



Original Article

Direct and indirect associations between experiential avoidance and reduced delay of gratification

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ABSTRACT

The ability to delay gratification and wait for larger long-term rewards is crucial for maximizing outcomes in commonly valued areas of living such as career, health, and relationships. Past research suggests that emotional distress impairs this ability to delay gratification. Research also indicates that persons who exhibit higher levels of experiential avoidance, the tendency to negatively evaluate and avoid emotion and cognition, tend to report higher levels of distress. There is limited research to date on the direct or indirect relationships between experiential avoidance and delay of gratification. The current study was designed to assess these relationships in order to integrate findings from the literature on experiential avoidance and delay of gratification. Two hundred and two university students provided ratings of their experiential avoidance, depression, anger, and delay of gratification. Results indicated these variables were moderately and significantly correlated. Path analysis suggested that experiential avoidance has a direct relationship with delay of gratification, and an indirect relationship through higher depression and anger. These findings suggest that acceptance-based behavior therapies that reduce experiential avoidance and distress may potentially enhance delay of gratification.

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1. Introduction

Over the past six decades, delaying gratification – the tendency to give up immediate pleasure in pursuit of long-term rewards – has been identified as a fundamental skill necessary for physical health, positive social functioning, educational and occupational achievement, and financial stability (Baker & Hoerger, 2012; Funder & Block, 1989; Hoerger, Quirk, & Weed, 2011). By early adolescence, most people develop a basic capacity for delaying gratification (Hoerger et al., 2011). In contrast to this finding, however, many adults demonstrate a resounding failure to delay gratification. Recent reviews emphasize that the failure to delay gratification can have significant consequences for individuals and societies, including substance use, health problems, low educational attainment, relationship problems, consumer debt, risky sexual behavior, and criminality (Hoerger et al., 2011; Mischel et al. 2011; Ramanathan & Menon, 2006). Recent initiatives by the National Institutes of Health (NIH, 2008, 2009) have called for immediate, targeted research aimed at identifying

mechanisms responsible for failed efforts to delay gratification. In synthesizing past research and theory, we developed a theoretical model of emotional processes that attempts to explain individual differences in the tendency to delay gratification.

Emotional distress plays a key role in reducing delay of gratification (Metcalf & Mischel, 1999). For instance, negative feedback and distressing thoughts reduce delay of gratification in experimental studies (Mischel, Ebbesen, & Zeiss, 1972; Schwarz & Pollack, 1977; Seeman & Schwarz, 1974), and measures of neuroticism, depression, and anger are associated with reduced delay of gratification (Hoerger et al., 2011; Tice, Bratslavsky, & Baumeister, 2001). It is argued that distress activates highly emotional and speedy decision making processes that are controlled by short-term contingencies. Once activated, these decision making processes increase the probability that smaller short-term rewards will be chosen (Metcalf & Mischel, 1999). These studies demonstrate, in a general way, that emotional distress hinders delay of gratification. Yet, emerging research suggests the need for greater specificity and integration in conceptual models explaining how aspects of emotional distress influence delay of gratification. Notably, anger and depression are consistently related to difficulties with delay of gratification, whereas anxiety is an inconsistent predictor of delay of gratification (Hoerger et al., 2011).

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Anger appears to be a critical factor that is proximally related to delay of gratification. Anger is positively correlated with various measures of impulsivity (Ramírez & Andreu, 2006), and this association is evident in the constellation of impulsive decision-making, inability to delay gratification, and anger commonly observed among adults with cluster B personality traits (American Psychiatric Association, 2000). In addition to impulsive decision-making, these individuals often present with great difficulty regulating intense anger and struggle to resolve problems effectively (Gerhart, Ronan, Russ, & Seymour, 2013). Anger may have this proximal influence on impulsive reactions, such as failures to delay gratification, due to its association with high autonomic arousal and the activation of behavioral approach systems (Carver & Harmon-Jones, 2009). Anger arousal may be especially detrimental to sources of delayed gratification that are interpersonal in nature, such as the enhancement of intimate relationships or occupational advancement (Mischel, Ayduk, & Mendoza-Denton, 2003).

