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The role of distress tolerance in the relationship between cognitive schemas and alcohol problems among college students

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Abstract

Introduction—The current study tested the role of distress tolerance in the relationship between three early maladaptive cognitive schemas (Abandonment, Defectiveness/Shame, and Insufficient Self-Control) and alcohol problems among college students ($N = 364$). Previous research suggests that maladaptive cognitive schemas may be a risk factor for alcohol-related problems. However, the mechanism underlying this association is unclear. One's tolerance for emotional distress may play an important role in understanding the nature of this association.

Methods—We tested a structural equation model where distress tolerance was expected to explain or moderate associations between early maladaptive schemas and alcohol outcomes.

Results—Results indicated distress tolerance partially mediated the relationships between schemas of Abandonment and Insufficient Self-Control and alcohol problems. Distress tolerance also significantly moderated the relationship between the Defectiveness/Shame schema and alcohol-related problems, reducing the strength of the association.

Conclusions—Distress tolerance is a modifiable risk factor and the results of this study support the inclusion of emotional regulation strategies in the prevention and treatment of alcohol problems among young adults.

Keywords

Distress tolerance; Cognitive schemas; College students; Alcohol

1. Introduction

Drinking alcohol is a nationwide pastime for a large percentage of college students. Young adults ages 18 to 25 have the highest rate of alcohol use disorder (SAMHSA, 2015). About

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Contributors

Raluca Simons and Rebecca Sistasd designed the study and wrote the protocol. Rebecca Sistasd conducted literature searches and provided summaries of previous studies and wrote the first draft of the manuscript. Jeffrey Simons conducted the statistical analyses. Jamie Hanson contributed to writing select sections of the paper. All authors contributed to and have approved the final manuscript.

Conflict of interest

All authors declare that they have no conflicts of interest.

60%, or 5.4 million, of full-time college students, ages 18–25, are current alcohol users, 3.5 million binge alcohol users, and 1.2 million heavy alcohol users (Lipari & Jean-Francois, 2016). Excessive alcohol use has been associated with numerous consequences which impact many life areas such as academic difficulties, psychological and physical health issues, problems in interpersonal relationships, and poor class attendance (Champion, Lewis, & Myers, 2015; Read, Haas, Radomski, Wickham, & Borish, 2016). Annual rates of adverse effects of college drinking contribute to approximately 600,000 injuries, 97,000 instances of sexual assault, and about 1825 student deaths (Hingson & Zha, 2009; U.S. Department of Health and Human Services, 2012).

2. Maladaptive schemas: development and relationship with alcohol outcomes

Cognitive schemas are highly resistant structures used to interpret and understand one's environment (Shorey, Anderson, & Stuart, 2012; Young, Klosko, & Weishaar, 2003). Cognitive theory regards childhood experiences as crucial in the development of schemas about the self, the world, and the future (Beck, 1967; Young et al., 2003). Specifically, cognitive schemas are developed throughout childhood via significant interactions with important role models, such as teachers and parents. Young adults represent a special group in transition from childhood into adulthood. Cognitive schemas continue to be reinforced and strengthened by new experiences that occur during emerging adulthood (e.g., newly acquired freedom and responsibility, romantic encounters), and schema refinement continues throughout adulthood (Young et al., 2003). Consistent positive experiences reinforce adaptive thinking, while traumatic situations and repetitive criticism foster the development and perpetuation of negative schemas. Individuals with adaptive schemas develop insight into the potential distortions of their own thinking, and are capable of generating alternative and plausible explanations to counteract cognitive errors. Furthermore, healthy adaptive patterns of thinking result in a positive affective state and facilitate engagement in positive behavior. Conversely, rejection from significant others—parents, siblings, teachers—fuel negative beliefs about one's lovability; and unrealistic parental and societal expectations foster doubt and insecurity, strengthening the development of maladaptive schemas throughout adolescence and adulthood (Beck, 1967; Young et al., 2003). Emotional distress triggered by schema activation can result in dysfunctional interpersonal interactions and maladaptive coping responses (Young et al., 2003).

