THE EFFECTIVENESS OF JOB CARD GROUNDING IN AN INTERMEDIATE CARE FACILITY FOR INDIVIDUALS WITH INTELLECTUAL DISABILITY

by

Gary Bruce Pate Jr.

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Director of Dissertation: Jeannie A. Golden, PhD, BCBA-D

Major Department: Psychology

Despite limited research, Job Card Grounding (JCG) remains a highly recommended clinical intervention for defiant adolescents, with many medical and parenting websites advocating for its use. The purpose of the current study was to examine the effectiveness and social acceptability of JCG in reducing defiant behaviors among residents in an Intermediate Care Facility for Individuals with Intellectual Disability (ICF/IID). Participants included three female adolescents with intellectual and related psychological disabilities. JCG was introduced as a multi-element intervention, adapted for use in the ICF/IID, that afforded participants the option to complete a brief 10 to 15-minute household chore contingent upon target (i.e., problem) behaviors. Daily rewards were incorporated to reinforce appropriate behavior. JCG was rated as a socially acceptable intervention that resulted in small to moderate reductions of target behavior across phase comparisons compared to treatment as usual. Results also suggest that JCG was a less restrictive intervention when compared to the behavioral intervention plans that were used at the facility.

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Gary Bruce Pate Jr.

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APPROVED BY:

DIRECTOR OF DISSERTATION: _____
Jeannie A. Golden, PhD, BCBA-D

COMMITTEE MEMBER: _____
Brandon K. Schultz, EdD, NCSP

COMMITTEE MEMBER: _____
Christy M. Walcott, PhD, NCSP

COMMITTEE MEMBER: _____
Lori Curtindale, PhD

INTERIM CHAIR OF DEPARTMENT OF PSYCHOLOGY: _____
D. Erik Everhart, PhD, ABPP, CBSM

DEAN OF THE GRADUATE SCHOOL: _____
Paul J. Gemperline, PhD

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LITERATURE REVIEW

Over 6,000 Intermediate Care Facilities for Individuals with Intellectual Disability (ICF/IID) across the United States provide residential care services to more than 100,000 persons with intellectual disability (Centers for Medicare and Medicaid Services [CMMS], 2013). ICF/IIDs provide around-the-clock comprehensive healthcare services to residents with intellectual disabilities and related physical and/or psychological disabilities. To be considered an ICF/IID, institutions must provide necessities (e.g., food, shelter) and active treatment services to four or more persons. These facilities bring unique challenges. Services provided are often expensive and require high levels of caregiver supervision and effort. Services may also lead to caregiver injury, and there are high rates of turnover secondary to challenging behaviors exhibited by residents (e.g. Brown, Brown, & Dibiasio, 2013). Annual Medicaid expenditures are approximately $120,000 per-person (Lakin et al., 2008).

Approximately 1% of the US population is diagnosed with an intellectual disability with prevalence rates remaining relatively stable (Maulik, Mascarenhas, Mathers, Dua, & Saxena, 2011). Given methodological inconsistencies concerning diagnosis, including diagnostic criteria, prevalence rates may range from 0.05% to 1.55% of the US population (McKenzie, Milton, Smith & Ouellette-Kuntz, 2016). To be eligible for treatment in an ICF/IID, residents must have an intellectual disability, defined as, “significant limitations both in intellectual functioning and in adaptive behavior” that originates prior to age 18 (American Association on Intellectual and Developmental Disabilities, 2013). Federal guidelines for ICF/IID services require that persons have an IQ below 70-75, be five years of age or older, and have a chronic and severe physical or mental disability (or any combination thereof) prior to the age of 22 that significantly and

adversely impacts three or more areas of life functioning, such as self-care, learning, mobility, and self-direction (CMMS, 2013). Each state may set its own additional requirements for ICF/IID eligibility.

Persons with an intellectual disability (ID) often face adverse health disparities including co-occurring physical, genetic, psychiatric, and behavioral disorders (Turygin, Matson, & Adams, 2014), and, when residing in a foster care setting, are more likely to be prescribed psychotropic drugs which often lead to negative side effects (Zitto et al., 2008). Frequent comorbid diagnoses include: attention deficit hyperactivity disorder (ADHD); depressive and bipolar disorders; anxiety disorders; autism spectrum disorder (ASD); stereotypic movement disorder; impulse-control disorders; and major neurocognitive developmental disorders (American Psychiatric Association [APA], 2013).

Individuals with ID are also at increased risk for comorbid disruptive behavior disorders including oppositional defiant disorders (Christensen, 2013) and antisocial behaviors (Einfield & Tonge, 1996). Those with more severe ID exhibit more frequent and severe forms of challenging behavior and are disproportionately referred for services compared to those with milder ID (Hemmings, 2007). Children with ID and conduct disorders are also more likely to experience physical abuse and neglect (e.g., Leeb, Bitsko, Merrick, & Armour, 2012) as caregivers become frustrated with and respond harshly to demanding or difficult behaviors associated with ID and comorbid behavior problems (Centers for Disease Control and Prevention [CDC], 2016).

In general, ICF/IIDs provide the most structured level of active treatment services in the form of individualized programming. Individualized programs provide direct support to facilitate measurable and criteria based objectives with the goal to help residents acquire

behaviors to function as independently as possible. ICF/IID primarily rely upon the use of positive behavioral management strategies, such as positive reinforcement, to encourage appropriate behaviors and reduce the probability of disruptive behaviors (American Healthcare Association, n.d.). Although no consistent definition is provided for what constitutes active treatment, required components include a comprehensive functional assessment and plan to address specific functional and adaptive social skills. Ongoing documentation of program implementation and progress monitoring are also required.

A plethora of research exists regarding applied behavioral analysis and the effectiveness of behavioral treatments for persons with ID (e.g., Beavers, Iwata, & Lerman, 2013). This functional (i.e., behavioral analytic) approach is successful in determining the function of behavior and serves as a basis for intervention (Sturmey, 2007) and progress monitoring. Although medication plays an important role, behavioral interventions are generally the focus of managing symptoms associated with intellectual disabilities. Medication alone does not improve the core symptoms or lead to improvements in adaptive behaviors (Aman et al., 2009). Behavioral interventions do, however, play a critical role in fostering the acquisition, maintenance, and generalization of adaptive skills that promote independence. Behaviorally-based interventions not only introduce reinforcement for the completion (or successive approximation) of adaptive behaviors but also establish contingencies to reduce the likelihood of disruptive behavior. Given that disruptive behavior impedes the acquisition and maintenance of adaptive skills (Scahill et al., 2016), the reinforcement of appropriate behavior may be particularly effective in promoting adaptive skills in the ID population.

Randomized controlled trials suggest that behaviorally-based interventions lead to improvements in adaptive behavior among children (Scahill et al., 2016) and toddlers (Dawson

et al., 2010) with autism spectrum disorder. Children with intellectual disabilities who received early behavioral interventions have also shown significant increases in adaptive behavior (Eldevik, Jahr, Eikeseth, Hastings, & Hughes, 2010). Persons with a mild form of ID, as opposed to profound, severe, or moderate, often have better communication skills and a greater understanding of the relationship between their behavior and its consequences (Tonge, 2007). As such, those with mild ID may likely benefit from modified cognitive behavioral therapies, such as reinforcement of prosocial behaviors.

Timeout

Timeout, often referred to as grounding when used with adolescence, is an effective behavioral modification technique for decreasing noncompliant and defiant behaviors. Timeout is, however, perhaps the most widely used but erroneously implemented behavioral procedure among parents of defiant or noncompliant children (Eaves et al., 2005; Delaney, 1999). Timeout is defined as "a [brief] period of time in a less reinforcing environment made contingent on behavior" (Brantner and Doherty, 1983; pg. .87). Its use is typically reserved for younger children, although its use has proven effective with a diverse population including children (e.g.; Mace, Page, Ivanic & O'Brien, 1986; Haring & Kenedy, 1990), adolescents (e.g.; Barton, Guess, Garcia, & Baer, 1970; Sourander, Ellilä, Välimäki, & Piha, 2002), and adults (e.g.; Matson & Keyes, 1990). The efficacy of timeout has been demonstrated across various settings including the school (e.g.; Abramowitz & O'Leary, 1991; Webster, 1976), home (e.g.; Hamilton & MacQuiddy, 1984; Whaler; 1969), and psychiatric ward (e.g.; Bostow & Bailey, 1969; Benjamin, Mazzarins & Kupfersmid, 1983; Joshi, Capozzoli & Coyle, 1988; Crespi, 1988). Implemented correctly, timeout is one of the most effective behavior modification procedures in

decreasing problem behaviors among preschool and elementary school children (Reitman & Drabman, 1996; Turner & Watson, 1999).

Timeout is categorized into three forms: isolation, exclusion, and non-exclusion (Brantner & Doherty, 1983). Isolation timeout, the most restrictive form, involves the removal of reinforcement by placing a child in a separate or isolated location in which access to reinforcement is unavailable. For example, a child who is observed to strike a peer while playing together with blocks in the classroom is sent to the hallway where he becomes isolated from the classroom, peers, blocks, and any other potential forms of reinforcement. The child can neither see any of his/her peers nor any activities that take place in the classroom while serving the timeout. This form of timeout is particularly at risk for misuse and subsequent harm to the child, especially if isolation is being used in a punishing or aversive manner (e.g., Delaney, 1999). Psychiatric hospitals and other mental health facilities may use seclusion rooms in which a patient or resident is placed and physically prevented from leaving for a period of time until or the patient has deescalated. Calls for the reduction of this controversial and restrictive form of behavior management procedure have been noted for decades given the availability of less restrictive methods (e.g.; Knox & Holloman, 2012; Scanlan, 2010).

Exclusionary timeout involves the removal of a child from an area of reinforcement to an alternate location within the same room, such as a corner or timeout chair, where the child is neither able to observe nor participate in ongoing activities. For example, the child who strikes his/her peer in the previous example may be sent to the corner of the room and instructed to face the corner where he/she is unable to view his/her peers or ongoing activities. Although the child is neither able to see nor participate in any reinforcing activities, he/she remains in the same room as opposed to being isolated in an alternative room. Given that timeout is used in a

nonauthoritarian manner and is not used when the child is frightened or distressed as a result of an accident, there are no known negative effects of exclusionary or non-exclusionary timeout (Morawska & Sanders, 2011). It should, however, be noted that timeout may become overused and misused when implemented for every problem behavior as the therapeutic intent may be lost and the underlying problem (i.e., function) of the child's behavior is not addressed (Delaney, 1999).

Non-exclusionary timeout, the least restrictive form, involves the placement of a child in an alternate location within the same room. Unlike exclusionary timeout, a child may continue to face the ongoing activity but not participate or receive any other form of reinforcement. Using the ongoing examples above, the child who struck his/her peer may be sent to the corner of the room, or any other location, where he/she is removed from the ongoing activity. With non-exclusionary timeout, however, the child may continue to observe peers and ongoing activities but not participate. The child will not receive any form of attention from peers or teacher, and all toys or other fun activities are removed.

Non-exclusionary timeout may also be implemented by simply withdrawing attention (i.e., ignoring) and removing all forms of reinforcement such as toys or games without having to relocate the child. For example, Foxx and Shapiro (1978) used timeout ribbons to reduce disruptive behavior among five special education students in a classroom setting. Rather than remove the student from the learning environment, teachers were instructed to simply remove a ribbon worn around each student's neck that, when worn, signaled the availability to earn verbal praise and edibles as rewards. The removal of the ribbon signified a brief timeout during which the child was not eligible to earn rewards.

In addition to being the least restrictive method, non-exclusionary timeout is often easier to implement given that caregivers do not have to physically move the child to an isolated or alternative location where monitoring may become more difficult. Instead, timeout may be achieved through restricting access to desired items or activities and withholding attention. For example, a caregiver may simply turn off the television or computer, take away a cell phone or other devices, and ensure that the environment is dull or boring enough so that the child (or adolescent) will work to regain access to those activities and privileges.

Non-exclusionary timeout minimizes physical restraint and isolation procedures to prevent avoidance/escape behavior such as holding, spanking, and barrier methods of enforcement (McNeil, Clemens-Mowrer, Gurwitch & Funderburk, 1994; Roberts & Powers, 1990; Eaves, Sheperis, Blanchard, Baylot, & Doggett, 2005) described below. Non-exclusionary timeout also enables this child to view the appropriate behaviors of his/her peers during timeout as well as any ongoing fun activities that may encourage the child to exhibit appropriate behavior in attempts to return to those activities.

Timeout ends upon the satisfaction of a release contingency in one of three forms; these include a time-release (temporal release), behavior-time release, or child-release contingencies (Kalb & Loeber, 2003). A time-release (hereafter referred to as a temporal release) contingency is perhaps most commonly associated with timeout. Temporal release contingencies require children to remain in timeout for a predetermined period of time regardless of whether disruptive behaviors occur while serving that timeout period. The parent or caregiver determines the length of timeout. Once the predetermined time period has elapsed, the parent or caregiver releases the child from timeout (parental-temporal). For example, a child who engaged in aggressive behaviors would be required to serve a 10-minute timeout, the time of which was determined by

the caregiver. The child would be required to serve those 10 minutes and would then be released, regardless of whether he or she exhibited appropriate behavior during that 10-minute timeout period.

Parents and caregivers often disagree about the length of timeout when using temporal release contingencies. Disagreements may be attributable to incomplete and/or inaccurate information commonly found on the internet, such as specific parameters that are required for timeout to be effective (Drayton, 2014). Moreover, ICF/IIDs may assign arbitrary temporal release contingencies that vary across behaviors; for example, residents may be placed on restriction for two hours contingent upon inappropriate use of language while physical aggression may result in an eight-hour loss of privileges to match the severity of the behavior with its consequence. The suggested period a child should remain in timeout ranges anywhere from two minutes (Bostow & Bailey, 1969; Peed, Roberts, & Forhand, 1977; Kalb & Loeber, 2003; Zeilberger et al., 1968) to 90 minutes (Benjamin, Mazzarins, & Kupfersmid, 1983). Regardless of which temporal release contingency one selects, it is essential to remain consistent for timeout to be effective (Barkley, 2013). Additionally, it has been suggested that temporal release contingencies be independent of the severity of the problem behavior (Reitman & Draban, 1996; Turner & Watson, 1999) such that more severe behaviors do not entail extended periods of timeout. For example, a child would be required to serve the same length of timeout as would be required for physical aggression, or any other rule violation.

Child-release contingencies allow children to excuse themselves upon demonstrating control of their own behavior (self-regulation) and compliance with adult requests. Once calm and willing to comply, children are released from timeout by their parent. A behavior-time release contingency requires children to engage in a brief period of appropriate behavior (e.g.

sitting quietly) prior to their release. The behavior-time release contingency reduces the probability of reinforcing disruptive behaviors, such as tantrums, upon release. Additionally, a behavior-time release contingency is the most effective contingency for reducing noncompliant behaviors (Bean & Roberts, 1981). Given the least restrictive nature of non-exclusionary timeout and the effectiveness of a behavior-time release contingency, a combination of the two may provide for the most effective and manageable form of timeout.

The primary behavioral mechanism responsible for the effectiveness of timeout, when used appropriately, is negative punishment. Negative punishment is the removal of a reinforcing stimulus contingent upon inappropriate behavior, given the behavior decreases in response. Timeout may paradoxically come to be negative reinforcement, or the removal of an undesired stimulus contingent upon a behavior, if the function of a child's inappropriate behavior is escape or avoidance. For instance, a child may prefer to serve a timeout rather than comply with a parental request to complete a difficult or undesired task. The child's refusal, or defiant behavior, becomes inadvertently reinforced if the undesired task is removed, thus, allowing the child to escape or avoid the task. For this reason, timeout is generally recommended for behaviors maintained by positive reinforcement rather than escape maintained behaviors (Everett et al., 2007). Furthermore, Barkley (2013) asserts that it is imperative that the child be required to complete the initially requested task immediately upon release from timeout to prevent the inadvertent reinforcement of escape maintained behaviors.

Adolescent Development

Adolescence is a time during which fundamental physical, cognitive, and social changes are major themes of development. The adolescent period stretches from childhood to adulthood, or approximately 10 to 24-years-old (Sawyer, Azzopardi, Wickremarathne, & Patton, 2018).

Cognitively, the adolescent brain continues to develop well into adulthood as adolescents develop abstract reasoning and problem-solving skills. A lack of brain maturity during the adolescent period may contribute to decreased emotional regulation and increased risk-taking and antisocial behavior (Santrock, 2008). To promote the development of their cognitive abilities, adolescents may benefit from increased involvement in the family decision-making process. For example, research has shown that when adolescents are included in the process, they are better able to communicate, negotiate, and contemplate the factors that others take into consideration (Liprie, 1993).

Limitations of using timeout with adolescents

Although extensive research exists regarding the efficacy of timeout, its use with typically developing adolescents is limited (Kalb & Loeber, 2003) and it is not recommended for use with older children and adolescents (Eaves et al., 2005; Barkley, 2013) given their unique developmental factors. Specifically, adolescents are typically more physically imposing, cognitively developed, independent, and capable of participating in the family decision-making process (Barkley, 2013; Barkley & Robin, 2008).

Perhaps the greatest limitation of using timeout with adolescents relates to their physical development. As previously discussed, adolescents are larger and much more physically imposing than younger children. The size and strength of adolescents may increase the risk of serious damage or physical harm, especially when parents make attempts to prevent their adolescent from leaving or escaping the timeout area. Caregivers may find that children will initially refuse to go to timeout or attempt to escape from the timeout area. These attempts to refuse (i.e. avoid) timeout or leave the timeout area (i.e., escape) are common and should be expected when first implementing a timeout procedure (e.g., Eaves et al., 2005). Adolescent

refusal to comply with timeout may be accompanied by tantrums and aggressive forms of behavior which may cause damage to property and/or persons.

If attempts to avoid or escape timeout occur, it is recommended that caregivers physically place or return the child to timeout (e.g. Shroeder & Gordon, 2002). This may mean holding the child's hand and walking or carrying them to or back to the timeout. Physical guidance may be practical for a younger and/or smaller child, especially for caregivers who have the physical capacity to do so as the child may jump, wriggle, fall to the floor, or exhibit potentially aggressive behaviors. As children grow taller and gain more strength during their adolescent years, such tantrum like behavior is more likely to result in physical injury to the both the adolescent and caregiver, especially if the adolescent becomes physically aggressive.

Additional methods of enforcing timeout and preventing avoidance/escape behavior include holding, spanking, and barrier methods of enforcement (McNeil, Clemens-Mowrer, Gurwitch & Funderburk, 1994; Roberts & Powers, 1990; Eaves et al., 2005). Again, said methods are impractical and dangerous when used with adolescents as they may lead to an escalation in oppositional and/or aggressive behavior. Increases in such defiant behavior may be more manageable for younger children who are less physically imposing and more readily physically managed; however, given the physical size of adolescents the risk of serious harm or injury is increased if such methods are imposed.

Moreover, a host of federal and state laws govern the use of techniques involving physical restraint and seclusion. Such techniques may also violate ethical standards set forth by the American Psychological Association's (APA) Ethical Principles of Psychologists (APA, 2017) including recognizing the autonomy and dignity of all persons, including those with ID, and most notably avoiding harm. Physical guidance, seclusion, and especially restraint have the

potential for and have been linked to cases of bodily injury and even death. That is not to say that seclusion or restraint should never be used; each situation should be evaluated independently with regards to, among other contextual factors, safety, intrusiveness, type of restraint, policy, and training. Strategies that minimize or eliminate the need for seclusion and restraint are especially suited for use in group homes, ICF/IIDs, and other institutions where caregivers are bound to more clearly defined ethical and legal policy and procedures.

Even when timeout is implemented correctly, caregivers often paradoxically experience an initial increase rather than a decrease in oppositional and defiant behaviors (Eaves et al, 2005; Roberts, 1982; Barkley, 2013, 1999) referred to in the behavioral literature as an extinction burst. Extinction bursts occur as individuals, in response to withdrawal of attention or loss of access to reinforcement, display an increase in the frequency, intensity, and/or duration of problem behavior. The increase in behavior can be viewed as attempts by the child to test the limits in hopes of escaping/avoiding and/or gaining access to social or other forms reinforcement.

Extinction bursts are likely to occur when caregivers adopt new or differing forms of behavior management, such as timeout. As parents attempt to enforce timeout, as opposed to providing attention or access to desired stimuli/activities contingent upon the child's tantrum, the child may scream louder, hit harder, and so forth in hopes of getting what he or she wants. Such extinction bursts occur more often when extinction is used alone to decrease behavior (Lerman & Iwata, 1995).

A second limitation of the more traditional timeout procedure involves the difficulty in using immediate and consistent (i.e., predictable) consequences. Inconsistent discipline has been linked to the development of antisocial and delinquent behaviors among children and adolescents (Frick, 1994; Halgunseth, Perkins, Lippold, & Nix, 2013). Unpredictability in discipline is also

detrimental to the effectiveness of timeout/grounding and is a commonly reported reason many caregivers experience a failure with timeout (Barkley, 2013). Caregivers with hectic schedules, or those who work multiple jobs, may not be able to enforce timeout effectively. Scheduled events often cut timeout short, delay enforcement, or hinder its use altogether. For example, a caregiver rushing to get to work may find their child or adolescent misbehaving just as the caregiver is leaving. Rather than struggle to enforce timeout or prevent the child/adolescent from escaping timeout/grounding, caregivers may issue an early release, threaten timeout/grounding at a delayed time, or simply overlook the behavior. Barkley (1999) notes that many parents of oppositional children provide such inconsistent consequences.

Inconsistencies particularly arise when enforcing extended durations or timeout or grounding. Extended periods not only promote inconsistency, but also reduce opportunities for the reinforcement of appropriate behaviors given the removal of such reinforcement while the child/adolescent is in timeout or grounded. Adolescents who are grounded for extended periods often become ungrounded as important events or other circumstances arise. Parents may allow an early release from timeout or grounding when such events arise however, this results in inconsistent and therefore potentially ineffective consequences. Thus, the use of shorter and more frequent timeouts or periods of grounding is preferred.