Anger is a functional emotion that tends to originate in response to frustration, environmental threats, and other negative effects such as sadness and depression (Berkowitz & Harmon-Jones, 2004). Given that anger is commonly observed among depressed individuals (Novaco, 2010), depressed affect may exert its influence on delay of gratification indirectly. Subjective feelings of depression commonly lead to secondary feelings of increased anger, irritability, and frustration (Berkowitz & Harmon-Jones, 2004; Gardner & Moore, 2008). The relationship between anger and depression is explained in part by the common utilization of angry rumination, other ineffective emotion regulation skills (Besharat, Nia, & Farahani, in press), and hostile attribution biases by depressed individuals (Riley, Treiber, & Woods, 1989). It has been suggested that subjective feelings of depression may reduce delay of gratification through the pathway of anger (Miller, Gaughan, Pryor, & Kamen, 2009), and this is the first known investigation to test that hypothesis.

Effective emotional regulation strategies are needed to modulate stronger feelings of depression and anger that may hinder delay of gratification. This multidimensional process of emotional regulation requires individuals to observe, understand, and accept emotional states while simultaneously inhibiting behaviors and action urges that may interfere with long-term goals and other valued outcomes (Gratz & Roemer, 2004; Stevens, Gerhart, Goldsmith, Heath, Chesney, & Hobfoll, 2013). Individuals differ greatly in their emotional regulation strategies, with some approaching emotional distress proactively, and others avoiding their emotions at all costs. *Experiential avoidance* tends to be an ineffective emotional regulation process whereby individuals attempt to escape, minimize, or avoid unwanted thoughts and emotions (Bond et al. 2011; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). The process is implicated as a basic mechanism of psychopathology, which paradoxically increases the salience, intensity, and control exerted by distressing emotions. People high on this trait are less psychologically flexible and tend to report more anger, depression, and general emotional distress (Bond et al., 2011; Kashdan, Breen, Afram, & Terhar, 2010). Treatment outcome research with a clinical sample indicated that changes in experiential avoidance mediated treatment-related changes in depression. Moreover, time-lagged relationships revealed that higher experiential avoidance predicted less change in depression, but not vice-versa, suggesting experiential avoidance influences psychological distress (Berking, Neacsiu, Comtois, & Linehan, 2009). Individuals higher on experiential avoidance have also reported addressing life problems in an impulsive or careless manner (Gerhart, Ronan, Seymour, & Holman, 2011), indicating that it may play a fundamental role in explaining deficits in delay of gratification.

Based on the theoretical model of Acceptance and Commitment Therapy (ACT; Hayes, Luoma, Bond, Masuda, & Lillis, 2006),

a relationship between experiential avoidance and a diminished ability to delay gratification could help illuminate why individuals prone to avoidant and inflexible coping have difficulty with committed action and the pursuit of long-term values. That is, experiential avoidance may interfere with delay of gratification by amplifying psychological distress, which then translates to greater control of behavior by escape and avoidance contingencies that minimize distress in the short-term. As a result, the salience of longer-term goals and values – such as health and relationship satisfaction – are diminished, and committed action decreased.

In summary, we hypothesized that experiential avoidance would be associated with reduced delay of gratification, with the relationship mediated by subjective feelings of depression and subsequent anger. More precisely, we hypothesized that experiential avoidance would be positively associated with depression, depression would be positively associated with anger, and anger would be negatively associated with delay of gratification. We tested the fit of the hypothesized model using path analysis and compared it to plausible alternative models. In the first alternative model, the order of anger and depression were alternated such that experiential avoidance was positively associated with anger, anger was positively associated with depression, and depression was negatively associated with delay of gratification. In the second alternative model, depression and anger were treated as indicators of a composite distress variable. Thus, the current investigation was designed to provide the conceptual specificity necessary for understanding the emotional processes underlying individual differences in delaying gratification.