Negative affectivity is a characteristic common to all maladaptive schemas (Young et al., 2003), particularly those related to invalidity, shame, and neglect. Specifically, the Abandonment and Defectiveness/Shame schemas fall within the domain of disconnection and rejection. The Defectiveness/Shame schema is the belief of one's inferiority and defectiveness. Common attributes include hypersensitivity to criticism and rejection, self-consciousness, and insecurity of perceived flaws (Young et al., 2003). The Abandonment schema is the belief that loved ones are not able to provide emotional support and protection due to unpredictability, unreliability, death, or abandonment for a superior person (Young et al., 2003). Finally, the Insufficient Self-Control schema is the belief that one is unable or refuses to apply self-control, has difficulty controlling emotions and impulses, and has poor

frustration tolerance, ultimately leading to the behavior of discomfort avoidance (Young et al., 2003). Individuals characterized by Insufficient Self-Control schema will frequently avoid situations involving pain, conflict, and responsibility at the expense of personal fulfillment and integrity. Each of the schemas is defined by attributes likely to endorse negative emotions and beliefs.

Although understudied, cognitive schemas appear to play an important role in substance related outcomes among adults. A few studies to date indicate a relationship between early maladaptive schemas and alcohol outcomes in clinical populations (Brotchie, Meyer, Copello, Kidney, & Waller, 2004; Roper, Dickson, Tinwell, Booth, & McGuire, 2010; Shorey et al., 2012). Alcohol-dependent individuals score higher on all maladaptive schema subscales as compared to a non-clinical group (Roper et al., 2010), and to non-users and other drug users (i.e., opiate users; Brotchie et al., 2004) suggesting that maladaptive schemas play an important role in alcohol-related outcomes. However, a systematic study of maladaptive schemas and alcohol use and problems among young adult college students has not been done. College is an environment with both learning opportunities and risk taking opportunities abound. Living independently and away from parental monitoring could be both positive (e.g., experiencing oneself as free agent in a new environment) and anxiety provoking (e.g., support systems that were perhaps available to help with distress throughout childhood are not so readily available). Young adults bring to college a framework of interpreting the world, themselves, and the future (i.e., schemas). A further understanding of the relationship between schemas and risk-taking behaviors, such as alcohol use, among the young adult college population is will help delineate potentially modifiable influential factors.

3. Distress tolerance, maladaptive schemas, and alcohol outcomes

Distress tolerance refers to an individual's ability to experience and withstand negative emotional states (Simons & Gaher, 2005). Distress tolerance is related to mood and anxiety disorders, poor quality of life, as well as maladaptive behaviors such as non-suicidal self-injury (Anestis et al., 2012). With respect to alcohol use and problems, the effects of distress tolerance increase impulsive, risky behaviors (Wray, Simons, Dvorak, & Gaher, 2012). Children raised in troubled families tend to develop maladaptive schemas (Young et al., 2003) and emotional dysregulation (Shipman et al., 2007). These children may not have had appropriate role models for coping adaptively with negative emotions (Rezaei, Ghazanfari, & Rezaee, 2016). Lacking adaptive strategies to deal with the negative affect inherent in early maladaptive schemas, individuals have difficulties regulating negative emotions and, over time, might perceive it as intolerable. Schemas develop early in childhood, arguably before distress tolerance skills are developed, and maladaptive schemas might in turn influence one's tolerance for distress. Namely, maladaptive cognitions about oneself, the world, and the future may undermine the development of good tolerance for distress, which in turn would affect alcohol outcomes. Hence, distress tolerance may mediate associations between maladaptive schemas and alcohol problems. Alternatively, poor distress tolerance may increase the likelihood that an individual will use maladaptive regulatory strategies (e.g., avoidance, substance use) in response to distress-evoking stimuli associated with maladaptive schemas. This conceptualization suggests that distress tolerance may moderate

associations between maladaptive schemas and alcohol problems. Indeed, distress tolerance is inversely associated with alcohol problems (Buckner, Keough, & Schmidt, 2007; Howell, Leyro, Hogan, Buckner, & Zvolensky, 2010; Simons & Gaher, 2005; Wray et al., 2012) where associations with frequency and quantity of alcohol use are often insignificant. Maladaptive schemas might exhibit similar associations with alcohol problems, although only a few findings regarding cognitive schemas and substance use exist (Brotchie et al., 2004; Roper et al., 2010; Shorey et al., 2012). Examining the role of cognitive schemas and distress tolerance in terms of alcohol use among the young adult college population is particularly important. Specifically, applying the model where alcohol misuse and problems reflect an attempt to cope with self-perceived flaws and an inability to tolerate distress to a non-clinical, college population is the aim of this study.

