

**EXPLORING THE RELATIONSHIP BETWEEN IMPULSIVITY AND
SHAME AND GUILT-PRONENESS**

An Undergraduate Research Scholars Thesis

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TABLE OF CONTENTS

	Page
ABSTRACT	1
ACKNOWLEDGMENTS	2
CHAPTER	
I. INTRODUCTION	3
Impulsivity	3
Shame and Guilt-Proneness	8
Current Study	11
II. METHODS	14
Participants.....	14
Procedure	14
Measures	14
Statistical Analyses	16
III. RESULTS	17
Descriptive Statistics.....	17
Correlations.....	17
Latent Variable Mediation Models	18
Structural Equation Model.....	21
IV. CONCLUSION.....	23
Discussion.....	23
Conclusions.....	25
REFERENCES	26

ABSTRACT

Exploring the Relationship Between Impulsivity and Shame and Guilt-Proneness

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The emotional experience of shame is characterized by negative self-evaluations, while guilt is characterized by negative behavioral-evaluations. Previous research has found shame to be the more maladaptive of these “self-conscious” emotions due to its association with various health-risk behaviors. This study investigated the relationship between impulsivity and shame and guilt-proneness in a population of undergraduate students. Whether this relationship predicts behavioral internalization or externalization was also examined. Students from the Texas A&M Psychology subject pool completed behavioral and self-report measures of impulsivity, shame- and guilt-proneness, and behavioral tendencies. Structural equation modeling was used to determine if shame and/or guilt-proneness mediate relationships between impulsivity and behavioral internalization and externalization.

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CHAPTER I

INTRODUCTION

Impulsivity

Impulsivity can be defined as a predisposition towards unplanned or rapid reactions to stimuli without the consideration of possible negative consequences (International Society for Research on Impulsivity; <http://impulsivity.org>). This personality feature can have far-reaching implications for an individual's physical and psychological health. Impulsivity has been linked to various conditions such as attention deficit hyperactivity disorder, borderline personality disorder, and addiction (Jentsch et al., 2014). One study estimates the lifetime prevalence of impulsivity to be 16.9% of the US population, based on a national survey of over 34,000 Americans. Rates of impulsive action were also significantly higher in men than women and in individuals with no college education (Chamorro et al., 2012).

Impulsivity is a multidimensional construct, encompassing traits such as impulsive decision-making, inattention, and disinhibition (Fields et al., 2009). Self-report measures like the UPPS-P evaluate other aspects of impulsivity such as negative and positive urgency, lack of premeditation, lack of perseverance, and sensation seeking (Whiteside & Lynam; 2001). Behavioral tests of delay discounting, risk-taking, and impulse control are also used to measure constructs of impulsivity (International Society for Research on Impulsivity; <http://impulsivity.org>).

Impulsivity is associated with a broad range of maladaptive health-risk behaviors, especially within adolescent and emerging-adult populations. Exploring the relationships between impulsivity and other psychological constructs, such as behavioral internalization and

externalization and shame and guilt-proneness, is necessary to understand the factors underlying maladaptive behavior. Knowledge of these associations may have clinical implications, such as shaping new behavioral interventions for highly impulsive individuals.

Relationship to Externalizing Behaviors

Externalizing behaviors are maladaptive behaviors directed towards the external environment and often reflect a violation of social norms (Lande et al., 2009). Extensive research has demonstrated the associations between impulsivity and externalizing health risk behaviors such as substance use (Jentsch et al., 2014), binge eating (Dawe & Loxton., 2004), sexual risk-taking (Hoyle et al., 2000) and self-injury (Hamza et al., 2015). Adolescent smokers tend to be more impulsive than non-smokers on measures of delay-discounting, indicating that they preferentially choose smaller, immediate rewards over larger, delayed rewards (Reynolds et al., 2007; Fields et al., 2009; Bickel et al., 1999). In a study of middle and high school students, those who demonstrated higher temporal discounting on a monetary choice task were more likely to demonstrate substance use (e.g. alcohol, cigarettes, and marijuana) as well as poorer academic performance and lower self-esteem (Wulfert et al., 2002). Higher rates of temporal discounting have also been found in heavy and problem social drinkers when compared with light social drinkers (Vuchinich & Simpson., 1998).

Binge eating has been linked to impulsivity in both clinical and community samples (Claes et al., 2002; Higgins et al, 2015). In a study comparing individuals with bulimia nervosa (BN), anorexia nervosa –restrict subtype (AN-R), and anorexia nervosa –binge-purge subtype (AN-P) with controls, BN subjects showed significantly higher impulsivity scores than AN-R subjects (Claes et al., 2002). Control subjects differed significantly from BN subjects but not AN

subjects in rates of impulsivity. This may demonstrate a particularly impulsive quality of bingeing that is not present in other forms of disordered eating, such as restriction.