2. Method

2.1. Participants and procedures

After receiving ethical approval from the local Institutional Review Board, we recruited 202 undergraduate participants from a large public university in the Midwestern U.S. Participants were 19.5 years old on average ($SD=3.0$) and mainly female (77.2%) and White (91.6%). They completed all study measures online via *SurveyMonkey.com*, due to the ethical and practical benefits of Internet-mediated research (Hoerger & Currell, 2011).

2.2. Measures

The Acceptance and Action Questionnaire Version II (AAQ-II; Bond et al., 2011) is a 10-item self-report measure of experiential avoidance. Sample items include “I worry about not being able to control my worries and feelings” and “It’s OK if I remember something unpleasant” (reverse coded). Respondents rate items on a scale from 1 (Never True) to 7 (Always True). The range of possible scores was 10–70. The AAQ-II possesses adequate validity, test–retest reliability, and internal consistency (Bond et al., 2011). The measure was scored so that higher scores indicated higher experiential avoidance. The measure did not specify a specific time-frame, but rather assessed experiential avoidance in general. In the current sample internal consistency was high, $\alpha=.86$.

The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) is a 20 item self-report measure of depressive symptoms on which participants endorse the frequency of various symptoms (e.g., “I had crying spells”) during the past week using a 4-point Likert-type scale, from 0 (Rarely or None of the Time) to 3 (Most or All of the Time). The range of possible scores was 0–60. The CES-D has demonstrated adequate internal consistency, test–retest reliability, and construct validity. Since its

development, the measure has been widely translated for use cross-culturally as a screen for depression in community samples. In the current sample internal consistency was good, $\alpha = .89$.

The PROMIS Emotional Distress – Anger (PED-A) item bank (Cella et al. 2010) is a 29-item self-report measure of angry emotions occurring the previous week. The measure was developed as a part of a broader initiative by the NIH to craft brief, free measures of psychosocial constructs relevant to public health research that demonstrate strong reliability, validity, precision, and responsiveness. Items (e.g., “I made myself angry about something just by thinking about it.”) were rated on a scale from 1 (Never) to 5 (Always). The range of possible scores was 29–145. In the present study, the internal consistency reliability of the PED-A was strong, $\alpha = .96$.

The Delaying Gratification Inventory (DGI; Hoerger et al., 2011) is a 35-item self-report measure of individual differences in delay of gratification. The DGI is theoretically grounded in over six decades of research on the construct and measures delay of gratification across five life domains: eating behaviors, physical pleasures, social behavior, monetary decision making, and achievement. Sample items include “It is easy for me to resist candy and bowls of snack foods” and “It is hard for me to resist buying things I cannot afford” (reverse coded). Items were rated on a scale from 1 (Never True) to 7 (Always True). The range of possible scores was 35–245. The measure did not specify a specific time-frame, but rather assessed delay of gratification in general.

Evidence for the test–retest reliability, internal consistency, factorial invariance, construct validity, and predictive validity of DGI scores is supported by research from diverse worldwide samples of over 10,000 participants (Hoerger et al., 2011).

The measure has shown convergence with standardized measures of self-control, convergent and discriminant validity with Big Five personality traits and constructs on the MMPI-2-RF, and correlations with objective indicators of educational attainment, sexual behavior, and financial problems (Baker & Hoerger, 2012; Giovanelli, Hoerger, Johnson, & Gruber, in press; Hoerger et al., 2011). In the present study, the internal consistency reliability of the DGI was strong, $\alpha = .88$.

