.
3. I feel tired when I get up in the morning and have to face another day on the job.
4. Working all day is really a strain for me.
5. I can effectively solve the problems that arise in my work.
6. I feel burned out from my work.
7. I feel I am making an effective contribution to what this organization does.
8. I have become less interested in my work since I started this job.
9. I have become less enthusiastic about my work.
10. In my opinion, I am good at my job.
11. I feel exhilarated when I accomplish something at work.
12. I have accomplished many worthwhile things in this job.
13. I just want to do my job and not be bothered.
14. I have become more cynical about whether my work contributes anything.
15. I doubt the significance of my work.
16. At my work, I feel confident that I am effective at getting things done.

Notes: The 3 factors are (1) exhaustion – items 1, 2, 3, 4, and 6, (2) cynicism – items 8, 9, 13, 14, and 15, and (3) depersonalization – items 7, 10, 11, 12, and 16.

Stress-Debilitating Mindset Measure (SDMM)
Shortened-version (four items that measure the SDM factor) from the Stress Mindset Measure (SMM-G) – General
(Crum, Salovey, & Achor, 2013)

Please rate the extent to which you agree, or disagree, with the following statements, on a 5-point scale, from 1 (strongly disagree) to 5 (strongly agree).

Response options: 1 (strongly disagree), 2 (disagree), 3 (neither agree nor disagree), 4 (agree), 5 (strongly agree)

1. The effects of stress are negative and should be avoided.
2. Experiencing stress depletes my health and vitality.
3. Experiencing stress inhibits my learning and growth.
4. Experiencing stress debilitates my performance and productivity.

Negative Affect Job-Related Scale (NAJS)
Shortened version (the 15-item negative affect factor) of the Job-related Affective Well-being Scale (JAWS)
(van Katwyk, Spector, Fox, & Kelloway, 2000)

Below are a number of statements that describe different emotions that a job can make a person feel. Please indicate the amount to which any part of your job (e.g., the work, coworkers, supervisor, clients, pay) has made you feel that emotion in the past 30 days.

Response options:1 (never), 2 (rarely), 3 (sometimes), 4 (quite often), 5 (extremely often or always)

1. My job made me feel annoyed
2. My job made me feel bored
3. My job made me feel disgusted
4. My job made me feel frustrated
5. My job made me feel gloomy
6. My job made me feel angry
7. My job made me feel anxious
8. My job made me feel confused
9. My job made me feel depressed
10. My job made me feel discouraged
11. My job made me feel frightened
12. My job made me feel furious
13. My job made me feel fatigued
14. My job made me feel intimidated
15. My job made me feel miserable

Self-Undermining Scale (SUS)
6 items – 1 factor
Bakker & Wang (2020)

Please indicate how often the following statements are true for you at work on a 7-point scale from 0 (never) to 7 (always)

Response options: 1 (never), 2 (once in a while), 3 (sometimes), 4 (regularly), 5 (often), 6 (very often), 7 (always)

1. I make mistakes.
2. I admit that I create stress at work.
3. I create confusion when I communicate with others at work.
4. I create a backlog in my tasks.
5. I run into problems at work.
6. I admit that I create conflicts.

Internal Locus of Control Scale (ILCS)
4 items – 1 factor
(Nießen, Schmidt, Groskurth, Rammstedt, & Lechner, 2022)

Please indicate the extent to which you agree, or disagree with the following statements on a scale from 1 (strongly disagree) to 5 (strongly agree).

Response options: 1 (strongly disagree), 2 (disagree), 3 (neither agree nor disagree), 4 (agree), 5(strongly agree)

1. I am my own boss.
2. If I work hard, I will succeed.
3. Whether at work or in my private life: What I do is mainly determined by others.
4. Fate often gets in the way of my plans.

Appendix B: Open-ended survey questions used in Study 2.

1. Think about some of the informal everyday learning activities that you initiate because you feel it is expected of you (to perform well) in your current job. Briefly list a few examples that come to mind.

2. Overall, what do you think and feel about the quantity and quality of these informal everyday learning events? Please explain why.

3. Out of these job learning events, if there are any, list the aspects that you associate with feeling frustrated. Please explain why.

4. If there are any, how often do frustrating (instead of neutral or stimulating) learning events happen in your current job on a percentage base? Please answer with a 1 to 100%.

Appendix C: IRB Memo.

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** ·
rede.ecu.edu/umcirb/

Notification of Exempt Certification

From: Social/Behavioral IRB
To: Mark Bowler
CC:
Date: 11/4/2019
Re: UMCIRB 19-002655
Informal Workplace Learning

I am pleased to inform you that your research submission has been certified as exempt on 11/3/2019. This study is eligible for Exempt Certification under category # 2ab.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

Document	Description
Consent Form Santos.docx(0.01)	Consent Forms
Debriefing Santos.docx(0.01)	Additional Items
Listing Santos.docx(0.01)	Recruitment Documents/Scripts
Scales Santos.docx(0.01)	Surveys and Questionnaires
Validity Check Santos.docx(0.01)	Additional Items

For research studies where a waiver of HIPAA Authorization has been approved, each of the waiver criteria in 45 CFR 164.512(i)(2)(ii) has been met. Additionally, the elements of PHI to be collected as described in items 1 and 2 of the Application for Waiver of Authorization have been determined to be the minimal necessary for the specified research.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.