3.1. Current study

The current study is attempting to fill this gap in the literature by examining associations between maladaptive cognitive schemas, distress tolerance, and alcohol problems among young adult college students. We tested a structural equation model for the role of distress tolerance in the association between schemas and alcohol use and problems. We hypothesized early maladaptive cognitive schemas, specifically Abandonment, Defectiveness/Shame, and Insufficient Self-Control, would predict low levels of Distress Tolerance. In turn, Alcohol Consumption and low levels of Distress Tolerance would predict Alcohol Problems. We also hypothesized that for individuals with low Distress Tolerance, the association between maladaptive schemas and alcohol outcomes would be stronger than among individuals with high tolerance for distress.

4. Methods

4.1. Participants

Four hundred ninety-four undergraduate college students ages 18–25 took an online survey during the Fall 2014 semester and Spring 2015 semester. In the full sample, the mean age was $M = 19.31$ ($SD = 1.47$). The full sample was 28% male and 72% female. With regard to racial demographics, 88.5% were White or Caucasian, 2.5% were Black or African American, 1.7% were Native American or Alaskan Native, 1.7% Asian or Asian American, 1.4% were Multiracial, 3.9% identified as Latino or Hispanic, and 0.55% did not respond. The analysis sample included 364 participants (72.25% female), between the ages 18–25 ($M = 19.41$; $SD = 1.49$) and similar racial demographics as the full sample. Inclusion criteria included students aged 18–25 years and self-reported at least one drink in the past 90 days.

5. Measures

5.1. Maladaptive schemas

The Abandonment, Defectiveness/Shame, and Insufficient Self-Control schemas were assessed by the 90-item Young Schema Questionnaire-Short Form (YSQ-S3; Young, 1994). Each subscale consists of five items. Examples of items include “I need other people so much that I worry about losing them” and “I worry that people I feel close to will leave me or abandon me” (Abandonment); “I’m unworthy of the love, attention, and respect of others”

and “I am too unacceptable in very basic ways to reveal myself to other people” (Defectiveness/Shame); and “Often I allow myself to carry through on impulses and express emotions that get me into trouble or hurt other people” and “I can't seem to discipline myself to complete most routine or boring tasks” (Insufficient Self-Control; Young, 1994). The scores of the YSQ were calculated by averaging the scores, with higher scores reflecting higher levels of a schema. Previous test-retest reliability on the subscales for the YSQ ranges from 0.50–0.82 ($r_{\text{avg}} = 0.76$) and internal consistency reliability has an average alpha of 0.90 (Schmidt, Joiner, Young, & Telch, 1995). The subscales demonstrated high internal consistency in the current study (Abandonment $\alpha = 0.88$; Defectiveness/Shame $\alpha = 0.90$; Insufficient Self-Control $\alpha = 0.84$).

5.2. The distress tolerance scale (DTS; Simons & Gaher, 2005)

The DTS is a 15-item scale assessing the extent to which one can tolerate emotional and psychologically distressing states. The DTS consists of four subscales which focus on an individual's perceived ability to tolerate distress. The scores of distress tolerance were calculated by averaging the scores, with lower scores reflecting lower levels of distress tolerance. The DTS has demonstrated high internal consistency ($\alpha = 0.89$) as well as adequate test-retest reliability ($r = 0.61$; Simons & Gaher, 2005). In the current study, the Cronbach alpha was $\alpha = 0.92$.