2.3. Calculation

All data were screened for violations of statistical assumptions, such as skewness, kurtosis, and statistical outliers. Anger was the only variable to demonstrate significant skew and kurtosis; thus, we used the logarithmic transformation of this variable for the primary analyses; descriptive statistics for this variable are reported using the raw anger variable. All other variables were normally distributed. We computed descriptive statistics and zero-order correlations and performed path analyses using AMOS 18 (Arbuckle, 2009) to assess the direct and indirect effects of experiential avoidance on delay of gratification. The AMOS program calculates indirect effects by multiplying the direct path coefficients together to obtain the beta weights, while

bootstrapping estimates the standard errors and significance values (Arbuckle, 2009).

Path analysis was performed using the current guidelines of the American Psychological Association (APA; McArdle, Ferrer, & Grimm, 2011). Model goodness of fit was assessed using a non-significant χ^2 test, the residual mean squared error of approximation (RMSEA) with values below .08 indicating adequate fit, and the Comparative Fit Index (CFI), with values greater than .95 indicating good fit. Consistent with APA guidelines, beyond evaluating the hypothesized model, we also evaluated the model fit of plausible alternative models. Alternative model one used the same path structure but reversed the order of depression and anger. Alternative model two used depression and anger as manifest indicators of a single latent variable of psychological distress and was, thus, fit using structural equation modeling. We examined the modification indices of these three models, but none suggested the need to explore further iterations. Finally, a series of post hoc analyses were conducted to assess the possibility of moderated mediation, and the possibility that anger and depression would be indirectly associated with delay of gratification through experiential avoidance.

3. Results

3.1. Descriptive statistics

Means, standard deviations, and zero-order correlations for all study variables are shown in Table 1. All study variables were significantly correlated in the hypothesized directions.

3.2. Path analysis

Path analysis was used to test our first model that experiential avoidance would have a direct effect on delay of gratification, with an indirect effect through depression and subsequent anger. This model fits the underlying data well, $\chi^2(2) = 4.51$, $p = .11$, CFI = .99, RMSEA = .07. All direct pathways in this model were statistically significant. Further, experiential avoidance had a significant indirect association with anger ($\beta = .445$, $p = .001$), suggesting that depression mediated this relationship. Experiential avoidance also had a significant indirect association with delay of gratification ($\beta = -.143$, $p = .001$). These findings suggest that experiential avoidance is significantly associated with lower delay of gratification both directly and indirectly, through heightened depression and anger. Avoidance accounted for 46.2% of the variance in depression which, in turn, accounted for 44.7% of the variance in anger. Overall, this model explained 21.3% of the variance in delay of gratification (see Table 2, Fig. 1).

The hypothesized model was retained, as neither of the alternative models (see Calculation section above) demonstrated improved model fit. Specifically, alternative model one (see Fig. 2) provided poor fit to the underlying data structure, $\chi^2(2) = 77.90$, $p < .001$, CFI = .74, RMSEA = .44, while the fit indices for alternative model two (see Fig. 3) were inconsistent, $\chi^2(1) = 4.606$,

Table 1
Statistical properties of study variables.

	Mean	SD	Range	(1)	(2)	(3)	(4)
(1) Experiential avoidance	26.39	8.75	11–52	(.86)	.68 ^a	.49 ^a	–.38 ^a
(2) Depression	12.41	8.11	0–36		(.89)	.67 ^a	–.44 ^a
(3) Anger	54.59	20.26	29–123			(.96)	–.42 ^a
(4) Delay of gratification	179.58	21.02	129–227				(.88)

Note: $n = 202$. Parenthetical values indicate internal consistency reliability.

^a $p < .01$.

Table 2
Path coefficients and explained variance of the final model.

	β	p	Multiple R ²
<u>Direct effects</u>			
Experiential avoidance → delay of gratification	-.224	<.01	
Experiential avoidance → depression	.680	<.01	
Depression → anger	.669	<.01	
Anger → delay of gratification	-.314	<.01	
<u>Indirect effects</u>			
Experiential avoidance → anger (via depression)	.445	<.01	
Experiential avoidance → delay of gratification (via anger and depression)	-.143	<.01	
<u>Explained variance</u>			
Depression			.462
Anger			.447
Delay of gratification			.213

Note: $n=202$.