Impulsivity is also positively correlated with sexual risk-taking (Hoyle et al., 2000; Donohew et al., 2000; Zuckerman & Kuhlman, 2000). According to a literature review by Hoyle and colleagues, impulsivity was positively correlated with multiple forms of sexual risk-taking including having multiple partners and high risk sexual encounters (Hoyle et al., 2000). In another study of over 2,900 ninth graders, individuals high in sensation seeking and impulsive decision-making were more likely to engage in risky sexual behavior such as having a high number of sexual partners, having been pregnant, and having had sex while drunk or under pressure (Donohew et al., 2000).

Non-suicidal self-injury (NSSI) has also been shown to correlate with impulsivity (Hamza et al., 2015; Glenn & Klonsky, 2010; Peters et al., 2016). NSSI is included in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association, 2013) and is defined as the self-destruction of bodily tissue without suicidal intent, including behavior such as burning, cutting, and hitting (Gratz et al., 2015). NSSI is used to gain relief from negative emotional states and has been theorized to distract from distressing emotions (Hamza et al., 2015). NSSI may be more characteristic of impulsive individuals who tend to use rash action to achieve fast emotional regulation.

Individuals who self-injure have been shown to display significantly higher levels of urgency (i.e., acting on strong impulses under negative emotion) and sensation seeking (i.e., pursuing exciting and possibly dangerous activities) and less premeditation than non-injurers on the UPPS Impulsive Behavior Scale (Glenn & Klonsky, 2010; Whiteside & Lynam; 2001). Glenn and Klonsky (2010) also observed lower levels of perseverance (i.e., remaining focused

during a boring or difficult task) in self-injurers who injured more recently and frequently than other self-injurers.

A meta-analysis conducted by Hamza and colleagues also found higher rates of self-reported impulsivity in individuals who engaged in NSSI than those who did not. However, no group differences were found in studies using behavioral measures of impulsivity (Hamza et al., 2015). Discrepancies between self-report and behavioral measure of impulsivity have also been found in studies of impulsivity and substance-use (Fernie et al., 2010). This may be due to differences in self-perceived and objective impulsivity, illustrating the need for both self-report and behavioral measures when examining this construct (Hamza et al., 2015).

Relationship to Internalizing Problems

Internalizing behaviors describe inwardly-focused mood problems such as depression and anxiety (Lande et al., 2009). Internalizing behaviors have also been studied in relation to impulsivity, especially in children. Previous findings indicate that low-impulsivity children are more prone to internalization and sadness than their high-impulsivity peers (Eisenberg et al., 2001; Eisenberg et al., 2009). Eisenberg and colleagues (2009) collected parent and teacher ratings of internalizing and externalizing symptoms, impulsivity, effortful control, and negative emotionality for a sample of 214 children. In line with previous findings, externalizing problems were associated with high impulsivity, low effortful control, and anger. Internalizing problems were associated with low impulsivity and negative emotions such as sadness and anger. Inhibited or inflexible children may lack approach-oriented behavior and adaptive means of coping with adverse emotions, showing more vulnerability to develop depression and anxiety (Eisenberg et al., 2009). Inhibited children may be at an increased risk of developing internalizing problems

such as anxiety and phobic disorders compared with uninhibited and healthy controls (Biederman et al., 1990).

Although an association between internalizing problems and low impulsivity has been noted in child populations, studies of adults demonstrate links between depression and high impulsivity (Corruble & Guelfi, 1999; Grano et al., 2007; Corruble et al., 2003). Impulsivity was predictive of the onset of depressive symptoms in a sample (N=4,505) of hospital employees with no history of depression (Grano et al., 2007). Corruble and Guelfi (1999) noted that depressed patients with a history of suicide attempts were more impulsive at admission and the end of a four-week treatment program than patients without a history of suicide attempts, despite showing no differences on assessments of general psychopathology and depression. This difference was noted even after depressive symptoms were reduced in both populations, indicating that impulsivity may be a relatively stable trait in depressed patients who have attempted suicide (Corruble & Guelfi, 1999).

Additionally, high attentional, motor, and non-planning impulsivity on the Barratt Impulsiveness Scale (BIS-11; Patton et al., 1995) has been noted in depressed subjects (Corruble et al., 2003). In a separate study of subjects with bipolar disorder, non-planning impulsivity was correlated with depression scores while motor impulsivity correlated with mania scores (Swann et al., 2008). These findings indicate that although increased impulsivity is often characterizes the manic state, impulsivity may also be intrinsic to the depressive state as well.