Shorter and more frequent periods of timeout/grounding also permit greater frequency of contact with established contingencies. The consistent application of contingencies, or treatment adherence, in effect promotes a stable and predictable environment that further reduces problem behaviors (Christophersen & Mortweet, 2002). Christophersen and Mortweet note that "Setting rules and then not enforcing them is confusing and sets up children to 'see what they can get away with'" (Ch. 13, appendix F, Be Consistent about Rules and Discipline, para. 1). Such

inconsistency in discipline is analogous to the functioning of a slot machine as a variable ratio schedule produces high steady rates of responding that is less susceptible to extinction. For example, a child or adolescent may persist in disruptive behaviors (e.g., tantrum) in hopes of "winning," or attaining a desired form of reinforcement as such persistency has intermittently paid off or allowed them to get their way in the past.

In an ICF/IID, inconsistencies in discipline may arise given that caregivers are often responsible for caring for two to more residents at any given time. If one resident exhibits an undesired behavior, the caregiver responsible for that resident must turn the focus of his/her attention to address the behavior. Given the difficulty, time, or effort that it may take to address the resident's undesirable behavior, caregivers may choose to simply ignore, scold, or verbally reprimand the resident as opposed to carrying out more consistent and effective strategies. Inconsistencies in the use of traditional timeout procedures may also arise given that residents in an ICF/IID often participate in many scheduled outings and community events. If a resident is grounded prior to a scheduled event, the grounding may be cut short or postponed, thereby allowing a resident the opportunity to attend such events. Caregivers may then forget to implement the timeout upon their return or defer its use all together if appropriate behavior was observed during the outing/event.

A third limitation of the more traditional timeout procedure arises from an inappropriate use of response cost procedures. Caregivers may report taking away one or two items that the child/adolescent finds particularly reinforcing (e.g., tablet, T.V.) per instance of misbehavior. When this strategy is used, alternative forms of entertainment/reinforcement (e.g., phone, computer) remain accessible. This contingency does not establish a clear contrast between the time-in and timeout environment, as the timeout environment may remain equitable in

reinforcing value. For example, a caregiver in an ICF/IID may restrict computer use contingent upon inappropriate behavior; however, a resident may then watch television or engage in other preferred activities that have equitable, or perhaps greater, reinforcement value when compared to computer use. Although access to the computer was restricted, the adolescent remains in time-in (i.e., a reinforcing environment), as opposed to timeout, given continued access to other preferred items or activities. A stark contrast between time-in and timeout is an essential component for timeout to be effective (Jones & Downing, 1991; Turner & Watson, 1999).

Conversely, caregivers may take away all forms of reinforcement for an extended period. Extended periods of isolation or timeout do not meet the adolescent's developmental need for social interaction necessary for healthy adolescent development (e.g.; Ryan, 2001; Barber & Olsen, 1997; Barkley & Robin, 2008). Moreover, extended isolation results in a loss of opportunities for the adolescent to observe and demonstrate appropriate behavior, as well as restricts opportunities for parents or caregivers to reinforce appropriate behavior (Henggeler & Schaeffer, 2010). Extended periods of restriction, or timeout, may be particularly problematic in an ICF/IID as opportunities to receive praise, feedback, and other forms of reinforcement that serve to increase the acquisition and maintenance of adaptive skills are reduced. As previously stated, the use of brief and more frequent period of timeout is preferred, especially in an ICF/IID setting, as it promotes consistency, is more developmentally appropriate, and promotes greater frequency of contact with established contingencies to reinforce more appropriate behavior to increase independence.

Time-in

A non-reinforcing environment is vital in maintaining the efficacy of the timeout procedure. The time-in environment must be reinforcing enough so that the removal of the

child/adolescent from that environment will be analogous to the removal of a desired stimulus or activity that will reduce the likelihood of subsequent misbehavior in the future (negative punishment). Timeout is not nearly as effective if the time-in environment is non-reinforcing (Jones & Downing, 1991; Turner & Watson, 1999), as the removal of the child from that environment to another non-reinforcing location (timeout) does not produce a contrast between time-in and timeout.

A time-in environment void of desired or reinforcing stimuli will essentially resemble the timeout environment. In establishing a reinforcing time-in environment, it is essential that praise and reinforcement are provided for appropriate behaviors. The more reinforcing the time-in environment becomes, the larger the contrast will be when timeout is enforced. Simply put, the more a child or adolescent desires to be in time-in, the more they will work to avoid timeout/grounding. To increase the reinforcing value of time-in parents and caregivers may provide praise and reinforcement for appropriate behavior, and preferred items such as computers and TV's should be available.

Contingent access to preferred items and caregiver praise also teaches children and adolescents what to do, as opposed to what not to do. Therefore, it is recommended that parents and caregivers emphasize praise for appropriate behaviors, and that timeout be used only as part of a treatment package that incorporates reinforcement (e.g.; Olmni, Sevier, & Natasi, 1997; Morawska & Sanders, 2011). An intervention package consisting of a brief behavior-time non-exclusionary timeout and contingent rewards may promote a cost effective, consistent, and effective form of discipline, especially when implemented in an ICF/IID.

Differential reinforcement

In addition to age-appropriate consistent use of restrictions and release contingencies, timeout requires the effective use of differential reinforcement during time-in to be most effective. Caregivers must ignore attempts to gain attention while in timeout and/or attempts to debate consequences. As previously mentioned, any form of attention during timeout will diminish the contrast between time-in and timeout, thereby making timeout less effective. Caregivers must also attend to and reinforce prosocial behaviors that occur during time-in to establish a contrast of environments and increase the future occurrence of the desired behaviors.

Differential Reinforcement involves the extinction of a target behavior and simultaneous reinforcement of other (DRO), incompatible (DRI), or alternative (DRA) behavior. Whaler (1969), in expanding upon his previous research (1968) which suggested differential reinforcement alone was insufficient at reducing the frequency of oppositional behaviors, examined the role of parental reinforcement value (i.e., how reinforcing parents are to their child). Whaler hypothesized that a previous failure to obtain therapeutic results using differential reinforcement was due to a lack of parental reinforcing value. In other words, differential reinforcement alone was perhaps not effective as parents were of little or no reinforcing value to their child. When timeout was combined with differential reinforcement, however, Whaler (1968) found dramatic reductions in the frequency of oppositional behaviors. Whaler hypothesized that the addition of timeout may serve to increase the power of parental social reinforcement as the addition of timeout results in the additional loss of all non-social reinforcement that may be maintaining a child's behavior.

In examining his latter hypothesis, Whaler (1969) conducted a follow up study by again combining differential reinforcement and timeout. Participants included two early elementary school-age boys, Billy and Sammy. Billy, age six, was referred for noncompliance in the home

(refusing parental commands of going to bed, eating specific foods, and other daily requests such as cleaning his room) and at school (although not as serious). Five-year-old Sammy was also referred for noncompliance. Sammy's parents found him "extremely stubborn" and "destructive"; any requests or attempts to enforce rules were followed by violent tantrums which prompted his parents to remove any requests. It was noted that parents of both responded to oppositional behavior through reasoning, arguing, and spanking.

The study used an ABAB design. During baseline both families were instructed to provide a list of aversive household chores to be issued as instructions for their child. Behavior was coded as either oppositional or cooperative in response to each instruction. Chores were issued at a consistent frequency throughout phases to ensure fluctuations of oppositional behavior were not resultant of fluctuations in the frequency of instructions. Typical methods of discipline were maintained throughout the baseline phase.

Following baseline, parents were asked to implement a combination of timeout (behavior-time release) and differential attention. Data regarding the number of timeouts issued, mean latency between oppositional behaviors and implementation of timeout, and percent of social attention following the child's oppositional behavior were collected. Parental social attention (physical or verbal attention involving the child) and parent instruction (any request or command) were also recorded, as well as child social approach behaviors (child initiated verbal or physical contact with parents). Families received training in the use of timeout and differential reinforcement prior to implementation. After a brief return to baseline, families again resumed the use of combined differential attention and timeout. Assessment of parental reinforcement value were conducted using a marble drop task (Gewirtz & Baer, 1958, as cited in Whaler, 1969) at the end of each phases to determine the reinforcing value of the parents.

Results suggest a reduction in oppositional behaviors for both families following treatment. The author notes that parents of both families demonstrated increased attention towards cooperative behavior and decreased attention towards oppositional behaviors. Regarding the value of parental reinforcement, results suggest that for both families the reinforcing value of the parents was a function of the treatment, as value rating increased during treatment and decreased when removed. The reinforcing value of the parents was also evident in the frequency of which Billy and Sammy approached their parents. Before treatment, the interaction between parents and participants was described as infrequent. Exchanges usually involved the parents giving instructions or telling the child to stop engaging in an undesired behavior. During treatment conditions, both Billy and Sammy approached their parents more often compared to baseline conditions.

Whaler's previous study (1968) suggests that the effectiveness of differential attention alone is limited, but his later study (1969) suggests the value of parental reinforcement is a function of combined differential attention and timeout. If caregivers are relatively ineffective sources of reinforcement, the concept of timeout, or removing a child from reinforcement, will have little effect, especially if the child's behavior is maintained by non-social reinforcement (e.g.; toys, video games, television). By recognizing and praising appropriate behavior, in addition to timeout, the value of parental reinforcement was shown to increase, as well as child approach behaviors and positive parent-child interaction. Such results suggest the need for integrating differential attention and timeout as part of a behavioral treatment package.

Results of Whaler's (1968, 1969) studies are of primary importance in an ICF/IID. The use of differential attention alone, such as ignoring minor misbehavior, may not be sufficient in reducing disruptive behavior, especially if a resident finds access to non-social reinforcement

more valuable than attention from her caregiver. The inclusion of a timeout (i.e. grounding) procedure will also help to establish a clear contrast between time-in and timeout environments by removing both social and non-social reinforcement. Additionally, the use of differential attention may similarly increase the value of caregiver reinforcement, reduce coercive interactions, and lead to more positive relations that may reduce caregiver burnout and/or turnover.

Token Economy Plus Response Cost

Increasing praise and attention for prosocial behaviors alone may not be sufficient for children who display symptoms of Attention Deficit Hyperactivity Disorder (ADHD), or those who lack self-control, are inattentive, or responsiveness to social feedback (Barkley, 2013). Many clinically referred children have greater difficulties with sustained attention, impulsivity, and self-control; these children are less sensitive to social praise/attention and in many cases "more powerful reinforcement programs" are needed (i.e. token economy) (Barkley, 2012, pp.118). A token reinforcement system addresses this limitation by providing more immediate contingencies and feedback, especially when paired with a chart for monitoring. The addition of a token reinforcement system also serves as a prompt for parents to provide praise and reinforcement (Weisz & Kazdin, 2010).

Christophersen, Arnold, Hill, and Quilitch (1972) implemented a token reinforcement system paired with response cost to reduce whining, bickering, and noncompliant behaviors displayed by children in two middle-class suburban families. The first family's children consisted of a nine-year-old boy (George) with behavioral problems (truancy, noncompliance, and arguing), an eight-year-old girl (Dollie) with mild cerebral palsy and a history of tantrums and hyperactivity, and a five-year-old boy (Keith) with little to no behavioral concerns. All three

children bickered with each other and displayed noncompliant behaviors during bedtime (whining, talking, horseplay, and giggling).

A multiple baseline design across behaviors was implemented for the first family (George, Dollie, and Keith). Training was provided in the use of a token point system; however, parents were not taught any behavioral principles or terminology. A list of maintenance behaviors (chores) were selected and defined for each child. Bickering, in addition to two other social (problem) behaviors were also selected for each child. Maintenance behaviors (e.g., make bed) were rewarded with points while social behaviors (e.g., whining or bickering) resulted in a point loss. Points were redeemable for basic privileges and special activities such as a movie. During a three-week baseline period parents recorded target behaviors for each child without mention of the program. The point reward system was then implemented and point fines were introduced for only one social behavior per child. After one week, point fines were introduced for each child's second social behavior. Following the second week, point fines were introduced for each child's third social behavior.

Results for the first family suggest that during the baseline phase (introduction of maintenance behaviors) neither Keith nor Dolly completed any chores. George cleaned his room twice. With the introduction of the point system, however, all participants completed their respective chores on a daily basis. When point fines were introduced for social behaviors, George's bickering was reduced from approximately five episodes per day to one. Additionally, bedtime violations were reduced from four to one per day, and teasing behaviors were reduced from approximately four to nearly zero. Dollie's behaviors of whining, bickering, and jumping on furniture were reduced from four to nine times per day, approximately three times per day, and four times per day respectively, to nearly zero upon the introduction of point fines. Keith's

problem behaviors of whining, bickering, and bedtime disruptions also showed a similar reduction to nearly zero instances per day upon the implementation of fines.

The second family's children included a ten-year-old girl (Teresa) and a seven-year-old boy (Robin) who presented with concerns of noncompliance. The authors note that the father frequently ignored the problem and would often become angry toward Teresa and Robin for not completing their chores. Additionally, Teresa and Robin's mother typically excused the children from the responsibilities following their noncompliance. A multi-element (alternating-treatment) design was implemented with the second family (Teresa and Robin). The design compared two forms of reinforcement: (1) monetary payment for each chore and (2) an incentive system that reinforced the consecutive completion of chores.

During baseline, participants were instructed to complete a list of six daily chores. A daily inspection was conducted, and data was collected regarding completion. A feedback session was then implemented in which the mother provided a daily chore report card detailing the number of chores completed. Next, a third phase was introduced in which the participants were told that gold stars would be placed on their daily chore report for each successfully completed chore. A fourth intervention phase then used monetary reinforcement contingent upon successful chore completion. A fifth intervention phase provided Teresa and Robin with a monetary bonus for the successful completion of chores over consecutive days. A sixth phase consisted of the sole use of a point system in which participants could earn points redeemable for extra privileges (play outside, watch TV, ride bike) and was followed by a return to baseline. A point system was reintroduced as the final intervention phase.

Results from the second family also suggest that the point system was effective at increasing chore completion (i.e. compliance). During baseline, Robin did not complete any

chores and Teresa completed only 2%. Feedback produced slightly higher rates of compliance for Teresa (4%), but not for Robin. Under the star chart condition, chore completion increased for both Teresa and Robin (6%, 12%, respectively). This pattern continued with the monetary incentive (54%, 47%) and bonus phase (68%, 87%). During the return to baseline, completion rates returned to slightly above original baseline measures. A return to the points system produced completion rates of 60% for Teresa and 47% for Robin.

In summary, positive reinforcement in the form of a token economy increased compliance of chore completion for both families. While response cost (point fines) was not implemented with the second family, results from the first family demonstrate the effectiveness of negative punishment at reducing inappropriate behaviors. Notably, children of both families responded well to the interventions despite minimal and informal behavior management training. Furthermore, maintenance of treatment gains was evident upon the removal of the token reinforcement system.

Given the effectiveness of a token reinforcement system at increasing compliance, and the effectiveness of response cost at decreasing problem behaviors, results from the study suggest that caregivers with limited training may successfully implement positive reward strategies in an ICF/IID setting. The use of positive reinforcement may also encourage residents to complete their typical daily chores and objectives. Moreover, the issuance of a daily reward contingent upon appropriate behavior may be less time consuming and easier to implement for caregivers in an ICF/IID than managing a token reinforcement system.

Positive Punishment

In addition to negative punishment (timeout) and praise/reinforcement (token economies), positive punishment has been shown to be effective at decreasing undesired

behaviors. Positive punishment is the addition of an aversive stimuli contingent upon a target behavior that decreases the future probability of the behaviors occurrence. Perhaps the most commonly used or recognized form of positive punishment is spanking. Considering principles of behavior, spanking may not, however, be an effective form of discipline. The sole reliance upon positive punishment may teach a child what *not* to do; however, unless reinforcement is contingent upon appropriate behaviors, the child may not know what behaviors are expected (i.e., what *to* do). While positive punishment may indeed result in an immediate suppression of inappropriate behavior, it neither reinforces nor shapes desired behaviors. Moreover, many studies have demonstrated the ineffectiveness of spanking alone at reducing problem behaviors (see Gershoff, 2013 for a comprehensive review).

Another form of positive punishment is the assignment of aversive chores contingent upon problem behavior. Fischer and Nehs (1978) were perhaps the first to demonstrate through an ABAB design the use of positive punishment in the form of an aversive chore to reduce problem behavior. The rate of swearing at the dinner table by Mark, a typically developing 11-year-old, was the target behavior. An aversive stimulus, window washing, was made contingent upon Mark's cursing behavior. Window washing was specifically selected as it was not a typically required chore for Mark. The authors note, and as previously mentioned, selecting a unique chore (not typically required) prevents routine or daily chores from becoming conditioned (i.e., associated) with punishment.

During initial baseline conditions, the frequency of Mark's swearing behavior at the table during a 30-minute dinner period was recorded for five days. Upon implementation of the treatment phase, Mark was informed that he would be required to wash windows for ten minutes per each instance of swearing while at the dinner table. Mark was instructed that if he refused to

comply all privileges would be removed. After two weeks of the intervention, Mark's parents informed him that he had done a great job and that window washing was no longer required. This return to baseline lasted for one week, after which Mark's parents informed Mark that the window washing contingency would once again be implemented.

Results indicated that Mark's behavior of cursing decreased very rapidly. His frequency of swearing during the initial baseline averaged 10.8 times for each 30-minute dinner period. Following the intervention, Mark's swearing behavior was reduced to a total of 13 times over a ten-day intervention (average of .76 times per period). Upon return to baseline, an increase in Mark's frequency of swearing was observed, averaging 4.5 per times per dinner period. Following the implementation of the second intervention phase, Mark's swearing behavior immediately dropped to a frequency of zero where it stayed for the remainder of the study.

Citing a lack of empirical evidence for effective discipline procedures for middle childhood to adolescence, Richards (2002) evaluated the effectiveness of a task-based (behavior-time release contingency) grounding procedure for reducing challenging behavior. Participants included a total of nine typically developing children and adolescents, ages eight to fifteen years old, from six different families. A multiple baseline across subjects design was used, as well as an ABAB withdrawal design for one participant.

During baseline, which varied from 27 to 48 days, parents continued to use their typical discipline strategies. Problem behaviors were monitored via the Parent Daily Report Checklist (PDR), a 31-item checklist of typical problem behaviors, which parents completed daily. If a problem behavior occurred within a 24-hour period, parents marked the respective item on the PDR (e.g., destructiveness, talking back), as with a partial interval recording method. Parents were provided written instructions of the procedures and then rehearsed those procedures with

investigators. Each family established a list of chores that were then written on 3 x 5 index cards. Steps for each chore were also written on the cards. The number of cards (i.e., chores) assigned for each target behavior was to be determined by each caregiver's judgment. The duration of the task-based grounding procedure varied. Procedural integrity was assessed using a 10-item checklist of procedures. Inter-parent agreement was also calculated by comparing within family independent caregiver PDR ratings.

Results indicated that the task-based grounding procedure was effective in reducing challenging behavior. The intervention was also rated as socially acceptable, per Treatment Evaluation Inventory ratings, and led to some, although statistically nonsignificant, improvements between pre- and post-treatment ratings on the Child Behavior Checklist (CBCL). Richards (2002) notes that the study was the first to empirically validate the use of discipline strategies targeted for older children and adolescents. It should be noted, however, that the use of a 24-hour partial interval recording method may not have reflected changes in the frequency or duration of problem behavior. Moreover, the study presents a serious lack of inconsistency across participants in that the number of chores assigned per target behavior was determined by the parents in an unstructured manner. It is unclear how many chores were issued at once, nor whether the difficulty of the chores assigned were based upon parental mood (e.g., assigning 5 or more difficult chores when feeling angry).

In summary, Richards (2002) demonstrated the effectiveness of a brief chore (positive punishment) in reducing the frequency of a problem behavior. Like Fisher and Nehs (1978), Richards' use of a brief aversive chore to reduce target behaviors is a form of positive punishment. It was noted that the use of a chore was thought to be more socially acceptable than previously researched forms of positive punishment including aversive tickling, spanking, and

electroshock. Given the effectiveness of a brief chore at reducing problem behaviors, the addition of such chores in conjunction with timeout and positive reinforcement may serve as an effective behavioral intervention package for use with attention-seeking and escape-maintained behaviors. The use of chores as consequences for disruptive behavior is relatively simple to implement with minimal training, promotes consistency, and requires little cost. These qualities, in addition to being socially acceptable, are ideal in an ICF/IID where caregivers may receive minimal training and are prone to stress and burnout.

Job Card Grounding

Job Card Grounding (JCG) is a commonly recommended behavioral intervention for reducing oppositional and defiant behaviors among older children and adolescents (e.g.; Eaves, Sheperis, Blanchard, Baylot, & Doggett, 2005; Christophersen, 2009; Lancaster, 2013). JCG is a form of non-exclusionary timeout that combines the contingent use of brief 10 to 15-minute chores and daily rewards. When implemented as a multi-element intervention, JCG relies upon multiple behavioral mechanisms including positive reinforcement (daily rewards), negative reinforcement (escape from timeout), positive punishment (contingent chores), and negative punishment (timeout). Each treatment component has also been proven efficacious at reducing defiant childhood and adolescent behavior and is considered a relatively simple intervention that requires minimal caregiver or parent training.

Related to development, JCG places a greater sense of responsibility upon the adolescent for his or her own actions. JCG also fosters independence by teaching the adolescent cause and effect (Eaves et al., 2005). As Ward (2009) explains, “The individuals will have the knowledge that ‘Y’ behavior always results in ‘X’ consequence” which establishes a cognitive-behavioral component (p.9). The use of brief and simple chores may also provide parents and caregivers

with a more developmentally appropriate form of discipline that may reduce the need for seclusion and restraint; as such, JCG is likely suited for use in group homes, ICF/IIDs, and other institutions where caregivers are bound to more clearly defined ethical and legal policy and procedures.

Although the combination of these components into a packaged intervention (JCG) has not been studied in a population of those with ID, behaviors often present similarly across persons with ID and their typically developing counterparts, with similar etiologies and outcomes (Christensen, 2013). It follows that the use of similar behavioral management strategies may result in similar outcomes, regardless of use with typical developing adolescents or among those adolescents who reside in an ICF/IID.