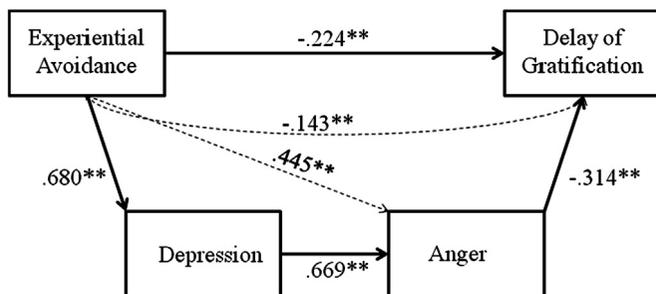


Fig. 1. Proposed model.

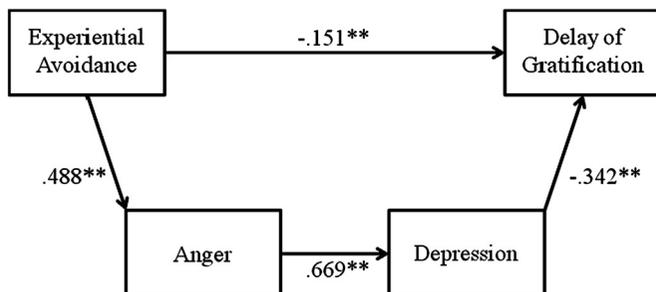


Fig. 2. Alternative model 1.

$p=.032$, CFI=.98, RMSEA=.13, with the RMSEA indicating particularly poor fit.

We conducted a post hoc exploratory test for the possibility of a moderated mediation model, but interactions terms between experiential avoidance and anger and delay of gratification did not reach statistical significance. A third and final alternative model in which anger and depression were both exogenous variables and each had indirect associations with delay of gratification through experiential avoidance was tested, but this model provided poor fit to the underlying data ($\chi^2(1)=19212$, $p < .001$, CFI=.94, RMSEA=.21).

4. Discussion

The results of the study have important implications for understanding individual differences in delay of gratification (Mischel et al., 2011), and informing future interventions to

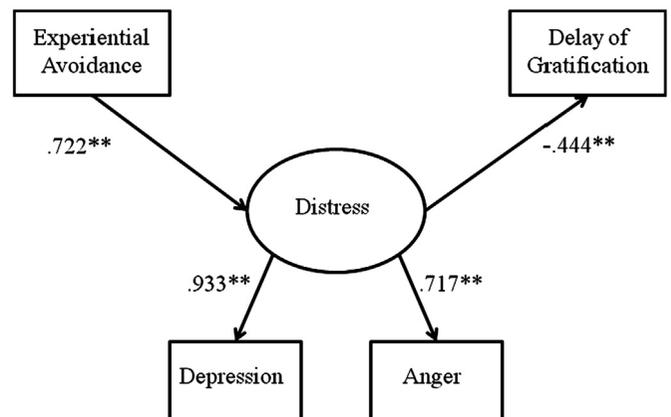


Fig. 3. Alternative model 2.

facilitate delay of gratification and enhance value-based living (Hayes et al., 2006). Experiential avoidance and emotional distress (i.e., depression and anger) significantly predicted decreased delay of gratification. In our proposed model, experiential avoidance was directly related to delay of gratification and also had an indirect association through depression and anger. This proposed model fit the underlying data well, and suggested that even after accounting for commonly occurring negative emotions, the general tendency to be uncomfortable and avoidant with private psychological responses was associated with decreased tendency to delay gratification. Plausible alternative models fit the data less well and bolstered support for our proposed model in which experiential avoidance is associated with decreased delay of gratification in part because of shared relationships with depressive affect, and associated angry arousal (Miller et al., 2009).