Impulsivity's relation to both externalizing and internalizing behavior demonstrates its complex and multifaceted nature. Further examination of the factors surrounding impulsivity may produce new methods for combatting health-risk behaviors.

Shame and Guilt-Proneness

Shame and guilt are commonly referred to as “self-conscious emotions” (Tangney & Dearing, 2002). Although sometimes used interchangeably, shame is defined as a global, negative feeling about oneself, while guilt is seen as a negative feeling about a specific behavior (Lewis, 1971). For example, shame would lead an individual to negative *self*-evaluations such as, “I am such a bad person”, while guilt would lead an individual to negative *behavioral*-evaluations such as, “That thing I did was bad.” The constructs of shame and guilt-proneness describe tendencies to experience shame or guilt “across a variety of situations” (Lewis, 1971; Covert et al., 2003). Shame and guilt often occur in the same person but have been shown to be distinct constructs by situation measures like the TOSCA-3 (Tangney & Dearing, 2002).

Shame-proneness is considered a maladaptive trait while guilt-proneness is considered adaptive (Lewis, 1971). The negative-self-evaluation that underlies shame causes one to attribute transgressions to personal character flaws that are fixed or difficult to alter. In contrast, guilt stems from the belief that transgressions are the result of behavioral errors, which may be corrected. As a result, shame-proneness is often accompanied by avoidance or withdrawal behaviors (e.g. leaving a situation), while guilt-proneness is accompanied by approach behaviors (e.g. initiating reparative action) (Tangney, 1994; Wolf et al., 2010).

Relationships to Externalizing Behaviors

Various externalized behaviors such as substance use (Rahim & Patton, 2015), binge-eating (Sanftner et al., 1995), sexual risk-taking (Gililand, 2010), and aggression (Tangney et al., 1992) show positive associations with shame-proneness but negative or negligible associations with guilt-proneness.

Substance-use has been shown to relate to shame more so than guilt in studies examining alcohol consumption in young adults (Dearing et al., 2005; Luoma et al., 2017). In several studies that administered the Test of Self-Conscious Affect (TOSCA-3: Tangney et al., 2000) and the Alcohol Use Disorders Identification Inventory (AUDIT: Babor et al., 2001), problematic drinking was positively associated with shame and negatively associated with guilt (Hequembourg & Dearing, 2013; Treeby & Bruno, 2012; Luoma et al., 2017). Luoma and colleagues (2017) specifically noted that shame was the strongest predictor of drinking problems among their sample of adults. Shame-prone individuals may resort to substance use as a method of coping with negative self-evaluations, while guilt-prone individuals seem less inclined to engage in this behavior.

Disordered eating symptoms such as binge eating and restriction tend to correlate positively with shame but negatively with guilt (Sanftner et al., 1995; Levinson et al., 2016). In a study of 300 women, symptoms of bulimia nervosa and social anxiety were predicted by shame but not by guilt (Levinson et al., 2016). A separate study noted that, compared to normal controls, women who binge eat report higher levels of both shame and guilt (Sanftner & Crowther, 1996). Burney & Irwin (2000) noted that global shame and guilt scores may be too broad to demonstrate a specific correlation with the severity of eating issues, but shame and guilt specifically in an eating context are predictive of eating disturbances (Burney & Irwin, 2000).

Another well-noted association is that between shame-proneness and aggression. Tangney and colleagues found shame to positively correlate with several indices of anger and hostility including “anger arousal, suspiciousness, resentment, irritability, a tendency to blame others for negative events, and indirect expressions of hostility”. (Tangney et al, 1992). The same study found “shame-free guilt” to be inversely related to indices of anger, hostility, and

resentment. Shame has shown to be associated with maladaptive anger responses while guilt is associated with constructive anger responses such as corrective action and non-hostile discussion (Tangney et al, 1996).

Lastly, the incidence of self-injurious behavior has been noted to associate positively with shame but not with guilt (Shoenleber et al., 2014; VanDerhei et al., 2013). In those with a previous history of non-suicidal self-injury, higher levels of self-reported shame-proneness were associated with a greater frequency of self-injury (Shoenleber et al., 2014). Guilt-proneness has been associated with lower frequencies of self-injury indicating that it may act in a protective manner. However, this effect was lost in guilt-prone individuals with high rates of internalizing tendencies (VanDerhei et al., 2013).

These findings indicate that shame-prone individuals may lack healthy means of coping with negative emotion, resulting in externalized health-risk behaviors. Guilt-proneness appears to be a more adaptive emotional response as indicated by its negative or non-significant associations with several of the same behaviors.

