Discounting of restraint usage, problem behavior management, and risk of autism severity

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ABSTRACT

The current study examined whether a history of experience with children with autism affected the rate of discounting of a delayed or probable consequence. Experiment 1 utilized a temporal discounting task to compare the discounting rates of adults who have worked in an autism service setting and have experience with physical restraints to that of adults who have little or no experience with these populations. The results showed that adults with a history of contact with autism made less optimal choices and discounted restraint responsibilities more steeply than adults with no such history, indicating increased avoidance of engaging in restraints. Experiment 2 investigated how the same groups discounted child problem behavior, and showed that those with experience with autism preferred to delay working with children with severe problem behavior and discounted the student's problem behavior more steeply, again demonstrating increased avoidance. Experiment 3 examined risk tendencies in relation to having children with diminished functioning in parents who have children with autism and those who have only worked with them. Results showed that parents made riskier choices than non-parents. Overall, all 3 experiments showed that those with increased experience with children with autism tended toward more impulsive and risky choices.

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1. Introduction

Diagnoses of autism spectrum disorders (ASD) have increased at an alarming rate in recent years. Now approximately 1 in every 88 children receives the diagnosis (Centers for Disease Control and Prevention, 2012). With the rapid rise in diagnoses, families with children with autism will also seek treatment at increasing rates. Beyond understanding the behavior of the children with autism, then, a further analysis of the decision making and behavior of service providers will become increasingly important. In 2006, the U.S. Department of Health and Human Services reported a turnover rate of approximately 50% for direct support professionals serving individuals with intellectual disabilities or other developmental disabilities in vocational programs and residential programs. Additionally, an estimated 96% of all direct support professionals hired in this area will be hired to replace those leaving their current positions. Skinner (1972) suggested that the positive behavior of even the most compassionate care workers will not last if the environment is not supportive of these behaviors, and the facts on turnover appear to support this position in regard to those who work with children with disabilities (U.S. Department of Health and Human Services, 2006). An analysis of factors relating to these problems is warranted so that the environment of these service providers may be effectively altered and the future of effective services is not compromised.

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Relative to the vast body of research on treatment and assessment of autism populations, investigations of staff behavior and choices are relatively few. For example, working with children with frequent challenging behavior and/or administering physical restraints may be burdensome tasks for staff who work with aggressive populations. An analysis of interviews with staff following engagement in a physical restraint demonstrated that staff primarily report negative emotions and discomfort (Hawkins, Allen, & Jenkins, 2005). Also, when working with clients with challenging behavior, brief training packages with instruction, role play, and rehearsal have been shown to increase confidence working with these populations, though no effects were observed for coping or perceived control (McDonnell et al., 2008), and staff who avoid such training exercises are unlikely to improve (Campbell, 2007). Much of the research in this area has identified problems such as these, and further variables must be examined to determine their influence to form a more comprehensive account of staff behavior and choices.

One particular area that may be troublesome for staff in the field of autism services is the delay to consequences. For example, intervention or other effective treatments may require an extended exposure before problem behavior is significantly reduced, or the child may require a large number of trials before demonstrating mastery in an academic task or demonstrating independence in a skill. The effects of delay to consequences or the probability that a consequence will be contacted following a certain choice can have major influences on decision making and current behavior. In order to quantify the effect that a delayed or probabilistic outcome will have on current behavior, a discounting task is often employed. In tasks of this type, participants are often presented hypothetical choices between a consequence available immediately (or for sure) versus a consequence that is often more advantageous, but is available only after a certain delay (or will be received at a certain probability). Those who more readily choose the immediate consequences of lesser value are then deemed impulsive, while those who make more optimal choices and choose to wait for a consequence of larger value are deemed self-controlled (Critchfield & Kollins, 2001).

Once a discounting task has been completed, the devaluation of rewards to be received after a delay can be predicted by a hyperbolic discounting function:

$$V = \frac{A}{(1 + bX)^S} \tag{1}$$

In the previous equation, V is the subjective value of the reward, A is the maximum reward amount available, X is the delay to the *reward* or the odds against earning the reward, b is the discounting rate, and s is a non-linear scaling parameter (e.g., Holt, Green, & Myerson, 2003). Once the data obtained from a discounting task is plotted using this equation, responding toward delayed or probabilistic rewards can be predicted. These models of impulsivity have shown high consistency in comparison to scenarios where actual outcomes were available as choices (Johnson & Bickel, 2002), have been found to produce an accurate model of responding (e.g., Dixon, Jacobs, & Sanders, 2006; Johnson & Bickel, 2002; Kirby & Marakovic, 1995), and show strong reliability when a variety of commodities are used such as body image, dating, retirement, or money (Weatherly, Derenne, & Terrell, 2011).

Examinations of delay discounting in various populations or clinical groups have provided behavioral researchers and service providers with knowledge and tools to further understand the behavior and choices of members of these populations and create interventions or programs that will more effectively remedy problems related to delayed consequences and risk. For example, Reed and Martens (2011) administered a brief delay discounting task in an elementary school classroom where children were asked to choose between a small amount of a reward available immediately and a larger amount of a reward that they could have later. After this assessment, students were rewarded during instruction with tokens for on-task behavior that could be traded for access to items after a short delay. Later, students were rewarded with tokens that could only be exchanged before instruction the next day. Overall, the responses to the delay discounting task predicted the children's adaptability to the newly implemented schedules. That is, more impulsive children were observed to be more on-task when reinforcement was available after minimal delays, and the behavior of students deemed more self-controlled in the assessment improved even under the conditions where the rewards were delayed. Further, insights into impulsivity and self-control have led to the development of methods to train more self-controlled decision making and tolerance to delay through the manipulation of reward quality and effort (Neef, Bicard, & Endo, 2001), experience with progressive delays (Schweitzer & Sulzer-Azaroff, 1988), and the availability of other activities to "bridge the gap" to the final reward (Dixon & Cummings, 2001).

Discounting studies have produced similar understanding of behavior and decision making in other clinical populations such as problem and pathological gamblers (Dixon et al., 2006; Dixon & Holton, 2009) adult smokers (Reynolds, Richards, Horn, & Karraker, 2004), adolescent smokers (Reynolds, Karraker, Horn, & Richards, 2003), children with attention-deficit/hyperactivity disorder (Wilson, Mitchell, Musser, Schmitt, & Nigg, 2011) and so on. Due to the frequency of delays to reinforcement involved in work in the field of autism, researchers may wish to employ similar methods of investigation to determine how delayed consequences affect staff behavior and decision making and how impulsive behavior may develop through contact with children with autism.

Similar to staff who work with clients with autism, the choice behavior of parents may be an important area for investigation in the future construction of a comprehensive treatment model. For example, Hastings et al. (2005) examined choice of coping strategies for parents with children with ASD, and found that parents frequently choose avoidance, denial, problem-focused, or positive coping methods to deal with their parenting responsibilities. Further, parents with avoidance