5.3. Alcohol consumption

Drinks per week was assessed via the Modified Daily Drinking Questionnaire (DDQ-M; Collins, Parks, & Marlatt, 1985; Dimeff, Baer, Kivlahan, & Marlatt, 1999). Respondents reported the numbers of drinks and hours spent drinking during a typical week within the last 30 days. Scores of alcohol consumption were calculated by summing number of drinks. Previous research supports the validity and one week test-retest reliability ($r = 0.93$) of this measure of alcohol use (Dimeff et al., 1999). For screening purposes, participants' frequencies of alcohol use in the past 90 days were assessed. Only responses from participants who reported drinking at least once in the past 90 days were used in the analyses for this study.

5.4. Alcohol-related problems

The Young Adult Alcohol Consequences Questionnaire (YAACQ; Read, Kahler, Strong, & Colder, 2006) is a 48-item self-report measure of negative consequences of alcohol. Each item was a dichotomous indicator of experiencing a consequence in the past 90 days. The YAACQ has been found to be a valid and reliable measure for alcohol-related consequences (Read et al., 2006; Read, Merrill, Kahler, & Strong, 2007). In the current study, the Cronbach alpha of the total YAACQ scale was $\alpha = 0.98$.

5.5. Procedure

Participants were recruited through the online research participation program at a Midwestern university. Undergraduate students between the ages of 18 to 25 and self-reported at least one drink in the past 90 days were eligible to participate. Participants provided informed consent and all procedures were approved by the institutional review

board. Participants received course credit for their participation. Responses were anonymous and all surveys were completed online. The validity of online data collection is supported by previous research (Gosling, Vazire, Srivastava, & John, 2004).

5.5.1. Data handling and preparation—Preliminary analyses were conducted to determine the ranges and distributions of variables. Missing scale items were imputed via best subsets regression. Two values on the YAACQ were outliers and were reduced to one unit higher than the nearest values (Tabachnick & Fidell, 2001) and data from 3 participants were excluded due to unreliable responses. Variables included in the analyses were relatively normally distributed (see Table 1).

6. Results

6.1. Descriptive statistics and correlations

Four hundred ninety-four total participants completed the study, and the data provided in the following sections is from the analysis sample of 364 participants. The analysis sample represents approximately 74% of the original number of participants. The Abandonment, Defectiveness/Shame, and Insufficient Self-Control schemas were all significantly correlated with distress tolerance and alcohol-related problems. None of the schemas were significantly related to alcohol consumption or gender at the bivariate level. In addition, distress tolerance was significantly positively correlated with alcohol-related problems, but not alcohol consumption. Alcohol consumption was significantly correlated with alcohol-related problems. Descriptive statistics are presented in Table 1. Correlations are presented in Table 2.

6.2. Measurement model

Structural equation models (SEM) were tested in Mplus 7.4 (Muthen & Muthen, 2014) with the maximum likelihood robust (MLR) estimator. We first tested the measurement model for the three latent constructs. Participants who reported drinking at least once in the past 90 days were included. The four subscales of the DTS were indicators of a latent Distress Tolerance factor. The Alcohol Consumption factor had two indicators (drinks per week and frequency in past 90 days). Seven subscales of the YAACQ were indicators of an Alcohol Problems factor. The dependence subscale was not included because of very low endorsement of items. The initial model fit was $\chi^2(62, N = 364) = 206.44, p < 0.001$; root mean square error of approximation (RMSEA) = 0.08 90% CI [0.07, 0.09], CFI = 0.94, SRMR = 0.05. The model was iteratively modified based on inspection of the modification indices. This resulted in two error covariances between the YAACQ subscales being freed (self-perceptions and control; academic and self-care). The final measurement model was a good fit to the data $\chi^2(60, N = 364) = 136.65, p < 0.001$; RMSEA = 0.06 90% CI [0.05, 0.07], CFI = 0.97, SRMR = 0.05. Standardized factor loadings were significant at $p < 0.001$ and ranged from 0.60 (YAACQ - self-perception) to 0.97 (DTS - absorption). Alcohol Problems were significantly correlated with Drinking ($r = 0.71, p < 0.001$) and Distress Tolerance ($r = -0.28, p < 0.001$). Distress Tolerance and Drinking were not significantly correlated ($r = -0.02, p = 0.740$).