Relationships to Internalizing Behaviors

As noted with impulsivity, shame and guilt have been linked to internalizing problems like depression and anxiety in both children and adults (Ferguson et al., 2000; Mills et al., 2013; Eisenberg, 2000). In a study evaluating internalizing symptoms in children, participants (age 6-13) completed a self-report of shame, guilt, and pride. Internalization was associated with guilt-proneness in response to ambiguous scenarios but with shame-proneness across both ambiguous and unambiguous scenarios (Ferguson et al., 2000). A separate study of internalizing problems in children found a significant correlation between shame and depressogenic thinking, which predicted anxiety and depression. More specifically, shame directly predicted depressive

symptoms in boys and indirectly predicted general internalization in boys and social anxiety in girls (Mills et al., 2015). These findings indicate that shame may contribute to internalizing issues more so than guilt.

Shame is also related to internalization in adult populations. A study of female sexual-assault survivors found that “internalizing” participants with PTSD produced the highest scores on the Internalized Shame Scale (ISS: Cook, 1988) and the highest rates of major depression compared to “externalizers” with PTSD and those with simple PTSD (Miller & Resick, 2007). Results of the ISS, which examines internalized shame in the form of feelings of inferiority, indicate that “internalizers” may incorporate aspects of traumatic incidents into their identity, resulting in depressive symptoms (Miller & Resick, 2007).

In summary, impulsivity and shame-proneness, and guilt-proneness are associated with similar behavioral tendencies. More so than guilt, shame and impulsivity appear to be positively correlated with various externalizing health risk behaviors such as substance use, disordered eating, and self-injury. Both of these factors also show some relation to internalizing behaviors like depression and anxiety, but the results seem more mixed, with internalization appearing more characteristic of those with low impulsivity (Eisenberg et al., 2009). Current findings indicate that impulsivity and shame are similarly maladaptive, while guilt-proneness may hold more adaptive, protective qualities (Tangney and Dearing, 2002; VanDerhei et al., 2013).

Current Study

It is evident that impulsivity and shame- and guilt-proneness have been linked to similar behavioral tendencies, but the question of whether these concepts are themselves directly related has yet to be explored. The current study aims to examine whether highly impulsive individuals differ from those who are less impulsive in their tendencies to experience shame or guilt. This

study also examines whether relationships between impulsivity and behavioral tendencies are mediated by shame or guilt.

We hypothesize that individuals who score highly on measures of impulsivity will demonstrate greater shame-proneness than guilt-proneness. This hypothesis was made because impulsivity and shame-proneness are both considered maladaptive and correlate with similar externalized health-risk behaviors. Guilt is considered more adaptive, so there is less indication that it will be associated with the rash action characteristic of impulsivity (Eisenberg, 2000). We also hypothesize that the relationship between impulsivity and problem outcomes will be mediated by shame and/or guilt. Based on previous findings, it appears that individuals who are more impulsive and shame-prone will also display greater behavioral externalization as measured by the Adult Self-Report (Achenbach, 2003).

This study will be conducted through the administration of several measures of impulsivity, including the Question-Based Delay-Discounting Measure (DDQ: Richards et al., 1999) and the short UPPS-P Impulsive Behavior Scale (Lynam, 2013). Shame and guilt-proneness will be assessed with the Test of Self-Conscious Affect-3, short form (TOSCA-3S: Tangney et al, 2000). Behavioral internalization and externalization will be assessed with the ASEBA Adult Self Report (ASR: Achenbach et al, 2003).

The current study aims to highlight the associations between impulsivity and self-conscious emotions. Although impulsivity and shame correlate with similar externalizing behaviors, little research has directly examined how these constructs relate to each other. Findings may indicate pathways by which shame or guilt mediate relationships between impulsivity and behavioral internalization or externalization. Externalizing behaviors such as substance-use, binge eating, or self-injury may be additional sources of shame, perpetuating a

cycle of risky behavior as a means of coping with negative emotion. Findings confirming the proposed relationship between impulsivity and shame-proneness may signal the need for therapeutic interventions specifically targeting negative self-evaluations in impulsive individuals.

CHAPTER II

METHODS

Participants

Study participants were 199 undergraduate students from the Texas A&M psychology subject pool (75.2% female). 210 students were initially recruited but 11 were excluded from analyses after failing to complete all measures. All participants were enrolled in a psychology course and received credit for participation through the SONA system. All participants were required to be over 18 years of age and fluent in English. The majority of participants were white (79.5%) and non-Hispanic (71.4%).