The study findings have implications for informing psychotherapy and other interventions to facilitate delay of gratification. Experiential avoidance is a key construct in ACT, an approach to psychotherapy that is based heavily on principles of mindfulness and behavioral activation (Hayes et al., 2006; Hayes, Strosahl, & Wilson, 1999). ACT clinicians encourage clients to proactively observe and accept emotions and other private experiences thereby reducing inflexible control of behavior by distress and related cognition to enhance commitment to long-term goals and values. Valued areas of living often overlap with common sources of delay of gratification (Wilson, Sandoz, Kitchens, & Roberts, 2010). Although specific areas of valued living tend to be ideographic, many individuals report valuing relationships, work, education, and health-related behaviors (Wilson et al., 2010).

Sources of delayed gratification assessed in the current study included social relationships, educational and occupational achievement, healthy eating, and financial responsibility (Hoerger et al., 2011). The pursuit of these valued outcomes often require inhibiting the pursuit of more ephemeral and immediate reinforcers derived from careless spending, unhealthy eating, or impulsive decision-making in relationships.

Our study, in accord with the ACT model, suggests that increasing psychological acceptance of unpleasant experience may increase clients' ability to pursue long-term goals and values. In particular, practitioners and intervention researchers may be able to enhance delay of gratification by helping clients reduce their use of experiential avoidance, or by helping clients to develop a more flexible repertoire of emotion regulation strategies for reducing anger and depression (Berking et al. 2009; Gratz & Roemer, 2004). These clinical interventions may be especially useful for helping clients pursue valued outcomes that are often both dynamic and delayed in the context of interpersonal life and occupational achievement (Mischel et al., 2003), and long-term health (Gifford & Lillis, 2009). Treatment outcome research designed to identify the time-lagged relationships between experiential avoidance, depression, anger, and delay of gratification will be critical for identifying the mechanisms of change that can enhance delay of gratification (Tschacher & Ramseyer, 2009).

These findings make a unique contribution to the understanding of experiential avoidance and anger. According to our proposed model, experiential avoidance has a significant indirect association with lower delay of gratification through anger and depression. This mediational model is consistent with frustration-aggression models of anger and aggression (Berkowitz, 1989; Berkowitz & Harmon-Jones, 2004) that highlight the angering effects of other aversive emotions. It is also consistent with contemporary theories of clinical anger which posit anger and aggression can function as a mechanism for avoiding hurt and sadness (Eifert, McKay, & Forsyth, 2006; Gardner & Moore, 2008). Our findings also support Miller et al. (2009) speculations that emotions such as anger that are associated with high autonomic arousal impair delay of gratification during times of stress.

This investigation had several noteworthy strengths. Foremost, to our knowledge, this was the first study to explore the direct and indirect influence of experiential avoidance on delay of gratification. Second, we used well-validated measures of constructs that are rooted in basic behavioral science. Third, the study was well-powered. Finally, we conducted analyses using advanced modeling techniques, and ruled out plausible alternative models, providing strong empirical support for our hypothesized model.

Future research would benefit from addressing limitations of this study. Participants were young, college educated, and predominantly female and white; future studies are needed to examine the potential moderating roles of socio-demographic variables. Although several effect sizes were strong, more research is needed to determine whether method variance augmented observed effects. Additional longitudinal research is needed to evaluate the relationships between experiential avoidance, psychological distress, and delay of gratification over time. Experimental research that utilizes anger induction techniques and behavioral choice procedures will also provide important extensions of this research.

In summary, we conducted a theory driven investigation on the role of experiential avoidance in increasing emotional distress and reducing delay of gratification. Our results suggest experiential avoidance has direct and indirect associations through depression and anger to decreased delay of gratification. These findings have promising implications for acceptance-based interventions aimed at enhancing the ability to delay gratification and pursue longer-term goals.

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