Within the ICF/IDD setting, the completion of chores may promote the learning and maintenance of skills (i.e. adaptive behaviors) as opposed to allowing students, residents, patients, and so forth to idly wait out a temporal release timeout contingency. Rather than being placed upon restricted activities for six hours, a resident is afforded more autonomy by having the choice to complete a job card and remove the restrictions. In turn, the completion of that chore may promote the learning and generalization of adaptive behaviors. For example, a resident who completes the job card "clean the microwave" may generalize those same skills (e.g., identifying appropriate cleaner, application of pressure to remove particles/stains) to cleaning her bathroom sink, furniture, and so forth.

Only one study (Ward, 2009) has explored the effectiveness of JCG. Ward implemented a token economy in combination with JCG in a therapeutic residential group home for males to reduce defiant behaviors. A multi-treatment reversal design was used consisting of a JCG and JCG plus a token economy treatment. JCG was used as a response cost only procedure during

which the residents (i.e. participants) were required to complete household chores that each took approximately 10 to 15 minutes to complete. A token economy was subsequently added to form a packaged intervention. The token economy allowed residents to earn a token each day that they were not issued a job card, and residents could exchange tokens on a weekly basis for preferred items or activities.

Results from Ward's (2009) study indicated that the use of JCG as a response cost only intervention resulted in fewer rule violations. When combined with a token economy, however, the packaged intervention resulted in even fewer disruptive behaviors compared to the baseline and JCG only conditions. It was noted that the JCG intervention (response cost only) was anecdotally rated as socially acceptable by both the residents and their caregivers.

Social Acceptability of Job Card Grounding

Fisher and Nehs (1978) indicated that task-based grounding procedures (i.e., aversive chores) present few ethical concerns and are more readily acceptable among non-professionals (e.g., parents, teachers) given the ease of implementation. Richards (2002) would later demonstrate the social acceptability of task-based grounding to reduce target behaviors among older children and adolescents using a Treatment Evaluation Inventory. Ward's (2009) anecdotal evidence also lends support to the social acceptability of JCG.

Previous research by this author (Pate, 2016) suggests that JCG is a socially acceptable treatment package as rated by a sample of undergraduate students. Participants rated the use of positive reinforcement strategies, including acknowledgement and encouragement, as most acceptable, followed by response cost strategies. The results are consistent with the literature which suggests that the use of positive treatments (e.g. praise, rewards) is consistently rated as

most acceptable (e.g. Elliot, 1988), followed closely by response cost procedures (Jones, Eyberg, Adams, & Boggs, 1998).

Summary

ICF/IIDs provide around-the-clock comprehensive healthcare services to residents with ID who generally present with more disruptive and oppositional behaviors than their typically developing peers. Services are often expensive and require a high level of supervision and effort among caregivers to manage such challenging behaviors. There is limited research regarding cost effective and evidence-based treatments for use with adolescents, especially for those with ID who reside in an ICF/IID. Current treatments that use traditional timeout procedures in an ICF/IID setting may raise legal and ethical concerns and may not be effective for behaviors maintained by escape or avoidance.

The use of a traditional timeout procedure is also not developmentally appropriate for adolescents, especially for those with mild ID who are better able to use communication skills and have a greater understanding of their behavior and its consequences (Tonge, 2007). Furthermore, the use of brief and simple chores contingent upon disruptive behavior may serve as a more developmentally appropriate consequence that promotes the acquisition, maintenance, and generalization of adaptive living skills among the adolescent residents. As opposed to sitting idly by while serving potentially prolonged periods of timeout, residents will have the opportunity to quickly return to time-in by completing simple chores that have the potential to add to their behavioral repertoire of adaptive living skills. The current study is the first to examine the effectiveness of JCG with a population of female adolescents with IDD who reside in an ICF.

Statement of Purpose

A dearth of empirical evidence remains regarding effective disciplinary procedures for use with older children and adolescents, for whom timeout may be neither effective or developmentally appropriate. Despite a lack of empirical evidence, Job Card Grounding (JCG) is a highly recommended clinical intervention for adolescents, with many medical and parenting websites advocating for its use (e.g., Christophersen, 2009; Lancaster, 2013). The purpose of the current study is to examine the effectiveness and social acceptability of JCG in reducing defiant behaviors among female adolescent residents in an ICF/IID.

It was hypothesized that JCG would be rated as socially acceptable, and that the percentage of intervals during which defiant behaviors occured would decrease following its implementation. The current study also sought to examine whether JCG would result in clinically significant increases in adaptive functioning and decreases in maladaptive behavior on the Vineland-3. It was hypothesized that participants would demonstrate clinically significant improvements in adaptive behaviors and clinically significant decreases in maladaptive behaviors between pre-and post-test caregiver ratings on the Vineland-3.

Research Questions

1. Will the JCG intervention be rated as socially acceptable per caregiver and participant ratings on a modified version of the IRP-15?
2. Is JCG an effective intervention for reducing defiant behaviors among female adolescents who reside in an ICF/IID?
3. Will the JCG intervention result in clinically significant increases in participants' Adaptive Behavior Composite or clinically significant decreases on the Maladaptive Behavior component according to caregiver ratings on the Vineland Adaptive behavior Scales, Third Edition (Vineland-3)?
4. Will JCG be a less restrictive intervention, compared to treatment as usual, as determined by a reduction in the number of hours that participants will be subjected to restricted privileges?

CHAPTER 2:

METHODS

Participants

Participants included three ambulatory female adolescents, aged 17 to 19, who were residents of an ICF/IID. Each participant communicated verbally, had a history of multiple placements, and received special education services in the form of an Individualized Education Plan at a local public school. Intelligence Quotient (IQ) scores were determined by review of records. Two participants were White, and one was African-American. All participants exhibited disruptive behaviors that limited their functioning in the school, home, and community settings. Pseudonyms were used to protect the identity of participants described below:

Hailey is a 19-year-old White girl who is in the twelfth grade (see Table 1 for basic demographic and diagnostic information for each participant). Primary behavioral concerns include aggression, impulsivity, cursing, noncompliance, and stealing. Hailey's Abbreviated Battery IQ (ABIQ) was determined to fall within the mildly impaired range of intellectual functioning (*SS* = 55) per the Stanford-Binet, Fifth Edition, Abbreviated Battery. The Vineland Adaptive Behavior Scales, Second Edition (Vineland-II) indicated an Adaptive Behavior Composite in the low range (*SS* = 59). Hailey lived in the ICF for approximately four- -and-a-half years prior to the current study.

Ami is a 17-year-old African-American girl who is in the eleventh grade. Primary behavioral concerns include aggression, impulsivity, cursing, elopement, noncompliance, and self-injurious behavior. Her IQ (*SS* = 75) was estimated based upon her performance on the Peabody Picture Vocabulary Test, Third Edition (PPVT-3). Ami obtained a Standard Score of 53 on the Slosson Intelligence Test for Children and Adults (SIT-3). The Vineland-II indicated

an ABC that fell within the moderately low range (*SS* = 71). Records indicated consistent support for a diagnosis of mild developmental delay. Ami lived in the ICF for approximately five and a half years prior to the current study.

Danny is a 17-year-old White girl who is in the eleventh grade. Primary behavioral concerns include physical aggression, self-injury, property destruction, stealing, and inappropriate sexual behavior. Her abbreviated IQ (ABIQ; *SS* = 73) was assessed using the abbreviated version of the Stanford-Binet, Fifth Edition. Danny's ABIQ, combined with scores on the Vineland-II (ABC = 67), indicated functioning within the Upper Mild range of developmental delay. Danny lived in the home for less than one year prior to the current study.

Table 1
Description of Participants

Participant	Age	Grade	IQ	Ethnicity	ABC	Diagnoses
Hailey	19	12	55	White	59	Reactive Attachment Disorder; Oppositional Defiant Disorder (ODD); Attention Deficit Hyperactivity Disorder; SIB: Mild Intellectual Disability; Autism Spectrum Disorder; and Bipolar Disorder- Mixed.
Ami	17	11	75	African-American	71	Attention Deficit Hyperactivity Disorder - Combined; Pervasive Developmental Disorder NOS; Mild Developmental Disability
Danny	17	11	73	White	67	Autism Spectrum Disorder; Mild Intellectual Disability Disorder; Attention Deficit Hyperactivity Disorder; Oppositional Defiant Disorder; Seizure Disorder; Tourette Syndrome

Setting

The JCG intervention was conducted in a private ICF/IID located within the southeastern United States. The one-story facility is approximately 2500 square feet and hosts six beds. The facility resembles a typical home, both inside and out, in function and appearance. The facility employed approximately 14 caregivers, in addition to a group home manager. Approximately

eight caregivers were responsible for the provision of direct care services. The remaining caregivers were scheduled on a part time, night-shift, or as-needed basis. Approximately twelve caregivers were African-American and two were White. Caregivers at the time of the study ranged in age from 21 to 52 and ranged in experience from less than one month to approximately four years.

Dependent Variables and Operational Definitions

The dependent variable for the current study is the percentage of intervals during which disruptive behavior (i.e., target behaviors) were documented. Data were collected by caregivers using a one-hour partial interval recording procedure in accordance the with standard ongoing data recording procedures used by the facility. Caregivers documented the occurrence of each participant's target behavior by circling the corresponding number (e.g.; task refusal = 1; aggression = 2; self-injurious behavior = 3) if the behavior occurred during the interval. Each interval started and ended on the hour (e.g., 5pm - 6pm, 6pm - 7pm). Daily intervals were coded from first hour (i.e., interval) each calendar day (12:00am – 1:00am) to the end of the calendar day (11:00pm – 12:00am).

Only those intervals during which participants were present and awake, for any amount of time during the interval, were included in the data analysis. Intervals during which participants were asleep throughout the entire interval (e.g., 10pm – 11pm) were excluded, given the lack of opportunity to exhibit disruptive behavior. Additionally, intervals during which participants were at school or otherwise out of the home and unsupervised by caregivers for the duration of an interval were excluded (e.g., doctor appointments, home visits). A graduate research assistant reviewed all data and discussions occurred on approximately six disagreed data points (e.g., both 1 and 2 appeared to be circled) until 100% agreement was achieved.

Materials

***Intervention Rating Profile-15* (IRP-15).** A modified version of the *Intervention Rating Profile* (IRP-15; Martens, Witt, Elliot, & Darveaux, 1985) was completed by caregivers to evaluate treatment acceptability and overall satisfaction with the JCG intervention (see appendix A). The IRP-15 is a shortened version of the IRP (Witt, Martens, & Elliot, 1984) with internal reliability rating of .98 using Chronbach's alpha. The IRP-15 uses a six-point Likert scale that requires raters respond to 15 statements such as "I would suggest the use of this procedure to other caregivers." Responses for each statement may range from 1 (*Strongly Disagree*) to 6 (*Strongly Agree).* Scores may range from 15 to 90 with higher scores suggesting greater perceptions of treatment acceptability. A sum of 52.50 or higher is considered acceptable (Martens, Witt, Elliot, & Darveaux, 1985).

***Vineland Adaptive Behavior Scales, Third Edition* (Vineland-3).** The Vineland Adaptive Behavior Scales is the gold standard among clinicians and researchers for assessing rater perceptions of an individual's adaptive behavior, especially those with ID (e.g. Minshawi, Ashby, & Swiezy, 2009). The Vineland-3 (Sparrow, Cicchetti, & Saulnier, 2016) is the latest revision and is considered a reliable and valid assessment that provides a norm-referenced assessment of personal and social skills necessary for daily living. The Vineland-3 is commonly used to help diagnose and classify intellectual and developmental disabilities by measuring adaptive behaviors in persons from birth through 90-years-old.

The Vineland-3 Domain-Level Parent/Caregiver Rating Form is a 120-item questionnaire that provides information on adaptive functioning in three broad domains including Communication, Daily Living Scales, and Socialization. A three-point Likert scale is used that includes zero (the behavior is *never performed*), 1 (the behavior is *sometimes or partly*

performed), and 2 (the behavior is *usually or habitually performed*). The Communication domain assesses the degree to which a ratee can attend to and follow through with directions, in addition to the ratee's use of expressive and written communication. The Daily Living Skills domain assesses factors such as personal care and hygiene, ability to complete household tasks, and capacity to function in the community environment. The Socialization domain assesses the rater's perception of how the ratee interacts with others during activities such as play and leisure, as well as how the individual exhibits responsibility and sensitivity to others. The domain scores are summed to yield an Adaptive Behavior Composite score (ABC) that is normed referenced to an average of 100 and a standard deviation of 15.

An optional Maladaptive Behavior domain provides a brief assessment of internalizing and externalizing problem behaviors. The internalizing composite is comprised of 13 items while the externalizing composite contains 11 items. A three-point Likert scale includes zero (*never*), 1 (*sometimes*), and 2 (*often*) concerning the occurrence of behaviors such as irritability, anxiety, disobedience, and aggression. A *v*-scale score is provided for the internalizing and externalizing domain with a mean score of 15 and standard deviation of 3. Scores ranging from zero to seventeen are considered to fall within the Average range. Scores that fall between eighteen to twenty are considered Elevated, while scores of twenty-one or higher are Clinically Significant.

Job cards. Job cards consisted of simple household jobs (i.e., chores) that were written on 3x5 inch index cards and laminated (see appendix B). Each job card listed step-by-step instructions for successful completion and took approximately 10-15 minutes to complete. One side of the job card was blank while the other side listed the job and all required steps for successful completion. Jobs were relatively equal in the amount of effort required for

completion. Caregivers issued job cards by fanning the deck of job cards out face down (i.e., blank side up) to ensure random selection.

All jobs that were unable to be completed due to inclement weather (e.g., Rake Yard, Sweep Porch) or other circumstances were removed from the deck prior to issuance. Similarly, recently completed job cards were also removed from the deck, if the subsequent completion was made significantly easier. For example, if the microwave was recently cleaned then subsequent cleaning would require less effort. The clinician worked with caregivers to identify readily available jobs that were suitable for the facility as well as the physical ability of each participant (e.g., strength to move furniture for sweeping underneath). If an unavailable or recently completed job was unknowingly left in the deck, participants returned the job card and were instructed to randomly select another a card.

Reward cards. Reward cards contained readily available rewards written on 3x5 inch cards and laminated (see appendix C). Like job cards, one side of each reward card was left blank while the other side listed a reward. Rewards included both tangible and nontangible items, such as “One free ice cream,” “30 minutes of additional screen time,” or “stay up 30 minutes late.” Preferred rewards were selected that were of low or no cost to make it feasible for the ICF/IID to provide daily.

Reward cards were issued by fanning the deck out face down and instructing participants to select a card at random. Rewards that were not available for use on the same day were removed from the deck prior to issuance. For example, the reward "Trip to the park" was removed if it is raining and therefore not possible for a participant to engage in the activity. If participants did select a reward that was not obtainable on the same day, they were provided the

option to either use the card later or redraw randomly from the deck of reward cards. The primary investigator worked with both caregivers and participants to identify desirable rewards.

Job card and reward card monitoring form. A job card assignment and completion monitoring form was used to record the assignment and completion of job cards and document the total number of hours that participants were grounded (see appendix D). Caregivers were instructed to document the date and time that each job card was issued and completed, as well as the job drawn for completion. A reward card monitoring form was also used to document the issuance of reward cards (see appendix E). Copies of the job card and reward card monitoring forms were placed next to the partial interval recording data forms in each participant's binder. This location was chosen to provide caregivers with a reminder to assign and document the issuance of job cards. Participant binders contained, among other documents, an individualized behavior plan, medical information, and general educational information (e.g., IEP plans). Caregivers used these binders to record target behaviors and other notable events (e.g., therapeutic holds, crisis medication administration).

JCG Treatment Integrity Checklist. The JCG Treatment Integrity Checklist (see appendix G) contains 10 items answerable in a *Yes* or *No* fashion. Each item is essential to proper implementation of JCG (e.g.; "Is the participant receiving reward cards?"; "Are you immediately providing job cards for talking back and arguing?"). Graduate research assistants completed the treatment integrity form and provided ongoing feedback to caregivers throughout the study.

Procedures

Consent and assent. Parental, or legal guardian, consent was obtained prior to implementing JCG. Assent was also obtained from each participant to participate in the current

study, including permission to interpret and present individual data. The procedures were explained to each participant in a manner that they could readily understand, and participants were instructed that they could refuse to participate at any time without penalty or judgment from the primary investigator or caregivers.

Graduate assistant training. Graduate level research assistants were provided a didactic style training in the use of JCG. Assistants viewed a series of brief training videos depicting appropriate and inappropriate JCG procedures and were required to complete the JCG integrity checklist, as well as recorded target behaviors, for each video. At least 90% agreement was required on the treatment integrity checklist and identification of target behaviors for assistants to conduct observations. Given that the facility assigned different target behaviors and definitions for each participant, graduate research assistants used the following definitions to record disruptive behavior: "Follow directions," "Keep hands and feet to self," and "Use appropriate language." These rules encompass most defiant behaviors, and reflect findings suggesting three to five rules as an optimal range (McGinnis et al., 1995; White & Wood, 2005). These rules were also selected to determine the feasibility of using similar rules and/or operational definitions following the end of the current study to promote greater consistency in the documentation of target behavior.

Following directions was defined as, "The initiation within ten seconds, or within a time otherwise specified, an essential behavior that has been specified in a command issued by the caregiver, or the cessation of a potentially harmful behavior that has been specified in a command issued by the caregiver for at least ten seconds." Following directions included the absence of target behaviors under TAU conditions including *elopement* and *uncooperative*.

Keep Hands and Feet to Self was defined as, "The absence of any apparently intentional physical behavior that would typically result in restriction of freedom of movement, physical pain, or injury that is directed toward another person or animal. This includes the absence of any apparently intentional behavior that would typically result in the damage, destruction, or loss of value of any object, regardless of ownership." Keep hands and feet to self included the absence of *aggression, inappropriate sexual behavior, self-injury,* and *stealing*.

Appropriate Language was defined as "Language that is void of taunts, threats of harm, profane or vulgar statements, and includes nonverbal gestures (e.g. clenching or raising a fist) that professes aggression or intent to harm, or any other language both verbal or nonverbal that would typically elicit annoyance or distress." Appropriate Language included the absence of *disrespectful* and *inappropriate social behaviors*.

Caregiver training. Caregivers received training in the use of JCG and related data collection forms from the primary investigator. Training occurred on-site and largely in individual training sessions. Training sessions lasted approximately 20 to 30 minutes each and were didactic in nature. Caregivers were provided the opportunity to role-play the use of JCG and received feedback on their performance. The primary investigator answered all question and addressed concerns presented throughout each training session. The importance of differential reinforcement (reinforcement of appropriate behaviors and planned ignoring) was discussed to highlight the importance of minimizing attention for problem behaviors, and creating a contrast between the time-in and timeout environment. Ongoing training and individual feedback were provided by the primary investigator and graduate research assistants throughout each JCG phase.

Training materials included a handout that described the JCG procedure (see appendix F) and review of a brief PowerPoint that further detailed procedures described in the handout. Previous research conducted by this author (Pate, 2016) suggested that a handout alone was effective in promoting the identification of core JCG components that are considered essential for treatment integrity. Previous research using a task-based grounding procedure (see Richards, 2002) also used a handout and brief review of procedures to successfully train caregivers in the use of similar behavioral management strategies.

Reward Card and Job Card Selection. Caregivers were asked to review all premade reward cards (see appendix C) and were encouraged to provide suggestions for additional rewards. It was recommended that the allowance and download an app reward be removed to limit potentially related cost. Participants were then asked to rank their top reward card choices from the list of premade cards (see appendix B). Hailey's top five cards were identified as (1) wild card, (2) 10 extra minutes on phone, (3) make extra phone call, (4) caregiver completes a chore, and (5) ice-cream. Ami's top five choices were, in order, wild card, ice-cream, 30-minutes extra screen time, stay up 30-minutes later, and watch a movie. Danny's top five choices included make a phone call, choose tv show, trip to the park, 10 extra minutes on the phone, and watch a movie, respectively. Given disinterest among each participant, the following rewards were removed: choose radio station for a day, tea party, bike ride, story time, and learn to build. Reward cards were placed a plastic penciled holder box with a green lid that was generally placed in the main living area next to resident charts.

The primary investigator also worked with caregivers to identify appropriate job cards from the list of premade job cards (see appendix B). Pick-up sticks, water flowers, and pull weed were removed given that landscaping was frequently conducted by contactors). Given the

absence of carpet and vacuum cleaner, vacuum couch, vacuum living room, and vacuum car (i.e., van) were also removed. Job cards were placed in a plastic pencil holder with red lid and were also kept near resident charts.

Daily check-in. The primary investigator worked with caregivers to establish a consistent time of day to "check-in" with participants to provide reward cards. Scheduled outings and other activities made it difficult to check-in at a consistent time each day; therefore, a one-hour window was selected between 7:00pm to 8:00pm. Daily check-ins lasted approximately three to five minutes. Participants could check-in only if they received two or fewer job cards (i.e., exhibited two or fewer target behaviors) within a 24-hour period and had no incomplete job cards (i.e., they were not currently grounded). Caregivers fanned the reward card deck out such the blank sides faces up and allowed participants to randomly select a reward. Caregivers also provided verbal praise during this time for appropriate behaviors, reductions in target behavior, and earned rewards. Target behaviors were not discussed. The end of the daily check-in signaled the beginning of a new 24-hour period.

Baseline (treatment as usual). Caregivers were informed that research was being conducted and that graduate research assistants would periodically observe participants in the facility. Caregivers were instructed to continue providing treatment as usual which relied upon a behavior-time release contingency. Specifically, participants lost privileges for a predetermined amount of time contingent upon target behavior*;* this was referred to as being "on hours." Target behaviors and hours of restriction varied across participants according to their individualized behavior plan (see Table 2). Privileges included computer access on designated nights (approximately twice weekly), telephone usage (approximal 10 to 15 min per day), access to the

gaming console (Nintendo Wii), and participation in various daily community outings such as bowling and special trips to the movies, museum, park, gym, store, and various restaurants.