Procedure

All data collection occurred online through the Texas A&M University SONA system. After consenting to the study, participants completed a computerized delay-discounting measure of impulsivity (DDQ: Richards et al, 1999). Participants then completed the Short UPPS-P (Lynam, 2013), the Adult Self-Report (Achenbach & Rescorla, 2003), the TOSCA-3S (Tangney & Dearing, 2002), and a demographics questionnaire. After completion of all study measures, participants were awarded credit through the SONA system. The total duration of the study was approximately one hour.

Measures

The Question-Based Delay-Discounting Measure (DDQ: Richards et al., 1999)

The Question-Based Delay-Discounting Measure (DDQ: Richards et al., 1999) is a 42-item, computerized measure of impulsivity. The DDQ presents participants with a choice between a smaller sum of money received immediately and a larger sum received at a later time.

The monetary values and periods of delay vary for each question. Through adaptive testing, the participants' responses determine which question will follow during the survey. Participant instructions for the DDQ can be found in Reynolds et al. (2003).

Short UPPS-P Impulsive Behavior Scale (SUPPS-P: Lynam, 2013)

The short UPPS-P is a 20-item self-report measure of impulsivity. Participants rate their agreement with statements on a 4-point Likert-type scale. The UPPS-P assesses impulsivity on five subscales, which include negative urgency, lack of premeditation, lack of perseverance, sensation seeking, and positive urgency. Negative urgency is conceptualized as rash action under extreme negative emotion, while positive urgency is rash behavior during extreme positive emotion. Lack of premeditation is the tendency to act without thoughtful deliberation of consequences and lack of perseverance is the failure to remain focused during a task. Both demonstrate deficits in conscientiousness. Sensation seeking is the tendency to seek out new and exciting experiences (Whiteside & Lynam, 2001). This shorter version provides four items for each subscale. SUPPS-P subscales are strongly correlated with UPPS-P subscales, demonstrate adequate reliability, and allow time savings during administration of about 66% (Cyders et al, 2014).

Adult Self-Report (ASR: Achenbach, 2003)

The Adult Self-Report form is used to assess adult functioning according to DSM-oriented scales. The ASR provides information on substance use, aggressive behavior, depressive problems, anxiety problems, and adaptive functioning. The ASR has been found to have high test-retest reliability and content validity (Achenbach, 2003). Participants completed 126 items from section VIII of the ASEBA Adult Self-Report form to evaluate for behavioral

internalization and externalization, including health-risk behaviors. Portions I – VII of the form were omitted.

The Test of Self-Conscious Affect (TOSCA-3S: Tangney & Dearing, 2002)

The Test of Self-Conscious Affect (TOSCA-3S) is an 11-item, scenario-based measure of shame and guilt-proneness. Different scenarios of moral transgressions or adverse events were presented along with three possible responses to each. Participants rated how likely they were to engage in each response on a 5-point Likert-type scale. The TOSCA-3S provides six different scores, which include shame-proneness, guilt-proneness, externalization, detachment-unconcern, alpha-pride, and beta-pride (Tangney & Dearing, 2002). This measure allows participants to rate an experience as eliciting both shame and guilt, so shared variance is analyzed. The TOSCA-3 is one of the most widely used shame and guilt-proneness assessments (Cohen et al., 2011).

Statistical Analyses

T-Tests were used to examine gender differences on scores for the UPPS-P and TOSCA-3S subscales. Correlations across all measure subscales were computed to examine construct associations broadly. The main analysis consisted of a structural equation model (SEM) run using Mplus' bias corrected bootstrap procedure with 10,000 draws. SEM was used for analysis because of its ability to examine the links and directionality of significant relationships between multiple constructs (Schreiber et al., 2006).

CHAPTER III

RESULTS

Descriptive Statistics

An independent samples T-Test was conducted to explore gender differences on UPPS-P subscales of impulsivity. Average sensation seeking scores differed between men ($M=11.49$, $SD=2.49$) and women ($M=10.25$, $SD=2.78$), with men showing higher amounts, $t(68.61) = 2.76$, $p < .01$. Male participants also showed higher positive urgency ($M=8.76$, $SD=2.83$) than women ($M=7.39$, $SD=2.48$), $t(197) = 3.06$, $p < .01$. No significant differences were noted for negative urgency, lack of perseverance, lack of premeditation, or DDQ total scores.

Additional T-Tests were conducted to evaluate gender differences on scores of shame-proneness, guilt-proneness, and externalized blame, as measured by the TOSCA-3S. Women ($M=35.46$, $SD=8.81$) showed slightly higher degrees of shame-proneness than men ($M=31.58$, $SD=7.88$), $t(193) = -2.54$, $p < .05$. Female participants ($M=47.35$, $SD=6.18$) also showed higher levels of guilt-proneness than male participants ($M=42.07$, $SD=9.32$), $t(49.55) = -3.43$, $p < .01$. These results are consistent with existing findings that women are more prone to experience shame and guilt than men (Tangney & Dearing, 2002). No gender difference was noted in level of externalized blame.