6.3. Structural model

The SEM model had four observed exogenous variables (gender and the three schemas) (Abandonment, Insufficient-Self Control, and Defectiveness/Shame) and three latent variables (Distress Tolerance, Alcohol Consumption, and Alcohol Problems). The exogenous variables had paths to the latent construct of Distress Tolerance, which in turn, had direct paths to both the Alcohol Consumption and Alcohol Problems latent constructs. Alcohol Consumption had a direct path to Alcohol Problems. Gender had direct paths to all endogenous constructs. We first tested the model without any interaction terms to obtain fit indices and effect sizes. The model was a good fit to the data $\chi^2(106, N = 364) = 223.33, p < 0.001$; RMSEA = 0.06 90% CI [0.05, 0.07], CFI = 0.96, SRMR = 0.06. Male gender ($\beta = 0.19, p < 0.001$), Abandonment ($\beta = -0.43, p < 0.001$), and Insufficient Self-control ($\beta = -0.24, p < 0.001$) were significantly associated with Distress Tolerance. However, Defectiveness/Shame was not significantly associated with Distress Tolerance ($\beta = -0.07, p = 0.385$). The model accounted for 47% ($p < 0.001$) of the variance in Distress Tolerance. Male gender ($\beta = -0.38, p < 0.001$), Distress Tolerance ($\beta = -0.24, p < 0.001$), and Alcohol Consumption ($\beta = 0.76, p < 0.001$) were significantly associated with Alcohol Problems, accounting for 59% ($p < 0.001$) of the variance. Male gender ($\beta = 0.78, p < 0.001$) but not Distress Tolerance ($\beta = -0.07, p = 0.250$) was significantly associated with Alcohol Consumption, accounting for 12% ($p = 0.002$) of the variance.

6.3.1. Interaction effects—We then tested the effects of each of the three hypothesized interactions between the schemas and the latent Distress Tolerance construct on Alcohol Problems. The latent interactions were defined as random effects predicting Alcohol Problems (Muthen & Muthen, 2014). Models were tested containing each of the interactions separately (and including the requisite direct effect of the schema on problems), as well as the three simultaneously. Only the Shame $\times$ Distress Tolerance interaction was significant. Hence, only this interaction was retained in the final model for parsimony (see Fig. 1). As shown in Fig. 2, the direct effect of shame on problems was significant when Distress Tolerance was low ($M - 1 SD; \beta = 0.37, p = 0.001$) or at the mean ($\beta = 0.19, p = 0.032$) but not when Distress Tolerance was high ($M + 1 SD, \beta = 0.00, p = 0.979$).

6.3.2. Indirect effects—Significance of the indirect effects was determined by testing the cross-products of the slopes (i.e., schema $\rightarrow$ Distress Tolerance (a) $\times$ DTS $\rightarrow$ Alcohol Problems (b)). Given the interaction between Shame and Distress Tolerance, we report the conditional indirect effects when shame is at the mean. Consistent with hypothesis, there was a significant indirect effect of Abandonment ($ab = 0.11, p = 0.014$) and Insufficient Self-Control ($ab = 0.06, p = 0.023$) on Alcohol Problems via Distress Tolerance. The indirect effect of Shame on Alcohol Problems via Distress Tolerance was not significant ($ab = 0.02, p = 0.447$). The indirect effect of shame was not significant across levels of shame (i.e., $M \pm 1 SD, ab = 0.03, p = 0.435$ and $ab = 0.00, p = 0.953$, respectively).

7. Discussion

This study tested a structural equation model to understand the associations between cognitive schemas, distress tolerance, alcohol use and problems. Previous research on the

origins of individual differences in distress tolerance has focused primarily on related cognitive-emotional traits (e.g., alexithymia, impulsivity; Gaher, Hofman, Simons, & Hunsaker, 2013; Wray et al., 2012). Only four studies to date have looked at the relationship between maladaptive schemas and alcohol outcomes, and none investigated potential mechanisms for this association in a non-clinical sample (Brotchie et al., 2004; Roper et al., 2010; Shorey et al., 2012; Shorey, Stuart, & Anderson, 2014). We hypothesized that early maladaptive schemas would be associated with deficits in tolerance for emotional distress. Distress Tolerance, in turn, was expected to mediate and/or moderate effects of maladaptive schemas on alcohol problems. The results largely supported these hypotheses. The schemas Abandonment and Insufficient Self-Control were indirectly associated with alcohol-related problems via distress tolerance. The indirect association between Defectiveness/Shame and alcohol problems via distress tolerance was non-significant. However, distress intolerance moderated the association between the Defectiveness/Shame schema and alcohol-related problems. The results indicate that distress tolerance plays an important role in the relationship between early maladaptive schemas and alcohol problems. These results will be discussed in turn.