Table 2
Hours of Restriction per Target Behavior for Treatment as Usual

	Hailey	**Ami**	**Danny**
Aggression	12hrs	8hrs	12hrs
Disrespectful	6hrs	4hrs	8hrs
Elopement	-	8hrs	-
Inappropriate Sexual Behaviors	48hrs	-	48hrs
Inappropriate Social Behaviors	5- 15min	4hrs	redirect
Self-Injury	4hrs	8hrs	4hrs
Stealing	8hrs	8hrs	8hrs
Uncooperative	8hrs	until complies	8hrs

Target behaviors varied in operational definitions across participants. Procedures for responding to target behavior also varied across participants and according to each participant's behavior plan. For example, Hailey's behavior plan allowed for one verbal cue (i.e., warning) prior to restricting her privileges for aggression, while plans for Ami and Danny did not provide such. Aggression was generally defined as engaging in a behavior that threatens or results in injury to others (hitting, pinching, scratching, pushing, pulling hair, biting, etc.). Related to uncooperative (task/refusal), Ami was allowed 15 to 20 minutes to comply with requests while Hailey was provided 10 to 20 seconds. Uncooperative was generally defined as refusing to participate in activities that are scheduled, essential training objectives, self-care activities, or directed to protect her and others from injury. Disrespect included speaks or acts in a manner that is agitating and/or considered disrespectful including cursing, name calling, using inappropriate tone of voice, yelling at others and exhibiting inappropriate gestures. Elopement included any attempt to leave supervised area or leave the group home without permission. Inappropriate sexual behavior was defined as overt, purposeful behavior which invades another's

personal space with the intent of sexual contact while inappropriate social behavior included inappropriately touching others, invading privacy, and standing too closely. Self-injury was defined as engaging in any behavior that may cause pain or injury to self (e.g., biting self, pulling hair, banging head). Stealing was considered to have occurred when a resident was observed to have property of others or takes other's property without permission, or property is found on her person or in her room that does not belong to her.

When participants were "on hours," appropriate behavior, as indicated by an absence of all target behavior, was required for the entire duration of those hours. For example, a participant who was serving eight hours for aggression was required to have eight consecutive hours of appropriate behavior prior to regaining her privileges. If a participant exhibited a target behavior while on hour seven of eight, the time of the behavior was documented and hours started over. A participant who was on hours for a target behavior requiring less hours (e.g., six hours for disrespect) exhibited a target behavior requiring a greater number of hours (e.g., twelve hours for aggression), the participant would be subject to the greater number of hours (i.e., aggression) which began at the time of the behavior.

Job Card Grounding. The JCG intervention phases were implemented for one month each. Prior to implementing the initial JCG phase, a meeting was held in the group home during which participants were informed of the JCG intervention. JCG was presented in a positive manner that highlighted the opportunity for participants to earn rewards and be in control over how long they will be grounded. The primary investigator modeled the procedure of selecting job cards and reward cards, as well as procedures for returning completed job cards. Participants were encouraged to ask questions and present any concerns. The primary investigator addressed all questions and concerns.

During the JCG conditions, participants randomly selected a job card contingent upon target behavior. Job cards were issued immediately following target behaviors. Participant were then grounded (i.e., on hours) until they successfully completed the job(s). Grounding was defined as the loss of access to the same special privileges as were restricted under TAU conditions. Caregivers were instructed to provide the minimal attention or assistance necessary to help participants complete job cards. No more than three job cards were issued per grounding occasion. For example, if a job card was issued for aggression and the participant became disrespectful upon being informed of such, an additional card was issued. If defiant behavior persisted or occurred while the participant was grounded, caregivers assigned an additional job card until the participant had up to three job cards.

When jobs were completed, participants returned the job cards to caregivers who then confirmed that the jobs were successfully completed. If each step was completed appropriately, the participant regained privileges. If participant returned a job card with an incomplete step, caregivers provided a brief description of the incomplete or missing step (e.g., “The dishes were not dried, see step 5”).

If a participant refused to select a job card, caregivers randomly selected in lieu. If a participant refused to complete a job card, that participant remained grounded for no longer than what was outlined in their behavior support plan. For example, Ami's behavior support plan required her to be placed on restricted privileges for eight hours following aggressive behavior. If she refused to select a job card, a caregiver randomly selected one for her. Ami could then complete the job card and regain privileges or refuse to complete the job card and remain under restricted privileges for eight hours. Participants could complete job card at any time while grounded (i.e., on hours), even if they initially refused to do so. This option to complete job

cards varies from traditional JCG procedure where adolescents remained grounded indefinitely until all job cards are complete. The purpose of this modification was to minimize excessive restrictions. For example, participants may refuse to complete a job card for two to three days, or longer; this extended period of grounding may be perceived as excessive or unjust.

Treatment Integrity.

In addition to completing the JCG integrity checklist, graduate research assistants recorded the occurrence of target behaviors for each participant using a partial interval recording form. Reliability was assessed by comparing caregiver and research assistant records of documented target behavior. If caregiver and research assistant records indicated that a target behavior occurred, an agreement was noted. The comparison between caregiver and research assistant records provided an indicator of the accuracy for which caregivers were documenting the occurrence of target behaviors.

Experimental Design

The current study used an ABAB withdrawal design. The availability of participant records allowed for an initial extended baseline period that was followed by a one-month treatment phase, one-month return to baseline, and final one-month treatment phase. Given that each participant had an individualized treatment plan to fall back upon during baseline (i.e. treatment as usual), the withdrawal of JCG was not considered to place participants at significant risk for harm or dysfunction. The comparison of JCG to treatment as usual was considered a rigorous assessment of the interventions effectiveness as it is relatively easy for any treatment to outperform no treatment (Wampold, 2001). Previous studies have examined JCG compared to arbitrary discipline strategies (Richards, 2002; Ward, 2009) and, as such, reported results that are not directly comparable to those of the current study.

Data Analysis

A lack of agreement regarding data analysis for single-case research designs exists (e.g., Brossart, Laird, & Armstrong, 2018; Byiers, Reichle, & Symons, 2012). Various methods for analyzing single-case research designs have been proposed including visual analysis, nonoverlap indices, and multiple parametric analyses. Some authors have suggested that effect size statistics be selected based upon data characteristics such as trend, slope, and autocorrelation (e.g., Mason, 2010), and others recommend that effect size statistics be interpreted in conjunction with visual analysis (Tate & Perdices, 2019). Results of the current study will be presented graphically for visual analysis. The NAP (Parker & Vannest, 2009) and Tau-U (Parker, Vannest, Davis, & Sauber, 2011) effect size measures will also be presented given the popularity of nonoverlap indices, ease of interpretation, available *p* value derived from Tau-U, and additional reasons outlined below.

Visual analysis has historically been considered the gold standard of analysis for single-case research designs (e.g., Cooper, Heron, & Heward, 2007). Visual analysis does not, however, allow for the quantification of effects (DeProspero & Cohen, 1979). Visual analysis has been considered less reliable or accurate secondary to factors such as variability, trend, autocorrelation, and inconsistencies regarding the graphical presentation of data (Nelson, 2012).

Nonoverlap methods assess the effectiveness on an intervention by calculating the difference (i.e., nonoverlap) of data between baseline and treatment. In principle, an effective intervention will result in data with a higher (or lower, depending on the desired effect) levels of data between phases; more effective interventions should result in less overlap. Nonoverlap methods may be used with all single-case research designs such as AB, ABAB, and multiple baseline (see Parker, Vannest, & Davis, 2011 for review). Nonoverlap indices are considered

relatively easy to calculate, require minimal assumptions regarding data distribution, generally correspond well with visual analysis, and are more robust than mean or median level changes alone (Tate & Perdices, 2019). Non-overlap indies are not, however, suitable when high variability or outliers are observed and are insensitive to changes in trend across phases (Parker, Vannest, & Davis, 2011).

Parker and Vannest (2009) suggest calculating the Nonoverlap of All Pairs (NAP) given that the method improves upon other nonoverlap effect size measures and is considered more appropriate than parametric analyses when data fail to meet parametric assumptions (e.g., outliers, normal distribution). NAP, which is equivalent to the Common Language Effect Size (see Vargha & Delaney, 2000), provides an intuitive interpretation that ranges from [0 – 1] with 0.5 indicating a 50% chance-level change, or a 50% probability that a data point in a given phase will be equivalent to a data point in a comparison phase. It has been described as a popular method that is relatively simple to compute, does not make assumptions about the data, is based upon relevant criteria related to visual analysis such as changes in slope and level, and is less likely to be misinterpreted than parametric analyses (Manolov, Losada, Chacón-Moscoso, & Sanduvete-Chaves, 2016).

For the current study, NAP is considered the proportion of cases in the treatment phase that fall below matched pairs in baseline, or simply the percentage of data that decrease across baseline to treatment phases. When comparing the initial JCG (B_1) to the return to baseline phase (A_2), NAP is presented as the percentage of data that increase as it is hypothesized that the PIDB will increase following the withdrawal of JCG. Compared to Cohen's (1988) *d* values, NAP effect sizes are much larger coefficient of determination (R^2) value such that an effect size

ranging from 0 to 0.65 is considered *weak*, 0.66 to 0.92 is *medium*, and 0.93 to 1.0 is *large* or *strong* (see Parker & Vannest; 2009).

Similar to NAP, Tau has been described as a simple linear rescaling of NAP to a range of [-1 to 1] and null value of zero (Parker, Vannest, & Davis, 2011). Tau, often referred to as Tau-U when correcting for trend in baseline data, is a nonparametric rank order correlation that provides a fairly robust measure of effect and has been recommended when autocorrelation and baseline trend are present (Tate & Perdices, 2019). Mathematically, Tau is described as the "percentage of nonoverlap minus overlap" as opposed to NAP which is a "a percentage of nonoverlap" (Parker, Vannest, & Davis, 2009, p. 11). Unlike NAP, Tau-U takes into consideration baseline trend. In addition to controlling for baseline trend, R Code provided by Kevin Tarlow (https://manolov.shinyapps.io/Overlap/) also takes intervention trend (A vs B + trendB – trend) and provides *p*-values related to Tau-u effect sizes (see Tarlow, 2016). Vannest & Ninci (2015) have provided a guide for interpreting Tau such that .20 is considered small, 0.2 to 0.6 is moderate, 0.6 to 0.8 is large, and above 0.8 is very large although the context of the behavior in consideration. Tau -U has, however, been considered an overly conservative analysis (Manolov, Losada, Chacón-Moscoso, & Sanduvete-Chaves, 2016).

Given that NAP and Tau-U are considered to have the highest statistical power of all nonoverlap indices (Parker, Vannest, & Davis, 2009), as well as ease of interpretation, availability of a *p*-value, robustness of each measure, and lack of assumptions each makes about the data, the current study will present NAP and the more conservative Tau-U effect size statistics. NAP and Tau-U were calculated using the online visual aids and nonoverlap indices calculator provided by Manolov's online visual aids & nonoverlap indices calculator (https://manolov.shinyapps.io/Overlap/). To remove adjustments for slope, Tau was used when

calculating the overall effect size across combines phases (A_1+A_2 vs B_1+B_2) for each participant using Vannest, Parker, Gonen, and Adiguzel's (2016) online calculator at singlecaseresearch.org.

Additional effect size statistics were calculated using the Percentage Exceeding the Median (PEM; Ma, 2006), Percentage Exceeding the Median trendline (PEM-T; Wolery, Busick, Reichow, & Barton, 2010), and Hedges' *g* (Hedges, 1981). Each of these effect size measures have inherent limitations and are presented as comparative measures against NAP and TAU. Specifically, PEM and PEM-T are compromised by several factors including trends in the data, outliers, and high variability in data overtime. PEM offers the lowest statistical power for determining effect size and is inappropriate when the distribution is highly skewed as it is a measure of central tendency (see Parker, Vannest, & Davis, 2011). Given violations of the assumptions related to parametric analyses (e.g., normality, homogeneity; see Solomon & Stein, 2015), Hedges' *g* is not an appropriate effect size for the current data. Specifically, non-normality was observed for each phase across all participants (skewness and kurtosis; see Table 3).

An overall between-cases standardized mean difference (BC-SMD; Shadish, Hedges, & Pustejovsky, 2014) was calculated using the scdhlm web application (see Valentine, Tanner-Smith, Pustejovsky, & Lau, 2016). PEM and PEM-T were calculated using Manolov's online visual aids and nonoverlap indices calculator (https://manolov.shinyapps.io/Overlap/). Interpretation of nonoverlap methods (e.g., PEM and PEM-T) may be determined by the following metric: $\leq$ 0.50 = not effective; 0.50 to 0.69 = detectable or debatably effective; 0.70 to 0.89 = moderate effectiveness; and $\geq$ 0.90 = very effective (Scruggs & Mastropieri, 1998).

CHAPTER 3:

RESULTS

Graduate research assistant ratings on the JCG Treatment Integrity Checklist indicated moderate levels of treatment integrity. A total of 26 one-hour observations were conducted by graduate research assistants. Participants received all earned rewards; this was corroborated by the primary investigator who was present or verified via record review and daily communication with caregivers as well as participants. Caregivers provided praise for appropriate behaviors during 23% of observed intervals. When looking exclusively at observations where job cards were either issued or completed, job cards were issued immediately flowing target behavior 57% of observed intervals. Job cards were issued 54% of observed intervals when participants argued with caregivers upon being issued a job card. No more than three job cards were issued per instance of grounding and job cards were randomly issued during all observations. Caregivers used a neutral tone of voice when issuing job cards 29% of observed intervals, and all privileges were suspended during 29% of observed intervals. When participants were grounded, caregivers nagged them to complete job cards during 57% of observed intervals. Caregivers checked to ensure chores were done correctly for all job cards issued.

When graduate research assistant records of target behavior were compared to caregiver records, an overall agreement of 78.10% was observed; thus, research assistants and caregivers agreed 78% of the time that a target behavior occurred. Agreement was lowest (65.70%) for behaviors involving inappropriate language (e.g., disrespect, inappropriate social behaviors), with research assistants indicating a greater percentage of intervals. Agreement was higher for noncompliance/task refusal (80%), and highest (88.57%) for physical behaviors (e.g., aggression, self-injury, stealing); research assistants again documented a greater percentage of intervals than caregivers indicating that caregivers may have underreported target behaviors.

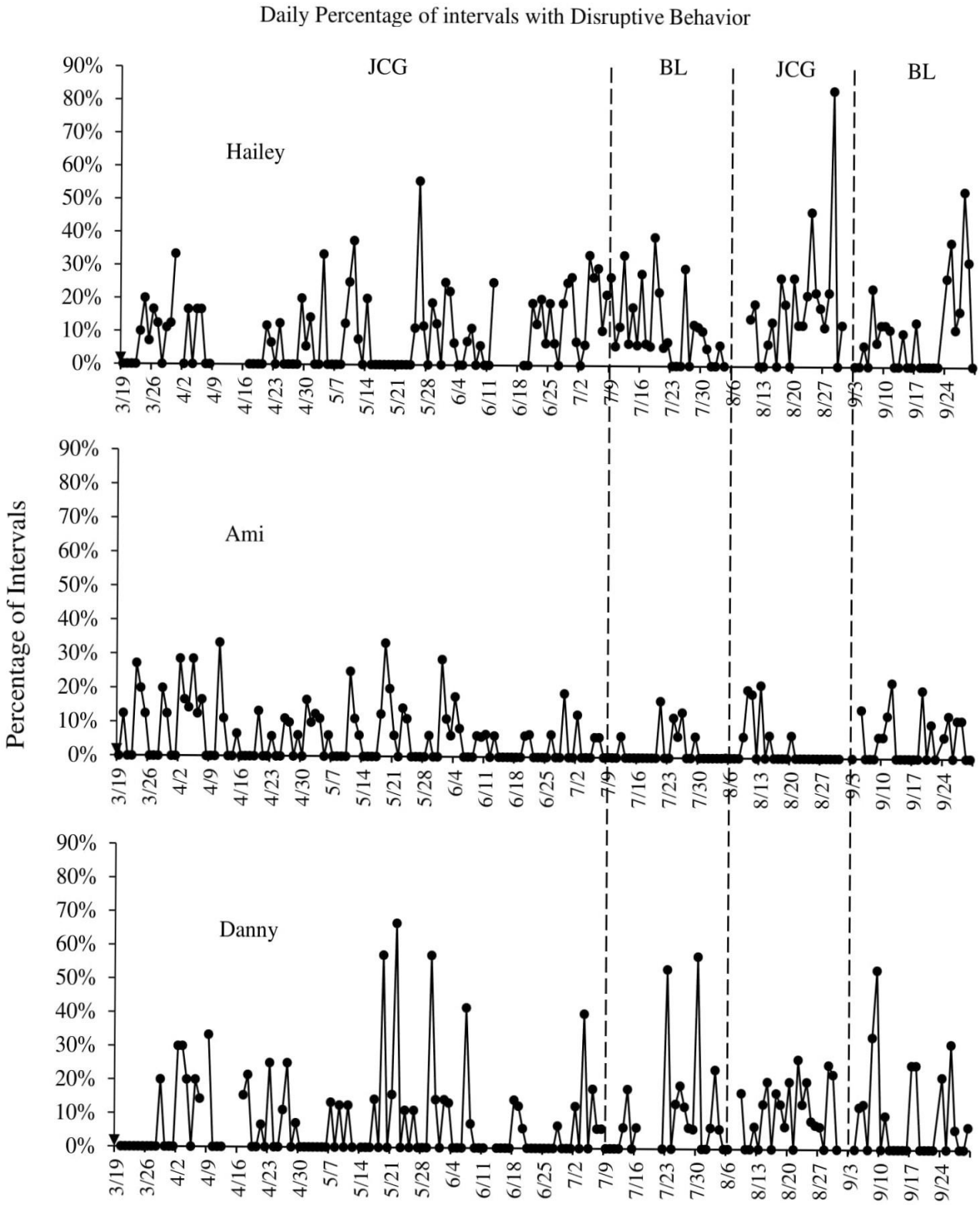
Research Questions

Question 1: *Will the intervention be rated as socially acceptable per caregiver and participant ratings on a modified version of the IRP-15?* A total of seven caregivers completed the modified IRP-15. Five caregivers rated the intervention as socially acceptable, as determined by a total score (i.e., sum) of 52.50 or higher (see appendix H). Among those caregivers who rated the intervention as acceptable, the average score was 71.60 (*SD* = 4.83) with a range of 66 to 76. Two caregiver ratings fell below the acceptability cutoff with scores of 51 and 35. The average score among all caregiver ratings was 63.43 (*SD* = 15.22; *Mdn* = 67).

Each participant rated the intervention as socially acceptable with an average score of 81.67 (*SD* = 4.16; *Mdn* = 83). Hailey's ratings ranged from one to six, with a total score of 83. Hailey reported unfamiliarity with the completion of chores as a consequence for target behaviors and rated item number ten (*This intervention is consistent with those I am already familiar with*) as one. Ami's ratings ranged from two to six, with a total score of 85. Ami rated each item as either five or six, except for item five (*My problem behavior is severe enough to warrant the use of this intervention*), for which she indicated disagreement. Danny's scores ranged from four to six, with a total score of 77.

Question 2: *Is JCG an effective intervention for reducing defiant behaviors among female adolescents who reside in the group home setting?* Linear regression (between-case standardized mean difference; Valentine, Tanner-Smith, Pustejovsky, & Lau, 2016) was used to estimate the overall treatment effect across participants using a fixed effect model (See Figure 1). Results suggest that JCG did not reduce overall defiant behaviors (i.e., PIDB) across participants ($b = 0.10$; $p = 0.94$).

Figure 1
Daily Percentage of Disruptive Behavior



At the individual case level, some phase changes were notable (see appendix I). The magnitude for each effect size was summarized using Tau-U, which is the most appropriate nonparametric measure of effect when considering the non-normality, trend, and autocorrelation (Hailey A_1 Lag_1 = 0.21, B_2 Lag_1= 0.41; Ami B_1 Lag_1 = 0,25; B_1 Lag_2 = -0.6) that was present in the current data. Although small, medium and large phase changes were observed among phase changes, Tau-U indicated a significant effect (increase) in Hailey's daily PIDB, as hypothesized, when JCG was withdrawn (B_1A_2; Tau-U = 0.27 [p = 0.01]). The number of days, average daily PIDB, standard deviation, range, median scores, skewness, and kurtosis are presented in Table 3.