Correlations

Correlations were computed for TOSCA-3S and UPPS-P subscales, DDQ total score, and ASR internalization and externalization T-scores (see Table 1). Shame-proneness was positively correlated with negative urgency ($r = .29$, $p < .01$) and externalized blame ($r = .32$, $p < .01$). Shame was also positively correlated with both internalization ($r = .45$, $p < .01$) and

externalization ($r = .29, p < .01$). Guilt-proneness was negatively correlated with negative urgency ($r = -.20, p < .01$), positive urgency ($r = -.31, p < .01$), lack of perseverance ($r = -.23, p < .01$), lack of premeditation ($r = -.25, p < .01$), and externalized blame ($r = -.17, p < .05$) Guilt-proneness was negatively correlated with both internalization ($r = -.15, p < .05$) and externalization, but the latter was not significant. These correlations support the initial hypothesis that impulsivity would be positively correlated with shame and negatively correlated with guilt. DDQ total score showed no significant correlations with TOSCA-3S, UPPS-P, or ASR scores.

Table 1. Correlation Matrix of DDQ, UPPS-P, and TOSCA-3S Subscales

	1	2	3	4	5	6	7	8	9	10	11
1. Shame	–										
2. Guilt	.400**	–									
3. Exter. Blame	.315**	-.166*	–								
4. DDQ	.102	.130	.000	–							
5. Neg. Urgency	.294**	-.196**	.305**	-.030	–						
6. Lack of Per.	-.114	-.225**	-.011	-.029	.077	–					
7. Lack of Premed.	-.116	-.250**	.046	-.006	.099	.503**	–				
8. Sens. Seeking	.066	-.056	.248**	-.105	.171*	-.142*	.009	–			
9. Pos. Urgency	.026	-.308**	.230**	-.104	.601*	-.044	.188**	.324**	–		
10. Internalization	.451**	-.065	.243**	.033	.423**	.183**	.055	.028	.197**	–	
11. Externalization	.287**	-.147*	.300**	-.026	.396**	.109	.165*	.139	.286**	.693**	–

Note: **. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Latent Variable Mediation Models

Latent variable mediation models were constructed with impulsivity serving as the latent, or unobserved, variable. The subscales of the UPPS-P served as factor loadings for the impulsivity composite variable. Lack of perseverance and lack of pre-mediation were highly correlated and broke off into a separate factor. Positive urgency, negative urgency, and sensation

seeking composed an additional factor. Positive urgency was made the marker variable, so the latent variable (i.e., impulsivity) was placed on the metric of the positive urgency scale (see Table 2).

Table 2. Factor Loadings of Latent Variable Impulsivity

UPPS-P Subscales	Residual Covariance
Negative Urgency	0.699
Lack of Perseverance	-0.032
Lack of Premeditation	0.145
Sensation Seeking	0.342
Positive Urgency	1

All mediation models were run using Mplus' bias corrected bootstrap procedure with 10,000 draws. Pathways were explored from impulsivity to mediators (shame/guilt), impulsivity to outcome variables (externalization/internalization/DDQ totals), and mediators to outcomes. Indirect pathways, which were the products of the impulsivity-mediator and mediator-outcome pathways, were also examined (see Table 3). Results are reported with the unstandardized regression coefficient (b), standardized regression coefficient (β), and the 95% confidence interval (unstandardized).

Table 3. Mediation Models Predicting Internalization, Externalization, and DDQ Total Score

Internalization	b (B)	95% CI
<i>Shame as Mediator:</i>		
Impulsivity → Shame	.08 (.02)	-.40, .58
Impulsivity → Internalization*	.93 (.19)	.17, 1.65
Shame → Internalization*	.66 (.45)	.47, .84
Indirect Pathway	.05 (.01)	-.25, .41
<i>Guilt as Mediator:</i>		
Impulsivity → Guilt*	-.85 (-.31)	-1.31, -.43
Impulsivity → Internalization*	.97 (.20)	.14, 1.82
Guilt → Internalization	-.009 (-.01)	-.29, .28
Indirect Pathway	.008 (.002)	-.26, .26
Externalization		
<i>Shame as Mediator:</i>		
Impulsivity → Shame	.09 (.03)	-.38, .60
Impulsivity → Externalization*	1.22 (.28)	.55, 1.92
Shame → Externalization*	.36 (.28)	.21, .52
Indirect Pathway	.03 (.01)	-.13, .24
<i>Guilt as Mediator:</i>		
Impulsivity → Guilt*	-.85 (-.31)	-1.31, -.43
Impulsivity → Externalization*	1.17 (.27)	.46, 1.91
Guilt → Externalization	-.10 (-.07)	-.32, .13
Indirect Pathway	.09 (.02)	-.09, .30
DDQ Total Score		
<i>Shame as Mediator:</i>		
Impulsivity → Shame	.09 (.03)	-.38, .57
Impulsivity → DDQ	-1.04 (-.12)	-2.31, .24
Shame → DDQ	.30 (.11)	-.09, .70
Indirect Pathway	.03 (.003)	-.10, .31
<i>Guilt as Mediator:</i>		
Impulsivity → Guilt*	-.86 (-.31)	-1.34, -.44
Impulsivity → DDQ	-.69 (-.07)	-2.05, .67
Guilt → DDQ	.38 (.11)	-.20, .94
Indirect Pathway	-.32 (-.03)	-.89, .13