7.1. Schemas and alcohol-related problems: mediating effects of distress tolerance

Distress tolerance mediated the relationship between the Abandonment and Insufficient-Self Control schemas and alcohol problems. This is consistent with research that found significant relationships between maladaptive schemas and substance related outcomes (Brotchie et al., 2004; Roper et al., 2010; Shorey et al., 2012), though in the current study the relationship was significant for alcohol problems not consumption per se. Schemas of abandonment arise from early interpersonal relationships that involve rejection (Young et al., 2003). Distress tolerance skills also start developing in early relationships when children rely on their caregivers and attachment figures to help them navigate intense emotions (Gottman, Katz, & Hooven, 1996; Morris, Silk, Steinberg, Myers, & Robinson, 2007). In healthy and stable relationships children have support as they learn ways to regulate emotions. However, when one is abandoned or neglected, distress tolerance skills might remain underdeveloped. Following abandonment, children experience uncertainty and a sense of vulnerability (Young et al., 2003), which may impair the child's confidence in their own ability to change negative emotions, contributing to low distress tolerance. Finally, these children might feel that they are controlled by negative emotions rather than feeling in control of their own emotions, contributing to low distress tolerance.

Likewise, the Insufficient Self-Control schema indirectly predicted alcohol-related problems via poor Distress Tolerance. The relationship between Insufficient Self-Control and alcohol problems is congruent with the research on the association between impulsivity (e.g., negative urgency) and alcohol problems (Anthenien, Lembo, & Neighbors, 2017; Hahn, Tirabassi, Simons, & Simons, 2016; Hahn et al., 2016; Emery, Simons, Clarke, & Gaher, 2014). Besides impulsivity, the Insufficient Self-Control schema entails a propensity to become frustrated when confronted with difficult tasks (Young et al., 2003). This perceived ineffectiveness in managing oneself in times of adversity may extend to management of negative emotions, contributing to low distress tolerance and greater alcohol-related problems.

Counter to prediction, the Defectiveness/Shame schema did not predict alcohol-related problems indirectly via Distress Tolerance. Defectiveness/Shame exhibited substantial bivariate associations with all facets of distress tolerance. However, Defectiveness/Shame was not significantly associated with Distress Tolerance in the multivariate model. It is possible that the Shame/Defectiveness impairs regulatory abilities differently from the other two schemas. For instance, Defectiveness and Shame involves awareness of self and are perhaps characteristics that might develop later in life, possibly after Distress Tolerance skills are formed. Finally, Defectiveness/Shame was the only schema with a direct effect on Alcohol Problems over and above Alcohol Consumption, gender, and the other two schemas. This is consistent with past literature that found associations between shame, guilt, and risky behaviors (risky sexual behavior and risky decision-making; Fulton, Marcus, & Zeigler-Hill, 2014; Leith & Baumeister, 1996). It is also consistent with studies demonstrating high levels of feelings of inferiority/hypersensitivity to criticism in an alcohol-dependent clinical sample (Brotchie et al., 2004; Roper et al., 2010; Shorey et al., 2012). The schema Defectiveness/Shame entails intense intrapersonal negative emotions regarding one's core worth as a human being (Tangney & Dearing, 2004). Shame and a sense of defectiveness prevent people from moving forward, keeping them "stuck" (Resick, 2001; Tangney & Dearing, 2004) and have been associated with alcohol outcomes and PTSD (Held, Owens, & Anderson, 2015; Treeby & Bruno, 2012). Emotions that keep people stuck are likely associated with broad and pervasive emotional and behavioral dysregulation (i.e., alcohol problems), which might explain the unique direct effect from Defectiveness/Shame to alcohol problems.