Table 3
Descriptive Statistics: Daily Percentages of Intervals with Disruptive Behavior

	Phase	Days Present	Average PIDB	Standard Deviation	Range	Median	Skewness	Kurtosis
Hailey	A (TAU)	19	13.24	10.37	0 - 83.33	7.14	1.30	1.10
	B (JCG)	55	10.70	12.44	0 - 52.94	6.67	1.15	0.89
	A1	97	9.09	11.26	0 - 55.56	6.25	1.36	2.03
	B1	27	11.04	11.39	0 - 38.89	6.69	1.09	0.15
	A2	22	17.63	18.52	0 - 83.33	13.81	2.31	7.23
	B2	28	10.37	13.57	0 - 52.94	6.70	1.58	2.48
Ami	A (TAU)	138	5.52	8.21	0 - 33.34	0	0.82	-0.29
	B (JCG)	55	3.90	6.40	0 - 21.43	0	1.23	0.38
	A1	112	6.09	8.46	0 - 33.34	0	2.13	3.61
	B1	28	2.16	4.46	0 - 16.67	0	1.46	1.57
	A2	26	3.07	6.62	0 – 21.43	0	2.16	3.47
	B2	27	5.70	7.48	0 - 22.22	0	1.01	-0.21
Danny	A (TAU)	127	7.72	12.60	0 – 66.67	0	1.27	0.31
	B (JCG)	50	9.41	14.71	0 – 57.14	0	1.89	3.03
	A1	103	7.41	13.26	0 – 66.67	0	2.43	6.51
	B1	23	10.13	15.85	0 – 57.14	5.88	2.22	4.61
	A2	24	10.11	9.13	0 – 26.67	7.74	0.30	-1.30
	B2	27	8.80	13.95	0 – 53.33	0.00	1.74	2.77

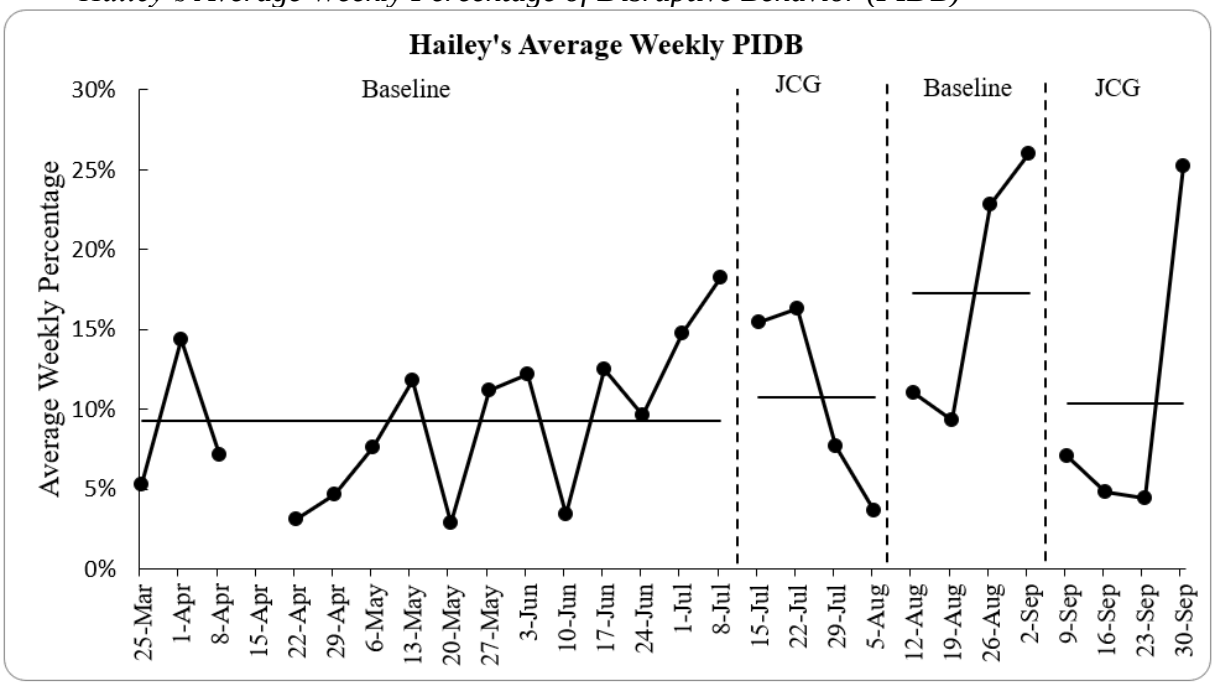
Note. TAU = Treatment as usual; JCG = Job Card Grounding

The average weekly, as opposed to daily, percentage of intervals during which disruptive behaviors (PIDB) occurred is displayed on separate graphs for each participant below to promote

interpretation via visual analysis. The weekly PIDB was calculated by averaging the daily PIDB for each week. Weeks began on Sunday and ended on Saturday.

Hailey. During Hailey's initial baseline phase (A_1), as shown in Figure 2, disruptive behaviors occurred on average 9.25% of recorded intervals (*SD* = 4.80; *Mdn* = 9.65%). Hailey's lowest weekly PIDB was 2.86%, and her highest was 18.23%. An overall increasing trend in PIDB was observed (0.47). Data was collected for a total of 97 days during the initial baseline phase as Hailey was absent during the fourth week; she was present and awake for an average of 11.95 hours (*SD* = 4.16; *Mdn* = 11; Mode = 9) per day, with a range of three to 19 hours. Data was not collected while participants were at school, as they were not in the presence of caregivers.

Figure 2
Hailey's Average Weekly Percentage of Disruptive Behavior (PIDB)



Hailey's average weekly PIDB increased, rather than decrease as hypothesized, to an average of 10.78% (*SD* = 6.13%; *Mdn* = 11.56%) during the initial JCG phase (B_1), with weekly PIDBs ranging from 15.46% to 3.67%. A downward trend in PIDB was, however, observed (-

4.40). Hailey was present and awake for an average of 16.26 hours per day (*SD* = 2.75; *Mdn* = 17; Mode = 17), with a range of 4 to 19 hours, during the initial JCG phase. During the return to baseline (A_2), Hailey's average weekly PIDB increased, as hypothesized, to an average of 17.28% (*SD* = 8.33; Range = 9.35 - 25.96) with an observed increasing trend in PIDB (5.83). Hailey was present and awake on average 13.41 hours per day (*SD* = 3.53; *Mdn* = 15; Mode = 15), with a range of six to 17 hours, during the return to baseline phase.

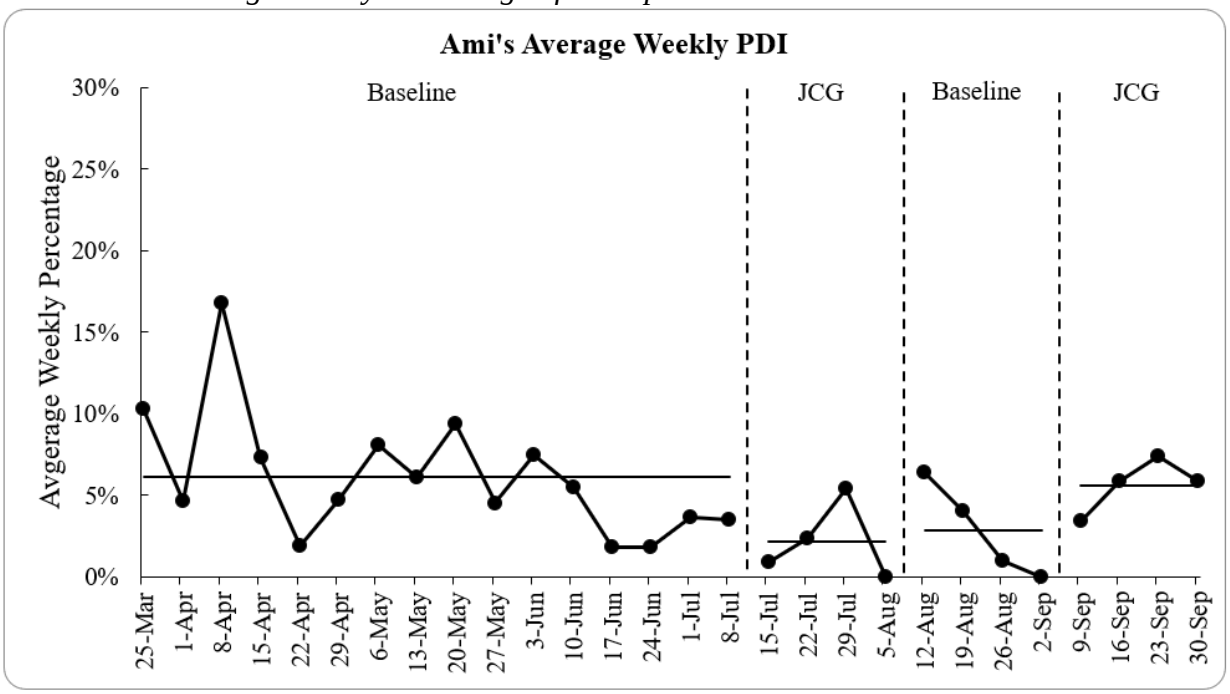
During the final JCG phase (B_2), Hailey's average weekly PIDB decreased to 10.73% (*SD* = 9.96) with a range of 4.43% to 25.21%. A decreasing trend in weekly PIDB was observed during the first three weeks followed by a sharp increase in disruptive behaviors during the final week of the JCG intervention; this sudden increase resulted in an overall increasing trend in weekly PIDB (5.41). When compared to the preceding baseline (A_2), the reimplementation of JCG (B_2) resulted in a small to medium decrease in Hailey's mean and medial level daily PIDB (A_2B_2; NAP = 0.66; PEM = 75; PEM-T = 85.71; SMD = 0.38; Hedges' g = 0.45). Hailey was present and awake for an average of 12.82 hours per day (*SD* = 3.84; *Mdn* = 14.50; Mode = 9), with a range of seven to 19 hours, during the final JCG phase.

Ami. During the initial baseline phase (A_1), Ami's disruptive behaviors occurred on average 6.09% of recorded intervals (*SD* = 3.86; *Mdn* = 5.10) with an overall decreasing trend (-0.44) in weekly PIDB (see Figure 3). Ami's lowest weekly PIDB was 1.85%, and her highest was 16.75%. Ami was present and awake for an average of 12.25 hours (*SD* = 3.70) per day, with a range of six to 17 hours (*Mdn* = 14; Mode = 15), during the initial baseline phase.

Following the initial implementation of JCG, Ami exhibited an overall decrease in weekly PIDB with disruptive behavior occurring on average 0.89% (*SD* = 2.35%; *Mdn* = 1.64%) of recorded intervals. Her weekly PIDB during the initial JCG (B_1) phase ranged from 0% to

5.37% with a slightly increasing trend (0.03). Ami was present and awake for an average 15.14 hours per day (*SD* = 2.19) with a range of 9 to 19 hours (*Mdn* = 16; Mode = 16) during the initial JCG phase.

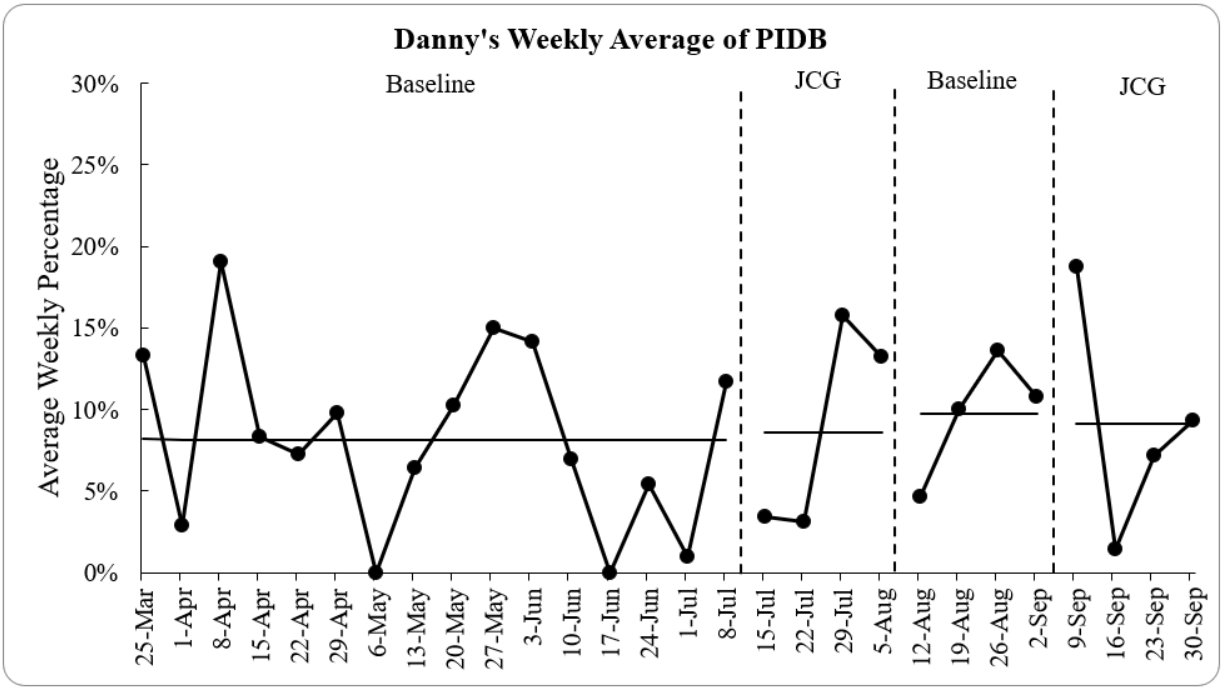
Figure 3
Ami's Average Weekly Percentage of Disruptive Behavior



During the return to baseline (A_2), Ami's average weekly PIDB increased to an average of 2.85% (*SD* = 2.94). Her weekly PIDB ranged from 0% to 6.43% with an overall decreasing trend (-2.24). Ami was present and awake for an average of 13.77 hours per day (*SD* = 3.73; *Mdn* = 15; Mode = 15), with a range of one to 17 hours during the return to baseline phase. During the final JCG phase (B_2), Ami's average weekly PIDB increased (rather than decrease as hypothesized) to 5.62% (*SD* = 1.62) with a rage of 3.42% to 7.35%. An overall increasing trend was observed (0.88). Ami was present and awake for an average of 10.7 hours per day (*SD* = 3.94; *Mdn* = 9; Mode = 9) with a range of 1 to 16 hours during the reimplementation of JCG.

Danny. During the initial baseline phase (A_1), as shown in Figure 4, Danny's weekly average PIDB was 8.1% (SD = 5.36%; *Mdn* = 7.11%). Her lowest weekly average was 0%, while her highest was 19.05%. An overall decreasing trend in weekly PIDB was observed (-0.28). Danny was present and awake for 103 days (28 weeks) during the initial baseline phase and data was collected for an average of 11.42 hours (*SD* = 4.45; *Mdn* = 12; Mode = 18) per day, with a range of two to 19 hours. A small increase, rather than decrease, in Danny's weekly PIDB was observed following the initial JCG phase (B_1), with disruptive behavior occurring on average 8.62% (*SD* = 6.87; *Mdn* = 8.34) of recorded intervals. Danny's weekly PIDB during the initial JCG phase ranged from 2.08% to 15.72% with an overall increasing trend (4.21); she was present and awake for an average of 15.48 hours per day (*SD* = 3.49; *Mdn* = 16; Mode = 15) with a range of 1 to 21 hours.

Figure 4
Danny's Average Weekly Percentage of Disruptive Behaviors



During the return to baseline (A_2), Danny's weekly PIDB increased to 9.77% (*SD* = 3.75) and ranged from 4.67% to 13.64%. An overall increasing trend in weekly PIDB was observed

during the return to baseline (2.20); Danny was present and awake on average 12.41 hours per day (*SD* = 3.74; *Mdn* = 14.5; Mode = 15), with a range of two to 17 hours. Danny's average weekly PIDB remained at 9% (9.16; *SD* = 7.20) during the final JCG phase with a rage of 1.43 to 18.75 and an overall decreasing trend (-2.26). Danny was present and awake for an average of 10.74 hours per day (*SD* = 4.24; *Mdn* = 10; Mode = 8) with a range of 3 to 21 hours. A comparison of all baseline (*n* = 127) and treatment phase (*n* = 50) data (daily PIDB) suggests that the JCG was not effective at reducing Danny's overall daily PIDB.

Question 3: *Will the JCG intervention result in clinically significant increases in participants Adaptive Behavior Composite or clinically significant decreases on the Maladaptive Behavior component according to caregiver ratings on the Vineland-3?*

Ratings on the Vineland-3 were completed by a caregiver who was most familiar with the participants and who had approximately four years of experience in the facility. Ratings were conducted approximately one week prior the start of the JCG intervention and immediately following the second JCG phase. A Wilcoxon signed-ranks test of combined scores from each domain (ABC) indicated that Ami's post- treatment rating on the Vineland-3 (*M* = 1.92, *SD* = 0.38, *Mdn* = 2) was significantly higher than her pre-treatment rating (*M* = 1.68, *SD* = 0.65, *Mdn* = 2), *Z* = 3.72, *p* = <.001. Comparisons of Hailey's pre- (*M* = 1.74, *SD* = 0.59) and post-treatment ABC ratings (*M* = 1.85, *SD* = 0.50) fell short of statistical significance (*p* = 0.12). Caregiver ratings of Danny's pre- pre- (*M* = 1.29, *SD* = 0.85) and post-treatment ABC (*M* = 1.36, *SD* = 0.84) also fell short of statistical significance (*p* = 0.39).

Comparisons of Ami's domain level composite scales indicate significant increases within the Daily Living Skills (*Z* = 2.25, *p* = 0.02) and Socialization (*Z* = 2.56, *p* = 0.01) domains. Within the Daily Living Skills composite, ratings suggest improvements on tasks such

as Ami's ability to call others using a phone, find information on the internet, take her own temperature, and demonstrate a knowledge of healthy and unhealthy foods. Within the Socialization composite, post-treatment ratings suggest that Ami demonstrated improvements in skills such as playing make-believe games, apologizing, use words when upset, showing good sportsmanship, and adhering to limits set by caregivers.

Table 4
Vineland-3 Caregiver Ratings (Adaptive Behavior Composite)

	Hailey		**Ami**		**Danny**	
	Pre **SS** (%tile)	Post **SS** (%tile)	Pre **SS** (%tile)	Post **SS** (%tile)	Pre **SS** (%tile)	Post **SS** (%tile)
Adaptive Behavior Composite	**86** (18th) *Adequate*	**95** (37th) *Adequate*	**82** (12th) *Moderately Low*	**101** (53rd) *Adequate*	**70** (2nd) *Low*	**71** (3rd) *Moderately Low*
Communication	*88 (21st)*	*98 (45th)*	*88 (21st)*	*105 (63rd)*	71 *(3rd)*	71 *(3rd)*
Daily Living Skills	*91 (27th)*	*99 (47th)*	*86 (18th)*	*101 (53rd)*	71 *(3rd)*	78 *(7th)*
Socialization	*86 (18th)*	*92 (30th)*	*81 (10th)*	*97 (42nd)*	71 *(3rd)*	71 *(3rd)*

Clinical significance was determined by a statistically significant increase in pre- and post-scores as well as ratings that moves participants within a normalized range of functioning (i.e., within two standard deviations of the population mean) following treatment (Jacobson & Traux, 1991). Per caregiver ratings, JCG resulted in a clinically significant increase in Ami's overall ABC. Within domain level composite scales, clinically significant increases were observed in Ami's Socialization domain, as evidenced by both statistically significant changes and post treatment functioning that falls within the normalized range of functioning. Hailey's pre- and post-treatment rating on the ABC and domain level composite scales fell within the same descriptive category. No change was observed regarding Danny's ABC or domain level composite scores. Table 4 provides a summary of pre- and post-treatment caregiver ratings.

On the Maladaptive behavior composite, caregiver ratings indicated a significant increase, as opposed to hypothesized decrease, in problem behaviors for each participant (see Table 5). Hailey's combined (i.e., internalizing and externalizing) pre-treatment scores within the Maladaptive behavior domain (*M* = 0.66, *SD* = 0.77, *Mdn* = 0) were significantly lower than post-treatment (*M* = 1.91, *SD* = 0.37, *Mdn* = 2) ratings, *Z* = 4.77, *p* = <.001. Similarly, Ami's combined pre-treatment Maladaptive behavior scores (*M* = 0.80, *SD* = 0.90, *Mdn* = 0) were significantly lower than her post-treatment (*M* = 1.84, *SD* = 0.50, *Mdn* = 2) ratings, *Z* = 4.27, *p* = <.001. Combined post-treatment ratings on the Maladaptive behavior composite for Danny (*M* = 0.12, *SD* = .94, *Mdn* = 2) were also significantly higher than pre-treatment ratings (*M* = 0.37, *SD* = 0.69, *Mdn* = 0), *Z* = 3.84, *p* = <.001.

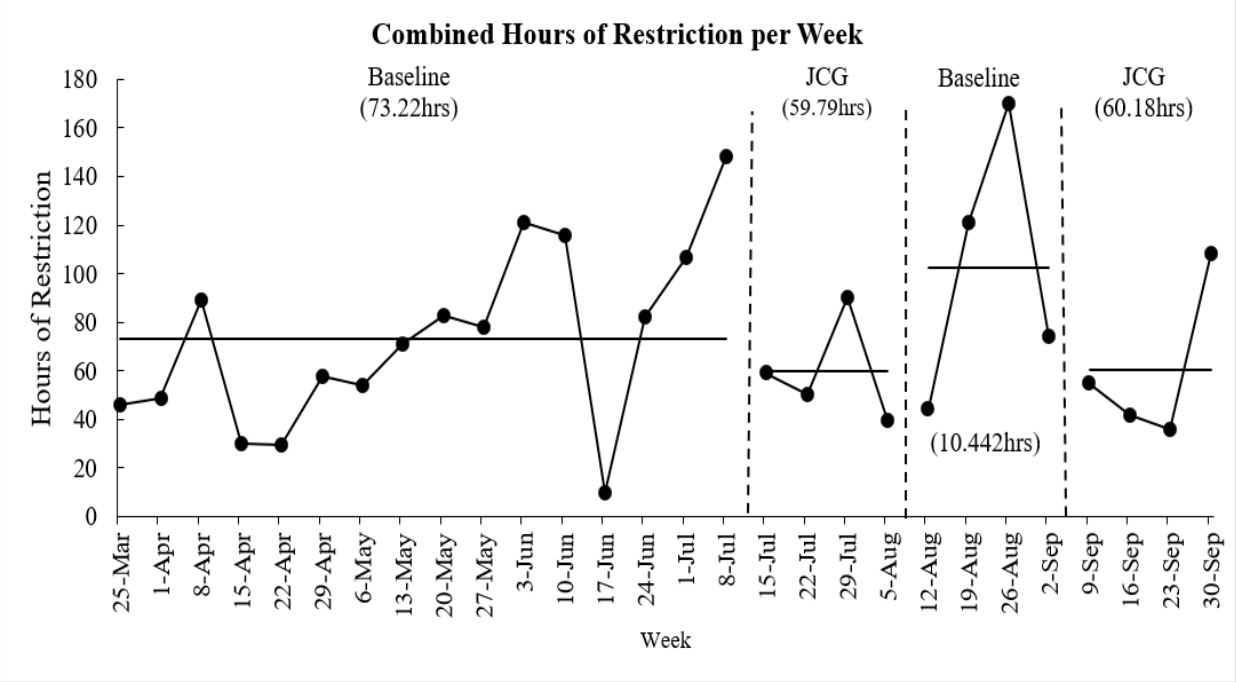
Table 5
Vineland-3 Caregiver Ratings (Maladaptive Behavior Domain)

	Hailey		**Ami**		**Danny**	
	Pre *v*-Scale	Post *v*-Scale	Pre *v*-Scale	Post *v*-Scale	Pre *v*-Scale	Post *v*-Scale
Internalizing	18 *Average*	24 *Significant*	20 *Elevated*	24 *Significant*	19 *Elevated*	24 *Significant*
Externalizing	21 *Elevated*	24 *Significant*	20 *Average*	24 *Significant*	19 *Average*	23 *Significant*

Question 4: *Will JCG be a less restrictive intervention, compared to treatment as usual, as determined by a reduction in the number of hours that participants will be subjected to restricted privileges?* During initial baseline conditions, participants were subject to a total of 1,171.50 hours of restricted privileges, with an average of 73.22 hours of restriction per week (*SD* = 37.40) during the 16-week extended baseline period (see Figure 5). Data were highly variable with a range of Range of 10 to 148 combined restricted hours per week. An increasing trend in the average weekly hours of restricted privileges was observed during the initial baseline phase.