Note: b=unstandardized regression coefficient; B=standardized regression coefficient; 95% confidence interval based on unstandardized coefficient; *statistically significant paths

Impulsivity was found to negatively predict guilt in models for both internalizing and externalizing behavior, with a 1-unit increase in impulsivity predicting a .85 decrease in guilt-proneness (b= -.85, 95% CI: [-1.31, -.43], β = -.31). Impulsivity also negatively predicted guilt-proneness within the DDQ model (b= -.86, 95% CI: [-1.34, -.44], β = -.31). Impulsivity predicted internalization in both shame (b= .93, 95% CI: [.17, 1.65], β = .19) and guilt (b= .97, 95% CI:

[.14, 1.82], $\beta = .20$) mediation conditions. Impulsivity also predicted externalization in both shame ($b = 1.22$, 95% CI: [.55, 1.92], $\beta = .28$) and guilt ($b = 1.17$, 95% CI: [.46, 1.91], $\beta = .27$) mediating conditions. Shame predicted both internalization ($b = .66$, 95% CI: [.47, .84], $\beta = .45$) and externalization ($b = .36$, 95% CI: [.21, .52], $\beta = .28$), but guilt predicted neither. All mediation models for the DDQ were non-significant except the impulsivity-guilt pathway previously mentioned. No indirect pathways were significant.

Structural Equation Model

A structural equation model was created to analyze the relationship between the latent variable of impulsivity and measured variables from the TOSCA, ASR, and DDQ (see Figure 1).

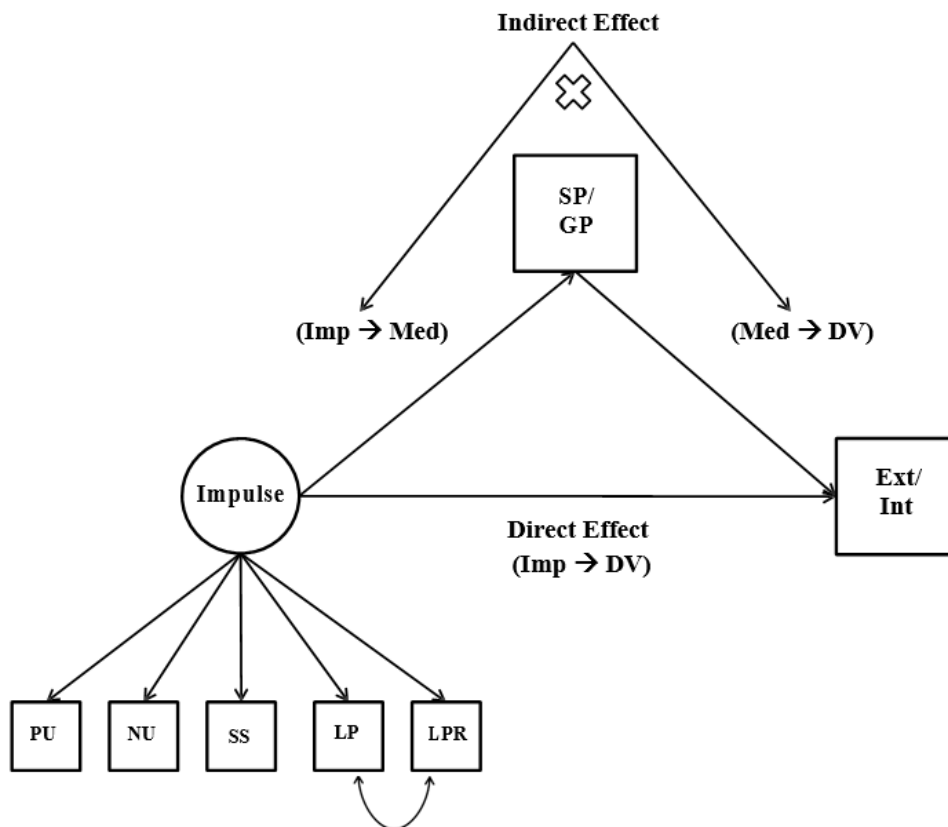


Figure 1. Structural Equation Model. SEM illustrates a direct effect between impulse and ASR internalization and externalization. Paths from impulse to guilt-proneness and from shame-proneness to ASR scores were also significant. No indirect effects were significant.

