

Is the delay discounting paradigm useful in understanding social anxiety?

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Abstract

The delay discounting paradigm was used to examine its utility in understanding motivational factors among socially anxious individuals. Participants ($n = 88$) who reported high and low levels of social anxiety were randomly assigned to either a social threat or non-threat condition and their subsequent rates of discounting were examined. A significant difference in rates of discounting was found between the high and low social anxiety groups within the non-threat condition, with high social anxiety participants showing increased discounting. This study suggests that a modified version of the delay discounting paradigm may be useful in understanding motivational factors in social anxiety.

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Introduction

Social anxiety is defined by fear and avoidance of social or performance situations (Hofmann & DiBartolo, 2001). At its most extreme, it manifests as social anxiety disorder (SAD), which creates emotional distress and interferes with daily functioning. At present, little is known about the motivational factors that influence an individual's decision to avoid versus approach social contact, particularly among individuals with social anxiety. The current study adapted a well-known paradigm used to examine motivational processes, in order to examine its usefulness in understanding social avoidance among individuals high and low in social anxiety.

Although numerous theoretical accounts exist to explain social avoidance in individuals with SAD (Alden, 2001; Clark & Wells, 1995; Rapee & Heimberg, 1997), only a limited number of studies have looked at variables that are associated with social avoidance. One study has shown that increased physiological arousal (i.e., heart rate and blood pressure) and negative cognitions are correlated with social avoidance in a sample of individuals who scored above the cutoff scores indicative of clinical levels of social anxiety on a battery of screening measures (Beidel, Turner, & Dancu, 1985). In a second study, the severity of social anxiety symptoms was positively correlated with social avoidance in a sample of fourth and fifth grade students (LaVoie, Spenceri, & Mahoney-Wernli, 2001). Similarly, Gazelle and Rudolph (2004) selected fifth and sixth

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graders who were excluded by peers and noted increased social avoidance over time, in comparison with non-excluded anxious youth. Lastly, Meleshko and Alden (1993) have found that socially anxious individuals are motivated to avoid social disapproval.

As these studies illustrate, it is possible that a number of factors contribute to an individual's decision to stay away from social contact, including the severity of SAD symptoms, increased physiological arousal and negative cognitions. Unfortunately, based on the small number of studies, it is unknown how the individual with social anxiety evaluates two central components of social contact, anxiety symptoms on one hand and potentially pleasant social contact on the other. Clearly, there would be motivation to avoid aversive symptoms but presumably, there would be motivation to approach social reinforcement. This is congruent with the current literature regarding social anxiety, which has shown that when socially anxious individuals are not in a social situation, they report a desire to engage in social activities (Hofmann & DiBartolo, 2001).

At present, we have no understanding of how motivational processes work to influence social avoidance in individuals with social anxiety and no methodology has been designed to examine this issue. However, the delay discounting paradigm was developed within the behavioral economic literature to examine motivation and decision processes of other types of populations, such as individuals with drug dependencies. This paradigm is a behavioral choice task, in which individuals are asked to choose between hypothetical monetary amounts that are available immediately or after a specified delay period (Critchfield & Kollins, 2001; Odum, Madden, Badger, & Bickel, 2000). By way of illustration, an individual is asked if he/she would prefer \$1000 immediately or \$1000 after a 1-week delay. This process continues with the value of immediate rewards descending, and the last immediate value that is chosen before preference switches to the delayed reward is noted. The process then is completed a second time, with the immediate rewards in ascending order. The average of these two values determines the indifference point, which is derived for each delay period. The indifference point then is used in a hyperbolic discounting equation which has been found to accurately describe discounting rates (Kirby, Petry, & Bickel, 1999, Vuchinich & Simpson, 1998): $V = A/(1 + kD)$, where V is the present value of the delayed reward A at delay D and k is the discount rate. As the value of k increases, the rate of discounting becomes steeper. In other words, as the delay to gain the reward is increased, the value of the delayed reward becomes smaller, which is referred to as discounting (Bickel & Marsch, 2001).

Findings from this paradigm have demonstrated that individuals who are drug dependent show increased rates of discounting relative to non-drug using participants (Coffey, Gudleski, Saladin, & Brady, 2003; Madden, Bickel & Jacobs, 1999). Given the benefits of this paradigm for understanding motivation in drug dependency, it seemed important to determine its utility in examining the decisional processes of socially anxious individuals. Although results from the delay discounting paradigm have been interpreted as reflective of personality factors such as impulsivity and disinhibition (e.g., Crean, deWit, & Richards, 2000), the most basic application of this methodology reflects the relative weighting of various rewards under specific condition, following from the field of behavioral economics (Critchfield & Kollins, 2001, Rachlin, Raineri, & Cross, 1991). As such, this paradigm has the potential to help us understand more about how social anxiety influences the value of rewards. In particular, it can help us to understand how social anxiety influences the decision to seek immediate versus delayed reinforcement, particularly when faced with potentially aversive anxiety symptoms. As a first step, we employed this paradigm using monetary rewards (unchanged from its original format) under conditions of hypothetical social threat and no threat, in order to examine the potential utility of the delay discounting paradigm for understanding motivation in social anxiety.

The current study included two groups of participants, individuals scoring high and low on a measure of social anxiety. These groups randomly were assigned to either a hypothetical social threat or a non-threat condition. Individuals in the non-threat condition were presented with a typical delay discounting procedure. Individuals in the social threat condition were presented with a choice of two monetary rewards, but they were given the hypothetical premise that they would only receive their choice of reward after having given a public speech. This modification was added in order to determine if different rates of discounting would be noted, depending on whether the person was presented with a hypothetical social obstacle to overcome in order to achieve the reward. We hypothesized that socially anxious individuals would evidence higher rates of discounting in the social threat condition, relative to non-anxious participants and socially anxious individuals in the non-threat condition. This prediction was based on the hypothesis that socially anxious individuals will

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