During the initial JCG phase, participants were subject to a combined total of 239.16 hours of restricted privileges. Participants experienced an average of 59.79 hours of restricted privileges per week (*SD* = 21.73; Range = 39.61 to 90.12), with a decreasing trend. When baseline conditions were reintroduced, participants experienced an increase in hours of restricted privileges which totaled 409.75 hours. The average number of restricted hours was 59.79 per week (*SD* = 5.15; Range = 44.25 to 170.25), with an increasing trend. Following the reimplementation of JCG, the combined hours of restriction per week reduced to 270.41. Participants experienced an average of 60.18 hours of restricted privileges per week. An upward trend was observed, with a range of 35.91 to 108.25 combined hours of restriction per week.

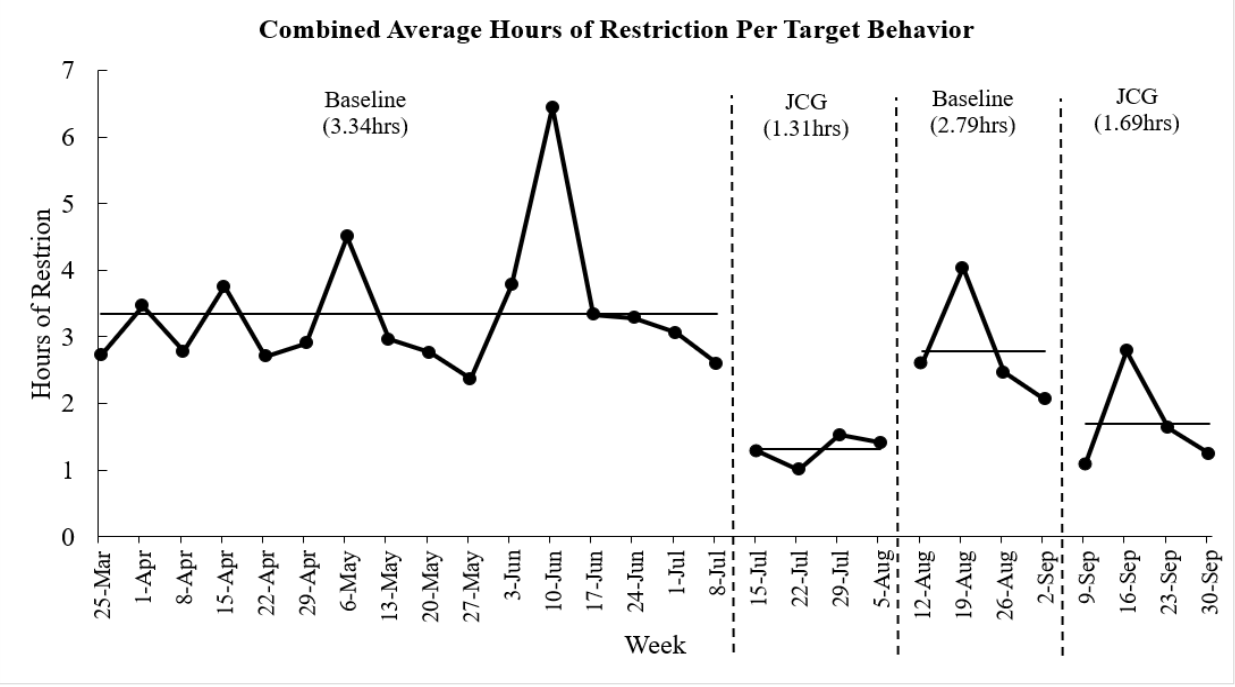
Figure 5
Combined Hours of Restricted Privileges per Week



A more precise measure of restrictiveness was determined by examining the average weekly hours of restriction per target behavior adjusted by the total occurrence of target behavior. During initial baseline conditions, participants averaged 3.34 hours of restricted

privileges per target behavior (see Figure 6). When JCG was introduced, the average number of hours participants were subject to per target behavior decreased to 1.31 hours (*SD* = 0.22; Range = 1.01 to 1.53) with 183 documented target behaviors. An effect size was calculated using NAP due to a non-normal distribution of data during the initial baseline phase; results indicate that a large reduction in the average duration of restriction (A_1B_1; NAP = 1). During the return to baseline, an increase in the average duration of restriction per target (2.79 hours) was observed (*SD* = 0.86; Range = 2.06 – 4.03; B_1A_2; Hedges' *g* = -2.05) with 152 documented target behaviors. When JCG was reintroduced, the average duration of restriction per target behavior decreased to 1.69 hours (*SD* = 0.77, Range = 1.1 to 2.79; Hedges' *g* = -1.17) with 174 documented target behaviors.

Figure 6
Combined Weekly Average Hours of Restricted Privileges per Target Behavior



CHAPTER 4:

DISCUSSION

Few studies have empirically examined the use developmentally appropriate behavioral management strategies for use with the adolescent and young adult population. The present study examined the social acceptability of the JCG intervention. It is also the first study to examine the effectiveness of JCG, implemented as a modified multi-element intervention, in reducing defiant or problem behavior among female adolescents with IDD who reside in an ICF/IID. JCG, as implemented in the current study, used a combination of daily rewards (i.e., reward cards) and brief household chores (i.e., job cards) made contingent upon problem behavior. Results were compared to a treatment as usual condition which involved a time-release timeout procedure.

Research Question 1: *Will the JCG intervention be rated as socially acceptable per caregiver and participant ratings on a modified version of the IRP-15?*

As hypothesized, overall caregiver ratings on the modified IRP-15 suggest that JCG is a socially acceptable intervention. This finding adds to the current literature supporting the social acceptability of using brief chores contingent upon problem behavior (see Fisher & Nehs, 1978; Pate, 2016; Richard, 2002; and Ward, 2009). Anecdotally, most caregivers reported that the JCG intervention was relatively easy to implement and considered the use of contingent chores a more developmentally appropriate consequence when compared to the time-release contingency used by the ICF/IDD. Most caregivers also anecdotally described the addition of a daily reward as positive and expressed a desire to continue providing daily rewards to encourage appropriate behavior.

The most common complaint among caregivers regarding JCG procedures was the assignment of only one job card per target behavior, regardless of the severity of the target

behavior. Specifically, all caregivers recommended that the number of job cards issued should be commensurate with the severity of target behavior, such that severe behaviors (e.g., physical aggression) result in the maximum number of job cards whereas less severe behaviors (e.g., being uncooperative or disrespectful) result in only one job card. Multiple caregivers suggested that participants be made to complete the jobs prior to becoming ungrounded to eliminate the possibility that they will opt for the time-release contingency. Caregivers also described the additional monitoring (i.e. paperwork) introduced with the current intervention as aversive when combined with the amount of documentation under TAU conditions (e.g., incident reports, food and water temperatures, caregiver shift duty checklists, participant goals/objectives tracking, shift notes). Of note, two caregivers indicated that it was easier to overlook less severe target behaviors (i.e., ignore the target behavior) given the amount of documentation involved.

Each participant rated JCG as socially acceptable. Anecdotally, participants reported a desire to continue implementing JCG full time. It was, however, requested that rewards be selected from a menu as opposed to random selection as used in the study. Participants expressed disappointment on multiple occasions during the current study when they selected a less preferred reward. Participants also attempted to trade rewards with one another and were allowed to do so, given agreement between both persons.

Research Question 2*: Is JCG an effective intervention for reducing defiant behaviors among female adolescents who reside in an ICF/IID?*

Results suggest that JCG had little to no effect at reducing target behaviors across all participants as a group (BC-SMD); however, small/weak to medium/moderate nonparametric effect sizes were obtained between phase comparisons for each participant. For example, although Hailey did not demonstrate a reduction of PIDB when JCG was implemented, she did

exhibit a moderate increase in PIDB during the return to baseline phase; this increase may reflect an adverse response to the removal of daily rewards. Following the reimplementation of JCG, Hailey responded with moderate and statistically significant decreases of target behavior. Ami responded to the initial implementation of JCG with small to medium decrease in target behavior. Danny's PIDB increased following the withdrawal of JCG and decreased following reimplementation.

Of note, the group home received a new resident during the first week of the reintroduction of JCG (B_2). The new resident shared a room with Ami who, per caregiver report, experienced multiple episodes of conflict with the new resident. A new group home manager was also assigned to the facility during the last week of the return to baseline phase (A_2); this change did not appear to affect the residents as Hailey and Ami were previously familiar with the manager. During the last week of the study, Hailey exhibited a sharp increase in target behavior. This was likely due to an alleged incident that occurred in the school involving stolen property; this incident resulted in ongoing negative interactions between Hailey and multiple caregivers. Hailey was grounded each day due to due to escalating behaviors during the final week of the study. The inclusion of Hailey's data during the final week was debated yet included in the data analysis to best represent participant's true responses throughout the entire study.

Several additional factors, including inconsistent treatment integrity and availability and potency of rewards may have also influenced results of the current study. Regarding treatment integrity, ratings indicated moderate adherence to the JCG procedures. Although participants received all earned daily rewards, the JCG Treatment Integrity Checklist, as well as anecdotal reports from graduate assistants, indicated overall low levels of caregiver praise or encouragement for positive behaviors. Low levels of caregiver reinforcement throughout the day

may have decreased the reinforcing value of "time-in." In other words, a lack of contrast between the time-in and timeout (grounding) environment, an essential part of the intervention, likely resulted in a lack of motivation to engage in more appropriate behavior and to complete job cards to become ungrounded.

The non-restrictive nature of ICF/IDD facilities are such that participants who were "on hours" or grounded were not removed from areas when preferred activities were ongoing. For example, while "on hours" or grounded, participants could remain in the living room and watch television/movies with their peers (a highly preferred activity for each participant). Participants were also granted noncontingent access to most personal items (e.g., magazines, books, dolls, games, music) given the legal and ethical considerations of such restrictions. These factors, combined with low levels of caregiver praise/reinforcement, noncontingent access to personal items, and continued enjoyment of various activities within the facility, further reduced the aversiveness of being "on hours" or grounded. The absence of more moderate to large effect sizes may be due in part to the lack of contrast that was previously noted to be an essential component for timeout (i.e., grounding) to be effective (Jones & Downing, 1991; Turner & Watson, 1999).

The lack of contrast between time-in and timeout manifested particularly during the second phase of the JCG intervention when participants were likely to complete chores only when it was their specific day to use the computer (participants shared the use of a central computer in the facility) or when special outings such as bowling were planned. Job cards were also delayed on multiple occasions which established inconsistent and delayed consequences. Specifically, job cards often delayed when participants were away at community outings and events. Caregivers also often delayed the issuance of Job Cards when participants appeared

agitated or upset to allow time for them to deescalate. Thus, the use of consequences was delayed at times and perhaps unpredictable which is the most commonly cited reason for the failure of timeout procedures (Barkley, 2013).

When interpreting effects of the current study, it is important to consider that JCG was compared to an active "treatment as usual" condition that was previously considered effective for the ICF/IDD. Previous studies that have examined the use of contingent chores (Fischer & Nehs, 1978, Richards, 2002; Ward, 2009) reported results that were compared to the absence (or arbitrary use) of treatment. Current results may reflect the effectiveness of JCG compared to a similar treatment as usual condition, and when used in a similar setting with similar participants; however, results do not reflect the effectiveness of JCG compared to the absence of treatment or when implemented without the modifications made in the current study.

Research Question 3: *Will the JCG intervention result in clinically significant increases in participants' Adaptive Behavior Composite or clinically significant decreases on the Maladaptive Behavior component according to caregiver ratings on the Vineland-3?*

Pre- and post-treatment ratings on the Vineland-3 were conducted by a caregiver who had the most experience in the group home (four years) and who was most familiar with each participant's abilities. Ratings indicated clinically significant improvements for Ami in the Daily Living Skills and Socialization composites. Ratings should be interpreted with caution, however, given that the observed change may be due to maturation effects or direct instruction during the school or home environment as opposed to the completion or job cards.

Ratings on the Maladaptive Behavior Composite should also be interpreted with caution. Caregiver ratings were completed following the end of the study when Hailey exhibited high levels of disruptive behavior while the PIDB for both Ami and Danny were also trending upward

in response to the admission of a new resident and ensuing conflict among other residents. Increased ratings on the Maladaptive Behavior Component may reflect perceived levels of maladaptive behavior at the time; however, the increase in behaviors may be attributed to the admission of the new resident as well as anecdotally reported increased stress and fatigue among caregivers, including the rater (group home manager) during this time.

Research Question 4: *Will JCG be a less restrictive intervention, compared to treatment as usual, as determined by a reduction in the number of hours that participants will be subjected to restricted privileges?*

During baseline phases (treatment as usual), behavior support plans were akin to a behavior-time release contingency during which privileges (e.g., bowling trips, computer usage, and phone calls) were restricted for a predetermined amount of time contingent upon target behavior. Participants were required to demonstrate an absence of target behaviors to regain privileges, the length of which varied from five minutes to 48 hours. Participants experienced an average of 73.22 hours of restriction per week, and privileges were often removed for multiple consecutive days given that hours started over following a target behavior. In some instances, participants demonstrated multiple consecutive hours of appropriate behavior (e.g., ten out of a required twelve hours) before exhibiting a target behavior which then negated that period of appropriate behavior. Of note, a participant was subject to restricted privileges for an entire month while attempting to exhibit 48 consecutive hours of appropriate behavior.

When JCG was implemented, participants were able to complete a brief household chore and regain special privileges. The option to complete a job card inherently made JCG a less restrictive intervention compared to the behavioral support plans (treatment as usual). Although participants did not always choose to complete the job card (approximately 77% of the time

based upon available data), or complete it immediately, the option remained; thus, participants could regain privileges in a much short time (as opposed to hours or days). Results indicated decrease in overall hours per week as well as hours of restriction per target behavior; this suggests that the current modified JCG procedure was a less restrictive intervention that the treatment as usual condition.

Limitations

Significant changes occurred within the facility during the last month of the study, including a change in management and addition of a new resident that may present a threat to the internal validity of the current study. Hailey's behavior in the school setting also led to increased caregiver interactions and escalating behavior in the facility during the final week of the study. These history effects may likely serve as a threat to internal validity not only in the interpretation of PIDB, but also when considering caregiver ratings of social acceptability and adaptive behavior. Specifically, the changing events and negative relations may have caused caregivers to report the intervention as less acceptable and rate maladaptive behaviors as more frequent and severe. Multiple caregiver ratings may have provided a better estimate of each participant's ABC and maladaptive behaviors given multiple perspectives and the ability to calculate an average rating across caregivers.

The use of a partial interval recording method to measure the dependent variable (PIDB) also serves as potential limitation. Specifically, partial interval recording methods tend to underestimate the frequency and duration of target behaviors (see Cooper, Heron, & Heward, 2007). As such, outcome data may be less sensitive to behavior change related to the actual reduction of target behavior as measured by frequency and duration. For example, a participant may have exhibited multiple episodes of aggression, swearing, and escalating behaviors during

an interval under baseline conditions yet responded with only single target behavior during the JCG phases; this reduction of frequency and intensity would be reflected in a partial interval recording method.

Additional limitations include low treatment integrity and reliability. As previously mentioned, research assistant ratings on the JCG Treatment Iidelity Checklist indicated low levels of caregiver reinforcement and lack of praise for appropriate behaviors throughout the day. Regarding the issuance of job cards, delays in assignment were noted, as well as failure among caregivers to use a neutral tone while issuing and failure to assign additional job cards when participants attempted to argue. Most notably, not all privileges were removed for most observed trials that participants were grounded. A comparison of research assistant and caregiver documentation of target behaviors suggested that while caregivers were likely to assign a job card for more severe target behaviors (e.g., aggression, self-injury), they were less likely to assign job cards for use of inappropriate language (e.g., disrespect).

Implications

Although JCG did not prove to be an effective intervention in reducing problem behaviors, the current study does have implications for practice. Caregiver and participant ratings of treatment acceptability provide further evidence of the social acceptability of JCG and, as such, a greater justification to continue studying the effectiveness of JCG. This finding is in agreement with previous studies which suggest that the use of contingent chores (Fischer & Nehs, 1978; Richards, 2002) and the combination of daily reinforcement and chores (Ward, 2009) were rated as socially acceptable.

Regarding the effectiveness of JCG, results of the current study suggest a reduction of target behaviors across at least one phase for each participant; however, such results offer less

definitive evidence related to the effectiveness of JCG when compared to prior research (Ward, 2009; Richards, 2002). JCG may result in small to moderate reductions in disruptive behavior among female adolescent participants with intellectual disability. Given the uniqueness of each participant (e.g., co-occurring diagnoses, developmental stage) and setting, results may not readily generalize to the typically developing population.

In addition to being socially acceptable and as effective as baseline conditions (TAU), JCG resulted in a less restrictive environment for participants. This is a major implication for practice as the less restrictive nature of JCG is consistent with federal regulations, such as the Individuals with Disabilities Education Act (IDEA; 2004), which mandates that students identified with disabilities are served in the least restrictive environment. Local statutes, such as the North Carolina Administrative Code (NCAC), also mandate ICF/IIDs provide services and supports that are least restrictive, most appropriate, and afford residents with dignity and respect (10A NCAC 27E.0101). In the current study, JCG afforded residents the opportunity (i.e., dignity, autonomy) to complete developmentally appropriate chores to reduce the number of hours that they were subjected to restricted privileges. This contingency not only resulted in a less restrictive environment but also likely promoted the acquisition, maintenance, and generalization of skills related to independent living.

Future Research

The current literature related to JCG remains limited. As suggested by Ward (2009), more research is needed to determine the effectiveness of JCG across participants of various populations (e.g., age, gender, diagnoses) and settings (e.g., home, school, community). Future research may consider the availability and potency of rewards. For example, would the use of a

reward menu or random selection result in greater changes in behavior? What are the effects of using more preferred yet potentially delayed rewards, such as a trip to the park?

Regarding the issuance of job cards, research may explore the effectiveness of assigning multiple jobs for serious rule violations, as highly recommended by caregivers of the current study. Future research may also systematically examine the effectiveness of each component (e.g., use of daily rewards alone) and consider bidirectional measures of caregiver/participant interactions to explore the effects of caregiver to participant and participant to caregiver interactions.

Additional research may also continue to examin the effects of JCG on the development or acquisition of adaptive daily living skills (ADLs) and use supplemental outcome ratings of behavior problems, such as the Child Behavior Checklist (as used with Richards, 2002), to provide additional evidence related to the effectiveness of JCG. Given that JCG is a multi-element intervention hypothesized to address problem behaviors maintained by various function, future research may consider whether the effectiveness of JCG is influenced by the function(s) of target behavior.

Of note, JCG is purported to provide a fairer environment (Ward, 2009) that may reduce coercive interactions between caregivers and residents. Researchers may be interested in using bidirectional measures of caregiver-participant interactions (e.g., approach behavior, praise statements), as well as measure or ratings related to quality of life, to determine whether JCG promotes a more positive environment and relation for both participants and their caregiver(s). Similarly, measures such as the Working Alliance Inventory (Horvath & Greenberg, 1989) may be completed by observers to assess the working and professional relationship between caregivers and participants.

Summary

The current study examined the social acceptability and effectiveness of JCG, implemented as a multi-element intervention, among female adolescents with ID who reside in an ICF/IID. An ABAB withdrawal design was used to compare JCG to a treatment as usual condition. Results indicate that JCG is a socially acceptable intervention, as rated by caregivers and participants alike, that was less restrictive in nature when compared to a treatment as usual condition. Although JCG did not result in significant reductions of problem behavior overall, small to moderate between phase reductions of disruptive behavior were observed. JCG also resulted in a less restricted environment as participants were afforded the option to complete a chore and regain privileges. The length of time that participants were subjected to restricted privileges was reduced following the implementation of JCG. Further evidence is warranted to support the overall effectives of JCG, as well the impact that JCG may have on promoting adaptive behavior. Future research may examine the effectiveness of JCG with additional populations (e.g., typically developing pre-teens and adolescents), consider variables related to reinforcement, determine whether JCG is effective for all functions of target behavior, and assess for improvements related to quality of life and participant-caregiver relations.

References

Aman, M. G., Mcdougle, C. J., Scahill, L., Handen, B., Arnold, L. E., Johnson, C., ... & Sukhodolsky, D. D. (2009). Medication and parent training in children with pervasive developmental disorders and serious behavior problems: Results from a randomized clinical trial. *Journal of the American Academy of Child & Adolescent Psychiatry*, *48*(12), 1143-1154.

American Association on Intellectual and Developmental Disabilities. (2013). *ICF/ IID glossary* [Intermediate Care Facility f or Individuals with Intellectual Disabilities (1905(d) of the SSA)]. Retrieved from: Https://www.cms.gov/Medicare/Provider-EnrollmentandCertification/CertificationandComplianc/downloads/ICFMR_Glossary.pdf

American Health Care Association (n.d.). *Intermediate care facilities for the developmentally disabled: Meeting the long term care needs and maximizing the potential of individuals with intellectual and/or developmental disabilities.* Retrieved October/November, 2016, from http://www.vor.net/index.php?option=com_zoo&task=item&item_id=152&Itemid=166

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders*, Fifth Edition. Arlington, VA, American Psychiatric Association.

American Psychological Association. (2017). *Ethical principles of psychologists and code of conduct*. Retrieved from http://www.apa.org/ethics/code/.

Barber, B. K., & Olsen, J. A. (1997). Socialization in context connection, regulation, and autonomy in the family, school, and neighborhood, and with peers. *Journal of Adolescent Research*, *12*(2), 287-315.

Barkley, R. A. (2013). *Defiant children: A clinician's manual for assessment and parent training*. (3). New York: The Guildford Press.