The model demonstrates direct effects between impulsivity and the ASR outcomes of internalization and externalization. Impulsivity also shows a direct relationship with guilt but not with shame. Shame significantly predicted both ASR outcomes, but guilt did not. It is particularly of note that none of the indirect paths were significant. Therefore, this model does not demonstrate that the direct relationship between impulsivity and ASR outcomes was mediated by either shame or guilt. Pathways predicting DDQ score were also not significant.

CHAPTER IV

CONCLUSION

Discussion

The current study explored patterns of impulsivity, self-conscious emotions, and behavioral tendencies in a population of emerging adults. Specifically, this study examined whether the relationships between impulsivity and behavioral tendencies (i.e. externalization and internalization) are mediated by shame and/or guilt. Initial correlational findings demonstrate positive relationships between shame and negative urgency, internalization, and externalization. In contrast, guilt correlated negatively with negative urgency, lack of perseverance, lack of premeditation, positive urgency, and externalization. This supports previous findings that shame is associated with impulsivity and behavioral issues, while guilt tends to negatively associate with those constructs (Tangney, 1994; Wolf et al., 2010). It is of note that DDQ total scores did not correlate significantly with any of the subscales. Discrepancies between self-report and behavioral measures of impulsivity have been observed in previous studies, indicating that these measures may evaluate distinct components of impulsivity (Ferne et al., 2010; Sharma et al., 2014). This may also signal differences in participants' perceptions of their own impulsivity and its behavioral manifestation.

Results of the SEM did not fully support our initial hypotheses. Impulsivity did not directly predict shame-proneness as originally hypothesized but did predict a negative relationship with guilt. Additionally, shame and guilt did not show significant mediating roles in the relationship between impulsivity and ASR outcomes. As expected, shame predicted internalization and externalization, while guilt predicted neither. These findings do support the

conceptualization of shame and guilt as distinct constructs, which differentially relate to impulsivity and health risk behaviors.

Limitations

The current analysis is limited by the relative demographic homogeneity of the study sample (75.2% female, 79.5% white, 71.4% non-Hispanic). Due to an error on the demographics questionnaire, data about participant age is missing. All participants had to be at least 18 years old and an undergraduate student to register for participation. As all participants were estimated to be age 18-25, the data reflects findings for an emerging-adult population. The uniform educational level and restricted age range of the sample further limit the generalizability of the results. Additionally, the private, online format of the study resulted in several incomplete entries. Lack of interest or motivation to complete the survey, may have led to random or inaccurate responses.

Practical Implications and Future Research

Shame-proneness does seem to predict negative behavioral outcomes according to the ASR. Therefore, negative self-evaluations may be a target of therapeutic intervention in individuals demonstrating issues such as substance use, disordered eating, depression, and anxiety. Guilt-proneness appears protective against negative behavioral outcomes, possibly indicating a healthier way to frame moral transgressions. Individuals could be encouraged to view their moral failures as behavioral mistakes that are amenable instead of the result of fixed personal traits.

Future research with larger and more diverse samples is needed to further explore the relationships between these constructs. Although shame and guilt were not significant mediators of the relationship between impulsivity and behavior, other mediating factors may explain

differential behavioral outcomes across impulsive populations. Additionally, future analyses could incorporate behavioral measures of impulsivity, such as DDQ total score, into a composite latent variable of impulsivity. Further studies are needed to examine why self-report and behavior measures of impulsivity are often discrepant.

Conclusions

In line with previous findings, the current study supports the conceptualization of guilt as adaptive and shame as maladaptive. Guilt correlated negatively with several subscales of impulsivity and both externalizing and internalizing behavior. In contrast, shame correlated positively with negative urgency and both ASR outcomes. The results of a structural equation model show that impulsivity directly predicted problem outcomes (i.e., internalization and externalization) as measured by the ASR. Impulsivity did not significantly predict shame-proneness but did predict a negative relationship with guilt. Contrary to our initial hypothesis, shame and guilt did not significantly mediate the relationship between impulsivity and behavioral tendencies. Other possible mechanisms contributing to health-risk behaviors in impulsive populations should be subjects of future analysis.

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