Barkley, R. A., Edwards, G. H., & Robin, A. L. (1999). *Defiant teens: A clinician's manual for assessment and family intervention*. Guilford Press.

Barkley, R. A., & Robin, A. L. (2008). *Your defiant teen: 10 steps to resolve and rebuild your relationship*. New York, NY: The Guilford Press.

Bean, A. W., & Roberts, M. W. (1981). The effect of time-out release contingencies on changes in child noncompliance. *Journal of Abnormal Child Psychology, 9*(1), 95-105.

Beavers, G. A., Iwata, B. A., & Lerman, D. C. (2013). Thirty years of research on the functional analysis of problem behavior. *Journal of Applied Behavior Analysis, 46*(1), 1. doi:10.1002/jaba.30.

Benjamin, R., Mazzarins, H., & Kupfersmid J. (1983). The effect of (TO) duration on assaultiveness in psychiatrically hospitalized children. *Aggressive Behavior*, 9, 21-27.

Bostow, D. E., & Bailey, J. (1969). Modification of severe disruptive and aggressive behavior using brief timeout and reinforcement procedures. *Journal of Applied Behavior Analysis*, *2*(1), 31-37.

Brantner, J. P., & Doherty, M. A. (1983). A review of: A conceptual and methodological analysis. In S. Axelrod & J. Apsche (Eds.), *The effects of punishment on human behavior* (pp. 87–132). New York: Academic Press.

Brossart, D. F., Laird, V. C., & Armstrong, T. W. (2018). Interpreting Kendall's tau and tau-U for single-case experimental designs. *Cogent Psychology*, 5(1), 1-26. doi:10.1080/23311908.2018.1518687

Brown, J. F., Brown, M. Z., & Dibiasio, P. (2013). Treating individuals with intellectual disabilities and challenging behaviors with adapted dialectical behavior therapy. *Journal*

of Mental Health Research in Intellectual Disabilities, *6*(4), 280-303. doi:10.1080/19315864.2012.700684.

Busk, P.L. & Serlin, R.C. (1992). Meta-analysis for single-case Research. In T.R. Kratochwill & J.R. Levin (Eds.), *Single-case research design and analysis: New directions for psychology and education* (pp. 197-212). Hillsdale: Lawrence Erlbaum Associates.

Byiers, B. J., Reichle, J., & Symons, F. J. (2012). Single-subject experimental design for evidence-based practice. *American journal of speech-language pathology*.

Centers for Disease Control and Prevention (CDC). (2016, March). *Childhood maltreatment among children with disabilities*. Retrieved January 2, 2017, from https://www.cdc.gov/ncbddd/disabilityandsafety/abuse.html

Centers for Medicare and Medicaid Services (CMMS). (2013, July). *Intermediate care facilities for individuals with intellectual disabilities* (ICF/IID). Retrieved October 28, 2016, from https://www.cms.gov/Medicare/Provider-Enrollment-and Certification/ Certification and Compliance/ICFIID.html

Christensen, L., Baker, B. L., & Blacher, J. (2013). Oppositional defiant disorder in children with intellectual disabilities. *Journal of Mental Health Research in Intellectual Disabilities, 6*(3), 225-244. doi:10.1080/19315864.2012.661033

Christophersen, E. (2009, August 20). *Job grounding as a method of discipline*. Retrieved from http://www.cpnonline.org/CRS/CRS/pa_jobgroun_pep.htm

Christophersen, E. R., Arnold, C. M., Hill, D. W., & Quilitch, H. R. (1972). The home point system: Token reinforcement procedures for application by parents of children with behavior problems. *Journal of Applied Behavior Analysis*, *5*(4), 485-497.

Christophersen, E. R., & Mortweet, S. L. (2002). *Parenting that works: Building skills that last a lifetime* [Kindle Version]. Washington, D.C: American Psychological Association.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, N.J: L. Erlbaum Associates.

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis* (2nd ed.). Columbus, OH: Merrill Prentice Hall.

Crespi, T.D. (1988). Effectiveness of: A comparison of psychiatric, correctional and day-treatment programs. *Adolescence*, *23*(92), 805-811.

Dawson, G., Rogers, S., Munson, J., Smith, M., Winter, J., Greenson, J., . . . Varley, J. (2010). Randomized, controlled trial of an intervention for toddlers with autism: The Early Start Denver Model. *Pediatrics, 125*(1), e17-e23. doi:10.1542/peds.2009-0958

Delaney, K. (1999). Time-out: An overused and misused milieu intervention. *Journal of Child and Adolescent Psychiatric Nursing*, *12*(2), 53-60.

DeProspero, A., & Cohen, S. (1979). Inconsistent visual analyses of intrasubject data. *Journal of Applied Behavior Analysis*, *12*(4), 573-579.

Drayton, A. K., Andersen, M. N., Knight, R. M., Felt, B. T., Fredericks, E. M., & Dore-Stites, D. J. (2014). Internet guidance on time out: Inaccuracies, omissions, and what to tell parents instead. *Journal of Developmental and Behavioral Pediatrics: JDBP, 35*(4), 239-246. doi:10.1097/DBP.0000000000000059.

Eaves, S. H., Sheperis, C. J., Blanchard, T., Baylot, L., & Doggett, R. A. (2005). Teaching time-out and job card grounding procedures to parents: A primer for family counselors. *The Family Journal*, *13*(3), 252-258.

Eldevik, S., Jahr, E., Eikeseth, S., Hastings, R. P., & Hughes, C. J. (2010). Cognitive and adaptive behavior outcomes of behavioral intervention for young children with intellectual disability. *Behavior Modification*, *34*(1), 16-34.

Elliott, S. N. (1988). Acceptability of behavioral treatments: Review of variables that influence treatment selection. *Professional Psychology: Research and Practice*, *19*(1), 68.

Everett, G. E., Olmi, D. J., Edwards, E. P., Tingstrom, D. H., Sterling-Turner, H. E., & Christ, T. J. (2007). An empirical investigation of with and without escape extinction to treat escape-maintained noncompliance. *Behavior Modification*, *31*(4), 412-434.

Fischer, J., & Nehs, R. (1978). Use of a commonly available chore to reduce a boy's rate of swearing. *Journal of Behavior Therapy and Experimental Psychiatry*, *9*(1), 81-83.

Frick, P. J. (1994). Family dysfunction and the disruptive behavior disorders: A review of recent empirical findings. In T.H. Ollendick & R. J. Prinz (Eds.), *Advances in Clinical Child Psychology, 18* (203-226). New York: Plenum Press.

Gershoff, E. T. (2013). Spanking and child development: We know enough now to stop hitting our children. *Child Development Perspectives*, *7*(3) (133-137).

Gewirtz, J. L., & Baer, D. M. (1958). Deprivation and satiation of social reinforcers as drive conditions. *The Journal of Abnormal and Social Psychology*, *57*(2), 165.

Halgunseth, L. C., Perkins, D. F., Lippold, M. A., & Nix, R. L. (2013). Delinquent-oriented attitudes mediate the relation between parental inconsistent discipline and early adolescent behavior. *Journal of Family Psychology*, *27*(2), 293

Hamilton, S.B., & MacQuiddy, S.L. (1984). Self-administered behavioral parent training: Enhancing of treatment efficacy using a signal seat. *Journal of Clinical Child Psychology*, 13, (61-69).

Haring, T. G., & Kennedy, C. H. (1990). Contextual control of problem behavior in students with severe disabilities. *Journal of Applied Behavior Analysis, 23*(2), 235-243.

Hedges, L. V. (1981). Distribution theory for Glass's estimator of effect size and related estimators. *Journal of Educational Statistics, 6*(2), 107-128. doi:10.3102/10769986006002107

Hemmings, C. (2007). The relationships between challenging behaviours and psychiatric disorders in people with severe intellectual disabilities. In B. Nick & G. Holt (Eds.), *Psychiatric and behavioural disorders in intellectual and developmental disabilities* (Second ed., pp. 62-75). New York, NY: Cambridge University Press.

Henggeler, S. W., & Schaeffer, C. (2010). Treating serious antisocial behavior using multisystemic therapy. In J. Weisz & A. Kazdin (Eds.), *Evidence-based psychotherapies for children and adolescents* (2nd ed.). New York, NY: The Guilford Press.

Horvath, A. O., & Greenberg, L. S. (1989). Development and validation of the Working Alliance Inventory. *Journal of Counseling Psychology, 36*(2), 223-233.

Individuals with Disabilities Education Act (2004). Authority: 20 U.S.C. § 1412; 34, CFR 300.114; 115C-106.3(10).

Jacobson, N. S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology, 59*(1), 12-19. doi:10.1037/0022-006X.59.1.12.

Jones, M. L., Eyberg, S. M., Adams, C. D., & Boggs, S. R. (1998). Treatment acceptability of behavioral interventions for children: An assessment by mothers of children with disruptive behavior disorders. *Child & Family Behavior Therapy, 20*(4), 15-26. doi:10.1300/J019v20n04_02

Jones, R.N., Downing, R.H. (1991). Assessment of the use of in an inpatient child psychiatry treatment unit. *Behavioral Residential Treatment*, 6, (219-230).

Joshi, P.T., Capozzoli, J.A., & Coyle, J.T. (1988). Use of a quiet room on an impatient unit. *Journal of the American Academy of Child and Adolescent Psychiatry*, 27, 642–644.

Kalb, L.M., & Loeber, R. (2003). Child disobedience and noncompliance: A review. *Pediatrics,* 111, (641-653).

Knox, D. K., & Holloman Jr, G. H. (2012). Use and avoidance of seclusion and restraint: consensus statement of the American Association for Emergency Psychiatry Project Beta seclusion and restraint workgroup. *Western Journal of Emergency Medicine, 13*(1), 35.

Lakin, K. C., Doljanac, R., Byun, S., Stancliffe, R. J., Taub, S., & Chiri, G. (2008). Factors associated with expenditures for Medicaid home and community based services (HCBS) and intermediate care facilities for persons with mental retardation (ICF/MR) services for persons with intellectual and developmental disabilities. *Intellectual and Developmental Disabilities, 46*(3), 200-214 doi:10.1352/2008.46:200-214.

Lancaster, B. (2013, April 23). *It's in the cards: Using job-card grounding to discipline teens*. Retrieved from http://uofmhealthblogs.org/4879/its-in-the-cards-using-job-card-grounding-to-discipline-teens.

Leeb, R. T., Bitsko, R. H., Merrick, M. T., & Armour, B. S. (2012). Does childhood disability increase risk for child abuse and neglect? *Journal of Mental Health Research in Intellectual Disabilities, 5*(1), 4-31. doi:10.1080/19315864.2011.608154

Lerman, D. C., & Iwata, B. A. (1995). Prevalence of the extinction burst and its attenuation during treatment. *Journal of Applied Behavior Analysis, 28*(1), 93-94.

Liprie, M. L. (1993). Adolescents' contributions to family decision making. *Marriage and Family Review, 18*(3-4), 241-253. doi:10.1300/J002v18n03_11.

Ma, H. H. (2006). An alternative method for quantitative synthesis of single-subject researches: Percentage of data points exceeding the median. *Behavior Modification*, *30*(5), 598-617.

Mace, C.F., Page, T. J., Ivancic, M. T., & O'Brien, S. (1986). Analysis of environmental determinants of aggression and disruption in mentally retarded children. *Applied Research in Mental Retardation, 7*(2), 203-221.

Manolov, R., Losada, J. L., Chacón-Moscoso, S., & Sanduvete-Chaves, S. (2016). Analyzing two-phase single-case data with non-overlap and mean difference indices: Illustration, software tools, and alternatives. *Frontiers in psychology*, *7*, 32.

Martens, B. K., Witt, J. C., Elliott, S. N., & Darveaux, D. X. (1985). Teacher judgments concerning the acceptability of school-based interventions. *Professional Psychology: Research and Practice*, *16*(2), 191.

Matson, J.L., & Keyes, J.B. (1990). A comparison of DRO to movement suppression and DRO with two self-injurious and aggressive mentally retarded adults. *Research in Developmental Disabilities*, 11, 111–120.

Mason, L. L. (2010). An analysis of effect sizes for single-subject research: A statistical comparison of five judgmental aids. *Journal of Precision Teaching and Celeration*, *26*, 3-16.

Maulik, P. K., Mascarenhas, M. N., Mathers, C. D., Dua, T., & Saxena, S. (2011). Prevalence of intellectual disability: a meta-analysis of population-based studies. *Research in Developmental Disabilities, 32*(2), 419-436. doi:10.1016/j.ridd.2010.12.018

McGinnis, J. C., Frederick, B. P., & Edwards, R. (1995). Enhancing classroom management through proactive rules and procedures. *Psychology in the Schools, 32*(3), 220-224.

McKenzie, K., Milton, M., Smith, G., & Ouellette-Kuntz, H. (2016). Systematic review of the prevalence and incidence of intellectual disabilities: Current trends and issues. *Current Developmental Disorders Reports,* 1-12.

McNeil, C. B., Clemens-Mowrer, L., Gurwith, R. H., & Funderburk, B. W. (1994). Assessment of a new procedure to prevent timeout escape in preschoolers. *Child and Family Behavior Therapy, 16*(4), 51-56.

Minshawi, N. F., Ashby, I., & Swiesy, N. (2009). Applied behavior analysis for children with Autism Spectrum Disorders (J. L. Matson, Ed.). In *Applied behavior analysis for children with Autism Spectrum Disorders* (pp. 189-206). New York: Springer Science Business Media, LLC.

Morawska, A., & Sanders, M. (2011). Parental use of time out revisited: A useful or harmful parenting strategy? *Journal of Child and Family Studies, 20*(1), 1-8. doi:10.1007/s10826-010-9371-x.

Nelson, E. G. (2012). *Hierarchical linear modeling versus visual analysis of single subject design data* (Doctoral dissertation, Louisiana State University). Retrieved from: https://digitalcommons.lsu.edu/gradschool_dissertations/1106.

Olmi, D.J Sevier, R.C., & Nasatasi, D.F. (1997). Time-in/time-out as a response to noncompliance and inappropriate behavior with children with developmental disabilities: Two case studies. *Psychology in the Schools, 34*(1), 31-39.

Parker, R. I., & Vannest, K. (2009). An improved effect size for single-case research: Nonoverlap of all pairs. *Behavior Therapy, 40*(4), 357-367. doi:10.1016/j.beth.2008.10.006.

Parker, R. I., Vannest, K. J., & Davis, J. L. (2011). Effect size in single-case research: A review of nine nonoverlap techniques. *Behavior Modification*, *35*(4), 303-322. https://doi.org/10.1177/0145445511399147.

Parker, R. I., Vannest, K. J., Davis, J. L., & Sauber, S. B. (2011). Combining nonoverlap and trend for single-case research: Tau-U. *Behavior Therapy*, *42*(2), 284-299. doi:10.1016/j.beth.2010.08.006.

Pate, G. B., Jr. (2016). *The training effect: Identification and social acceptability of job-card grounding components by level of training* (unpublished master's thesis). East Carolina University, Greenville, NC.

Peed, S., Roberts, M., & Forehand, R. (1977). Evaluation of the effectiveness of a standardized parent training program in altering the interaction of mothers and their noncompliant children. *Behavior Modification*, (3), 323-350.

Reitman, D., & Drabman, R.S. (1996). Read my fingertips: A procedure for enhancing the effectiveness of time out with argumentative children. *Child and Family Behavior Therapy*, *18* (2), 35-40,

Richards, D. F. (2002). *Evaluation of task -based grounding as a parent-implemented disciplinary procedure* (Doctoral dissertation). Retrieved from ProQuest Information and Learning database (UMI no. 306518).

Roberts, M.W. (1982). Resistance to timeout: Some normative data. *Behavioral Assessment*, 4(2), 237-246.

Roberts, M. W., & Powers, S. W. (1990). Adjusting chair timeout enforcement procedures for oppositional children. *Behavior Therapy*, *21*(3), 257-271.

Ryan, A. M. (2001). The peer group as a context for the development of young adolescent motivation and achievement. *Child development*, *72*(4), 1135-1150.

Santrock, J. W. (2008). *Adolescence* (Twelfth ed.). New York, NY: McGraw-Hill.

Sawyer, S. M., Azzopardi, P. S., Wickremarathne, D., & Patton, G. C. (2018). The age of adolescence. *The Lancet Child & Adolescent Health*, *2*(3), 223-228.

Scahill, L., Bearss, K., Lecavalier, L., Smith, T., Swiezy, N., Aman, M. G., . . . Johnson, C. (2016). Effect of parent training on adaptive behavior in children with autism spectrum disorder and disruptive behavior: Results of a randomized trial. *Journal of the American Academy of Child and Adolescent Psychiatry*, *55*(7), 602-609.e3.

Scanlan, J. N. (2010). Interventions to reduce the use of seclusion and restraint in inpatient psychiatric settings: What we know so far a review of the literature. *International Journal of Social Psychiatry*, *56*(4), 412-423.

Shadish, W. R., Hedges, L. V., & Pustejovsky, J. E. (2014). Analysis and meta-analysis of single-case designs with a standardized mean difference statistic: A primer and applications. *Journal of School Psychology*, *52*(2), 123-147. doi:10.1016/j.jsp.2013.11.005.

Solomon, B. G., Howard, T. K., & Stein, B. L. (2015). Critical assumptions and distribution features pertaining to contemporary single-case effect sizes. *Journal of Behavioral Education, 24*(4), 438-458. doi:10.1007/s10864-015-9221-4.

Sourander, A., Ellilä, H., Välimäki, M., & Piha, J. (2002). Use of holding, restraints, seclusion and in child and adolescent psychiatric in-patient treatment. *European Child & Adolescent Psychiatry, 11*(4), 162-167.

Sparrow, S., Cicchetti, D., & Saulnier, C. (2016). Vineland Adaptive Behavior Scales, Third Edition (Vineland-3). Bloomington, MN: Pearson Assessment.

Sturmey, P. (2007). Diagnosis of mental disorders in people with intellectual disabilities. In B. Nick & H. Geraldine (Eds.), *Psychiatric and behavioural disorders in intellectual and developmental disabilities* (Second ed., pp. 1-23). New York, NY: Cambridge University Press.

Tarlow, K. R. (2016). *Baseline corrected Tau calculator*. Retrieved May 20, 2019, from http://ktarlow.com/stats/tau/.

Tate, R. L., & Perdices, M. (2019). *Single-case experimental designs for clinical research and neurorehabilitation settings: Planning, conduct, analysis and reporting*. New York, NY: Routledge.

Tonge, B. (2007). The psychopathology of children with intellectual disabilities. In B. Nick & G. Holt (Eds.), *Psychiatric and behavioural disorders in intellectual and developmental disabilities* (Second ed., pp. 93-112). New York, NY: Cambridge University Press.

Turner, H. S., & Watson, T. S. (1999). Consultant's guide for the use of time-out in the preschool and elementary classroom. *Psychology in the Schools*, 36(2), 135-148.

Turygin, N., Matson, J. L., & Adams, H. (2014). Prevalence of co-occurring disorders in a sample of adults with mild and moderate intellectual disabilities who reside in a residential treatment setting. *Research in Developmental Disabilities, 35*(7), 1802-1808. doi:10.1016/j.ridd.2014.01.027.

Valentine, J.C., Tanner-Smith, E.E., Pustejovsky, J.E., Lau, T.S., *Between-case standardized mean difference effect sizes for single-case designs: A primer and tutorial using the scdhlm web application*. Oslo, Norway: The Campbell Collaboration. Retrieved from: www.campbellcollaboration.org/DOI: 10.4073/cmdp.2016.1.

Vannest, K. J., & Ninci, J. (2015). Evaluating intervention effects in single-case research designs. *Journal of Counseling & Development*, 93(4), 403-411. doi:10.1002/jcad.12038.

Vannest, K.J., Parker, R.I., Gonen, O., & Adiguzel, T. (2016). Single case research: Web-based calculators for SCR analysis, Version 2.0 (Web-based application). College Station, TX: Texas A&M University. Retrieved Sunday 12th May 2019. Available from singlecaseresearch.org.

Vargha, A., & Delaney, H. D. (2000). A critique and improvement of the CL common language effect size statistics of McGraw and Wong. *Journal of Educational and Behavioral Statistics, 25*(2), 101-132. doi:10.3102/10769986025002101.

Wampold, B. E. (2001). *The great psychotherapy debate: Models, methods, and findings*. Mahwah, N.J: L. Erlbaum Associates

Ward, P. P. (2009). *The effectiveness of job card grounding and job card grounding with a token economy in the management of the behavior of males residing in a therapeutic group home* (Doctoral dissertation). Retrieved from ProQuest LLC. (Order No. 3366251).

Webster, R.E. (1976). A time-out procedure in a public school setting. *Psychology in the Schools*, 13, 72-76.

Weisz, J. R., & Kazdin, A. E. (2010). *Evidence-based psychotherapies for children and adolescents* (2nd ed.). New York: Guilford Press.

Whaler, R. G. *Behavior therapy for oppositional children: Love is not enough*. Paper read at Eastern Psychological Association meeting, 1968.

Whaler, R.G. (1969). Oppositional children: A quest for parental reinforcement control. *Journal of Applied Behavior Analysis*, 2(3), 159-170.

White, K., & Wood, C. (2005, November). Schoolwide rules creation. *Responsive Classroom Newsletter*. Retrieved from https://www.responsiveclassroom.org/article/schoolwide-rules-creation

Witt, J. C., Martens, B. K., & Elliott, S. N. (1984). Factors affecting teachers' judgments of the acceptability of behavioral interventions: Time involvement, behavior problem severity, and type of intervention. *Behavior Therapy*, *15*, 204– 209.

Wolery, M., Busick, M., Reichow, B., & Barton, E. E. (2010). Comparison of overlap methods for quantitatively synthesizing single-subject data. *The Journal of Special Education*, *44*(1), 18–28. https://doi.org/10.1177/0022466908328009.

Zeilberger, J., Sampen, S.E., & Sloan, H.N. (1968). Modification of a child's problem behaviors in the home with the mother as therapist. *Journal of Applied Behavioral Analysis*, 1(1), 47-5.

APPENDIX A

MODIFIED IRP-15

Intervention Rating Profile-15

The purpose of this questionnaire is to obtain information that will aid in the selection of in-home interventions. This intervention can be used by caregivers of residents with behavioral problems. Please circle the number that best describes your agreement or disagreement with each statement.

1 = Strongly Disagree
2 = Disagree
3 = Slightly Disagree
4 = Slightly Agree
5 = Agree
6 = Strongly Agree

1.) This would be an acceptable intervention for the child's problem behavior	1 2 3 4 5 6
2.) Most caregivers would find this intervention appropriate for behavior problems in addition the one described.	1 2 3 4 5 6
3.) This intervention should prove effective in changing the resident's problem behavior.	1 2 3 4 5 6
4.) I would suggest the use of this intervention to other caregivers.	1 2 3 4 5 6
5.) The residents' problem behavior is severe enough to warrant the use of this intervention.	1 2 3 4 5 6
6.) Most caregivers would find this intervention suitable for the problem behavior described.	1 2 3 4 5 6
7.) I would be willing to use this intervention in the group home (facility).	1 2 3 4 5 6
8.) This intervention would not result in negative side-effects for the residents.	1 2 3 4 5 6
9.) This intervention would be appropriate for a wide variety of residents.	1 2 3 4 5 6
10.) This intervention is consistent with those I am already familiar with.	1 2 3 4 5 6
11.) This intervention is a fair way to handle residents' problem behavior.	1 2 3 4 5 6
12.) This intervention is reasonable for the problem behaviors described.	1 2 3 4 5 6
13.) I like the procedures used in this intervention.	1 2 3 4 5 6
14.) This intervention is a good way to handle residents' problem behavior.	1 2 3 4 5 6
15.) Overall, this intervention would be beneficial for the residents.	1 2 3 4 5 6

APPENDIX B

JOB CARDS

Empty Trash

1.) Neatly empty the contents of all trashcans into garbage bags
2.) Tie each bag
3.) Place bags in the appropriate storage location
4.) Replace trash bags in trashcans if necessary

Supplies
Trash bags

Wash Inside Windows

1.) Spray window with glass cleaner
2.) Use washcloth to immediately wipe clean
3.) Repeat until window is dry and streak free
4.) Continue until all windows have been washed
5.) Put away washcloth, cleanser, and all materials

Supplies
Window Cleaner
Squeegee (optional)
Soft washcloth or paper

Clean Bathtub and Sink

1.) Remove washcloths, tub mat, shampoo, and all other items
2.) Scrub bathtub and sink with scrub brush and cleanser
3.) Rinse well
4.) Dry with an old washcloth or towel
5.) Place washcloths in the dirty laundry
6.) Replace tub mat, shampoo, and all other items removed

Supplies
Scrub brush
Bathroom cleanser
Old washcloth or towel

Wipe Baseboards

1.) Use dampened washcloth to wipe dust off baseboards in designated rooms
2.) Rinse washcloth as necessary when filled with dust or dirt
3.) Dry any wet areas with a dry washcloth
4.) Place washcloths in the dirty laundry

Supplies
Old damp washcloth
Spray cleanser (optional)
Old dry washcloth

Pull Weeds

1.) Put on gloves
2.) Look for weeds in flower beds and walkways in front, back, and side yards
3.) Pull weeds from the base of stem, as far down as possible. Use a gardening spade if necessary.
4.) Place pulled weeds in a bag for later disposal
5.) Throw away bag of weeds in the trash and put up gloves

Supplies
Gloves
Gardening spade (optional)
Trash bag

Rake Yard & Bag Leaves

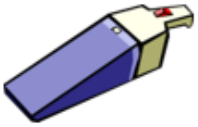
1.) Rake front, back, and side yards into piles
2.) Put piles of leaves into trash bag(s)
3.) Put rake away in garage
4.) Place bag(s) of leaves by the driveway

Supplies
Rake
Trash bags

Vacuum Car

1.) Throw away all trash from the car
2.) Wipe the dashboard with a damp washcloth
3.) Remove floor mats
4.) Vacuum all carpeted areas, seats, and upholstered surfaces
5.) Vacuum floor mats and place back in car
6.) Place washcloth in dirty laundry or throw away used paper towels

Supplies
Vacuum
Damp washcloth



Vacuum Living Room

1.) Vacuum floor
2.) Make sure to vacuum under tables, behind furniture, and in the corners. Move furniture if necessary.
3.) Place furniture back in original location
4.) Put away the vacuum

Supplies
Vacuum

Sweep Floors

1.) Sweep floors in all rooms assigned
2.) Use a dustpan and throw away swept material
3.) Make sure to sweep under tables, behind furniture, and in the corners. Move furniture if necessary.
4.) Place furniture back in original location
5.) Put away broom and dustpan

Supplies
Broom
Dustpan

Vacuum Couch

1.) Remove all cushions from couch
2.) Remove large trash such as tissues and put in trash
3.) Vacuum both sides of cushions and in cracks of couch
4.) Place cushions back in couch
5.) Put away the vacuum

Supplies
Vacuum

Wash Outside Windows

1.) Set step up stepladder below window if necessary
2.) Spray window with glass cleaner
3.) Use washcloth to immediately wipe clean
4.) Repeat until window is dry and streak free
5.) Continue until all windows have been washed
6.) Put away washcloth, cleanser, and all materials

Supplies
Window Cleaner
Squeegee (optional)
Soft washcloth
Stepladder (optional)

Clean Microwave

1.) Spray all outside surfaces with cleanser
2.) Use an old damp washcloth to wipe all sides, handle, and glass
3.) Open microwave and remove carousel cooking tray
4.) Spray and wipe top, bottom, sides, and door
5.) Clean carousel cooking tray and return to microwave
6.) Put away cleanser and place washcloth in dirty laundry

Supplies
Old damp washcloth
Spray cleanser
Cleaning wipes (optional)

Dust

1.) Start with the highest to lowest surfaces and wipe in room or assigned area
2.) Remember to wipe the tops of picture frames, light fixtures, and behind objects, moving items if necessary
3.) Put all items back in their original location
4.) Put away duster or place washcloth in dirty clothes

Supplies
Old damp washcloth
Duster (optional)
Cleaning wipes (optional)

Water Flowers

1.) Fill watering jug with water
2.) Pour a small amount of water for each flower being careful not to pour too much or cause pots to overflow
3.) Refill jug as necessary
4.) Dry any spills with a dry washcloth
5.) Pour unused water into sink
6.) Place watering jug in its original location or with dirty dishes

Supplies
Watering jug (or container)
Dry washcloth

Scrub Toilet

1.) Put on gloves
2.) Spray tank, sides, lid, bowl, and seat with cleanser
3.) Wipe tank, sides, lid, and seat with old damp washcloth
4.) Scrub bowl with scrubbing brush
5.) Flush toilet
6.) Dry seat and lid with dry washcloth
7.) Put away cleanser, scrub brush, and gloves

Supplies
Old damp washcloth
Old dry washcloth
Scrub Brush
Spray cleanser

Clean Refrigerator

1.) Remove all items and place on table/counter
2.) Throw all out-of-date items in trash
3.) Spray top, bottom, sides, and shelves with cleanser
4.) Use old damp washcloth to wipe all surfaces
5.) Use dry washcloth to dry all surfaces
6.) Put items back in their usual place
7.) Place washcloths in dirty laundry and put away cleanser

Supplies
Old damp washcloth
Dry washcloth
Spray cleanser

Pick-up Sticks

1.) Pick up all twigs, rocks, gumballs, and acorns in front, back, and side yards
2.) Place items in trash bag
3.) Place trash bag by the sidewalk nearest the house

Supplies
Trash bag

Clean Exterior Doors

1.) Use broom to sweep doorframe and remove cobwebs
2.) Use damp washcloth to wipe door, frame, and handles
3.) Use stepladder to reach tops of doors and frames
4.) Put away washcloth in dirty clothes
5.) Put away stepladder in original location

Supplies
Old damp washcloth
Broom
Stepladder

Mop Kitchen Floor

1.) Fill bucket with warm soapy water
2.) Dip mop head and wring out until damp, repeat as needed
3.) Make sure to mop under furniture, move if necessary
4.) Replace all moved furniture
5.) Empty mop bucket in sink
6.) Put away mop and bucket

Supplies
Mop bucket
Soap
Mop

Wipe Cabinets

1.) Use damp washcloth to wipe kitchen cabinets
2.) Make sure to wipe all doors and handles or knobs (use stepladder if necessary)
3.) Place damp washcloth in dirty laundry and put away ladder

Supplies
Old damp washcloth
Stepladder

Clean Washer and Dryer

1.) Remove any items from on top of the washer and dryer
2.) Spray the washer and dryer with cleanser
3.) Use damp washcloth to wipe the top, sides, and front. Make sure to wipe up any spills or detergent
4.) Place washcloths in dirty laundry and put away cleanser

Supplies
Damp washcloth
Spray cleanser

Sweep Back Deck

1.) Remove all chairs and other items from the deck
2.) Use broom to sweep the entire deck and steps
3.) Make sure to sweep away any leaves, twigs, and cobwebs
4.) Put back any chairs or items that were removed
5.) Put away broom

Supplies
Broom

Clean Light Switches & Door Handles

1.) Use damp washcloth to wipe all light switches
2.) Spray each door handle with cleanser and wipe with damp washcloth
7.) Wipe each door handle with dry washcloth until dry

Supplies
Damp washcloth
Dry washcloth
Spray cleaner

Wipe Table and Chairs

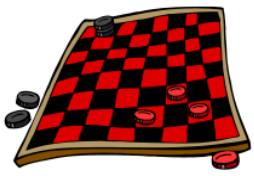
1.) Spray dining room table top and legs with cleanser
2.) Use damp washcloth to wipe table top and legs
3.) Spray the back, side, and legs of each chair with cleanser
4.) Use damp washcloth to wipe each chair, making sure to get the back, side, and legs of each
5.) Place washcloths in dirty laundry and put away cleanser

Supplies
Damp washcloth
Spray cleanser

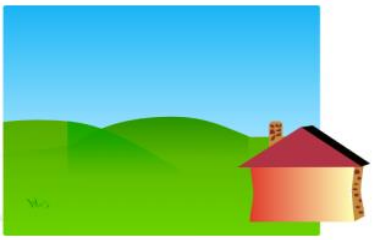
APPENDIX C

REWARD CARDS

Stay up 30 Minutes Late  Extend your bedtime by 30 minutes!	**30 Extra Minutes of Screen Time**  30 more minutes of T.V., computer, or video game time!
Choose What's for Dinner  Choose what's for dinner tonight!	**Make Your Favorite Snack**  Make a snack with help from a caregiver (healthy snacks are preferred)!

Download an App or Game  Download an approved app or game (maximum $2 Value)!	**Watch a Movie**  Select a movie you own to watch during your leisure time!
Play a Game with Parents  Play a board, video, or sports game with a caregiver!	**Choose Radio Station for a Day**  Choose the radio station that you and your house mates will listen to for an entire day while in the van!

Extra Time Outside



Sped 30 extra minutes relaxing or playing outside!

Tea Party

Tea…For me? Yes please! Have a tea party with a caregiver!

Bike Ride

Take a caregiver for a bike ride!

Trip to the Park

Take a trip to the local park!
(weather and schedule permitting)

Choose the T.V. Show

Choose what's on the television (good for one t.v. show)!

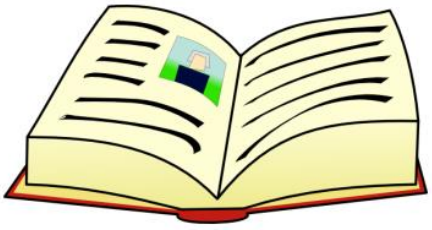
Earn an Allowance

Roll the dice to earn between 1 and six dollars!

Bubble Bath

Enjoy a relaxing bubble bath!

Story Time



Read a favorite story to a caregiver, or have them read one to you!

One Free Ice Cream

Choose one scoop or serving of your favorite ice cream!

Arts and Crafts

Paint, cut, design, or create a masterpiece of your design with a caregiver!

Caregiver Completes a Chore

Have a caregiver complete a daily chore for you!
*This does NOT include job cards.

Choose Dessert

Choose what's for desert tonight!

Go for a Walk

Go for a relaxing walk around the neighborhood with a caregiver!

Makeover

Spend time with a caregiver doing make up, nails, or dressing up!

Wild Card

Sort through the deck and select your preferred reward!

Learn to Build

Use spare items from around the house to build something creative or decorative such as picture frame! Advanced builders may help make model cars, dollhouses, or household repairs.

10 Extra Minutes on Phone  Use the phone for 10 extra minutes!	**Choose the Daily Group Activity**  Choose the daily structured activity for the home such as arts and crafts, reading, games, or Wii.
Be the First!  Be the first in line, the first to go, and the first to do everything!	**Make a Phone Call**  Make a phone call to an approved contact.

APPENDIX D

JOB CARD MONITORING FORM

Job Card Assignment and Completion Monitoring

Date	Time Issued:	Job	Was job completed?	If completed... Time/date of completion:
Example: 9/14	*6:35 pm*	*Wash windows*	Yes / No	*4:22 pm (9/15)*
			Yes / No	
			Yes / No	
			Yes / No	
			Yes / No	
			Yes / No	
			Yes / No	
			Yes / No	
			Yes / No	
			Yes / No	
			Yes / No	
			Yes / No	
			Yes / No	
			Yes / No	
			Yes / No	
			Yes / No	
			Yes / No	
			Yes / No	

Please list the date and time that *every* job card was issued. Circle "yes" if the participant completed the chore or "no" if the participant chose to stay on hours as indicated in the current behavior plan.

APPENDIX E

REWARD CARD MONITORING

Reward Card Monitoring

Date	Was a reward earned?	If yes, what reward was earned?	What time was reward given?
Example: *9/3*	(Yes) / No	*Stay up 30 minutes later*	7:35 pm
9/3	Yes / No		
9/4	Yes / No		
9/5	Yes / No		
9/6	Yes / No		
9/7	Yes / No		
9/8	Yes / No		
9/9	Yes / No		
9/10	Yes / No		
9/11	Yes / No		
9/12	Yes / No		
9/13	Yes / No		
9/14	Yes / No		
9/15	Yes / No		
9/16	Yes / No		
9/17	Yes / No		
9/18	Yes / No		
9/19	Yes / No		
9/20	Yes / No		
9/21	Yes / No		
9/22	Yes / No		
9/23	Yes / No		
9/24	Yes / No		
9/25	Yes / No		
9/26	Yes / No		
9/27	Yes / No		

<u>Rewards should be given when</u>:

(1) TWO [2] or fewer target behaviors occurred within the past 24hrs (*3 strikes and you're out!).*
(2) Participant is not on hours [grounded] while issuing rewards and has no incomplete job cards.

Please try to give rewards at the same time every evening!

APPENDIX F

JOB CARD GROUNDING PROCEDURES

JOB CARD GROUNDING AS A METHOD OF DISCIPLINE

Guidelines for Caregivers

Grounding is a method of discipline that may be used to teach residents the consequences of breaking rules (inappropriate behavior). Grounding also provides residents with an opportunity to learn how to do various jobs around the group home and receive your constructive feedback. The following instructions describe how to use grounding:

1. **Explain to participants that when a rule is broken** s**he will be grounded**. The grounding is for as long as it takes her to complete a 10-15-minute job card. No more than 3 job cards should be issued at once. The resident will randomly select a job card from the pre-written job cards. Caregivers should fan out the deck of job cards face down to ensure random selection. Until the job described on the card is completed correctly, the resident will remain grounded.

2. **Being grounded means**:
   a. Attending school
   b. Performing required chores
   c. Following house rules
   d. No television, radio, tablet, video games, or computer (unless used for schoolwork)
   I. No playing outside
   j. No additional or special snacks other than those outlined on the resident's dietary plan
   l. No special community outings (for example, movies, bowling, trips to the mall)

You will need to have a caregiver available on short notice in case a resident is grounded and unable to accompany the group on a planned outing.

3. **Grounding does <u>NOT</u> mean**:
   a. Nagging the resident to complete chores
   b. Reminding about jobs to be done
   c. Discussing the grounding or explaining the rules and/or consequences

4. **When the jobs are completed, you should check to be sure that they have been done correctly**. Praise the resident for completing the chores correctly and, thus, ending the grounding. If a job is not completed correctly, review the job description and provide feedback on parts done correctly and incorrectly. Without nagging, instruct the resident to redo the incorrect tasks to end the grounding.

5. **Grounding lasts for as long as it takes to complete the assigned job or until the time stated in the behavior support plan has passed**. If the jobs are not completed within an hour, check to be sure that the resident's life is dull enough during the grounding (for example, reinforcing activities and special privileges are removed) and that you are not providing a lot of attention in the form of nagging, etc.

APPENDIX G

JOB CARD GROUNDING TREATMENT INTEGRITY CHECKLIST

Job Card Grounding Treatment Integrity Checklist

Date: _____

Observer: Time: to am / pm

Was a job card issued during this observation period? *Circle:* YES or NO

Please select either YES or NO for the following questions:			
1	Are the participants *receiving reward cards*?	Yes	No
2	Did the caregivers provide *praise for appropriate behavior*?	Yes	No
3	Were participants *immediately issued* job-cards for each rule violation (e.g., no nagging, inappropriate warnings, discussion/debate) where appropriate?	Yes	No
4	Did the caregiver immediately issue job-card(s) for *talking back*? If no talking-back occurred, select "Yes."	Yes	No
5	Were *no more than three* job-cards issued per grounding assigned?	Yes	No
6	Were all job-cards *randomly issued* (e.g., face down, picked at random)?	Yes	No
7	Did caregiver us a *neural tone of voice* when issuing all job-cards (i.e. no yelling, lecturing, discussing, submissive/questioning manner, etc.)?	Yes	No
8	Were *all privileges suspended* each time the participant was grounded (e.g., no telephone, TV, friends, Nintendo, leaving the house)?	Yes	No
9	Did caregivers *avoid nagging* participants to complete chores?	Yes	No
10	Did caregivers *insist that all chores are done correctly* and checked each before the participant regains her privileges?	Yes	No

IOA Form

	Participant 1	Participant 2	Participant 3
Follow Directions			
Use Appropriate Language			
Keep Hands and Feet to Self			
Number of Job Cards Issued			
Number of Job Cards Completed			
Rewards Earned			

*Please place a check mark (✓) in the corresponding box for target behaviors and staff responses, if observed, during the one hour interval. Each hourly interval starts on the hour and ends on the hour (e.g. 6:00 pm to 7:00pm).

APPENDIX H

PARTICIPANT AND CAREGIVER SOCIAL ACCEPTBILITY RATINGS

Participant and Caregiver Modified IRP-15 Ratings

Item	Hailey	Ami	Danny	Caregiver Positive (n = 5)	Caregiver Negative (n = 2)
#1	6	6	5	4.6	3
#2	6	6	6	4.2	4
#3	4	5	5	4.8	3.5
#4	6	6	4	4.4	4
#5	6	2	4	5	3
#6	6	6	5	4.8	2.5
#7	6	6	6	4.6	4
#8	6	6	6	4.4	2
#9	6	6	5	5.6	2.5
#10	1	6	5	4.6	3.5
#11	6	6	6	5	2.5
#12	6	6	5	4.8	2.5
#13	6	6	6	4.6	2
#14	6	6	4	5	2
#15	6	6	5	5.2	2
Total	**83**	**85**	**77**	**71.6**	**43**

A total score of 52.5 or higher indicates social acceptability

APPENDIX I

EFFECT SIZE MEASURES

	Effect Size	A vs B	A_1B_1	B_1A_2	A_2B_2
Hailey	NAP	0.50	0.44	**0.63***	**0.66****
	Tau-U or (Tau)	(0.00)	-0.06	**0.27****	-0.12
	PEM	**52.73***	40.74	**72.73****	**75.00****
	PEM-T	-	**70.37****	**100.00*****	**85.71****
	Hedges' *g*	-0.03	-0.17	**0.44***	**0.45***
Ami	NAP	0.39	**0.63***	0.52	0.39
	Tau-U or (Tau)	(-0.09)	0.00	-0.03	0.17
	PEM	0.00	0.00	23.08	0.00
	PEM-T	-	0.00	23.08	0.00
	Hedges' *g*	**0.21***	**0.50****	0.16	-0.37
Danny	NAP	0.48	0.43	**0.60***	**0.60****
	Tau-U or (Tau)	(0.09)	0.05	0.11	-0.15
	PEM	0.00	0.00	**66.67***	**66.67***
	PEM-T	-	0.00	37.50	**77.78****
	Hedges' *g*	-0.13	-0.20	0.00	0.11

* = *weak, small,* or *detectable* effect
** = *medium* or *moderate* effect
*** = *large*, *very large,* or *very effective* effect

Effect Size Interpretation

NAP: ≤ 0.49 = detrimental effect; 0.50 – 0.65 = *weak;* 0.66 – 0.92 = *medium*; 0.93 – 1.00 = *large*
TAU-U: 0.20 = *small*; 0.2 - 0.6 = *moderate*; 0.6 - 0.8 = *large*; > 0.8 = *very large*
PEM/PEM-T: < 50 no effective; 50–69 = *detectable*; 70-89 = *moderate*; ≥ 90 = *very effective*
Hedges' *g*: 0.20 = *small*; 0.50 = *medium*; 0.80 = *large*

APPENDIX J

IRB APPROVAL

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office 252-744-2914 · Fax 252-744-2284 · www.ecu.edu/ORIC/irb

Notification of Initial Approval: Expedited

From: Social/Behavioral IRB
To: Gary Pate
CC:
Jeannie Golden
Gary Pate
Date: 5/8/2017
Re: UMCIRB 17-000620
The Effectiveness of JCG in an ICF/IID

I am pleased to inform you that your Expedited Application was approved. Approval of the study and any consent form(s) is for the period of 5/7/2017 to 5/6/2018. The research study is eligible for review under expedited category #7. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Name	Description
Bruce Pate Dissertation Proposal Draft.docx	Study Protocol or Grant Application
JCG Assent	Consent Forms
JCG Parental Consent	Consent Forms
Modified IRP 15 for Participants	Surveys and Questionnaires
Modified IRP15.docx	Surveys and Questionnaires

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

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418
IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418