7.2. Schemas and alcohol-related problems: moderating effects of distress tolerance

Distress tolerance uniquely moderated the relationship between Defectiveness/Shame and alcohol-related problems. The association between Shame/Defectiveness and Alcohol Problems was stronger for individuals low in distress tolerance. Attempting to hide perceived deficient personal characteristics is often a demanding, stressful task that adds additional negative affect on an already existing foundation of negative emotions caused by shame and feelings of defectiveness. Therefore, the strong association between Shame/Defectiveness and Alcohol Problems among individuals with low tolerance for distress in the current study is not surprising. Taken together, these findings highlight the influence of distress tolerance in attenuating the relationship between schemas high in negative affect (i.e., Shame and Defectiveness) and behavioral problems.

7.3. Clinical implications

The results of this study can inform prevention and treatment efforts. Concurrent efforts to decrease the rigidity of maladaptive cognitive schemas by creating more flexible and adaptive alternative schemas, coupled with increasing distress tolerance skills, could be a promising avenue of reducing alcohol-related problems. Most young adults stop drinking heavily before the behavior evolves into a long-term problem (White, Labouvie, & Papadaratsakis, 2005). However, a small minority drink specifically to reduce negative affect, consequently experiencing more alcohol problems which continue beyond college and result in substance use disorders (Bujarski & Ray, 2014; Ostafin & Brooks, 2011). For these individuals, enhancing distress tolerance and decreasing rigid maladaptive schemas

may be central for successful treatment. Poor distress tolerance and maladaptive schemas were associated with alcohol-related problems but not consumption. Results of the multivariate model demonstrate that both maladaptive schemas and poor tolerance for distress exhibit effects on alcohol-related problems independent on consumption, pointing to broad emotional dysregulation. Thus, while many young adults may drink, maladaptive schemas and poor tolerance for distress contribute specifically to risk of negative consequences.

Finally, women comprised a majority of the current sample. Although both men and women endorse high rates of early maladaptive schemas, women tend to endorse greater severity (Shorey et al., 2012, 2014). Women are often more likely to have experienced childhood maltreatment relative to men, such as sexual abuse (Kristman-Valente & Wells, 2013), possibly placing women at increased risk of developing these maladaptive schemas. Furthermore, women most often have greater rates of depression and anxiety (American Psychiatric Association, 2013; Kristman-Valente & Wells, 2013), disorders linked with underlying schemas (Beck, 2011; Young et al., 2003); hence, symptomology may account for gender differences (Shorey et al., 2012, 2014). The results of the current study primarily reflect the experience of women, and studies the means with which these symptoms are managed.

7.4. Limitations

There are several limitations that warrant attention. The cross-sectional design precludes a definitive analysis of the proposed temporal sequence as well as casual interpretations of the effects. The sample was comprised of predominantly white, young female adults and generalization to samples with other demographic characteristics remains an empirical question. Further research is needed to test these associations in samples that differ in age, race, or degree of alcohol-related problems (e.g., clinical samples).

8. Summary

Early childhood is a period of rapid development when individuals are developing self-concept and a wide range of regulatory capacities. Cognitive schemas developed during this period have long lasting effects on the individual's future inter- and intra-personal functioning (Young et al., 2003). The current findings indicate that schemas of Abandonment and Insufficient Self-Control are related to deficits in tolerance for emotional distress. These schemas and associated developmental experiences may contribute to individuals perceiving negative emotion as unbearable and inhibit development of the ability to tolerate and effectively manage the experience. The results demonstrate that distress tolerance mediates effects of early cognitive schemas on alcohol problems in young adulthood as well as serves to buffer the effects of some of the most difficult emotional states (i.e., shame) on risk for alcohol-related problems.

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HIGHLIGHTS

- Distress tolerance mediates the relationship between Abandonment and Insufficient Control schemas and alcohol problems.
- Distress tolerance skills buffered the effects of Shame/Defectiveness on alcohol problems.
- Maladaptive schemas inhibit development of the ability to tolerate negative emotions.
- Decreasing the rigidity of cognitive schemas and increasing distress tolerance are suggested for intervention.

Fig. 1. Structural model ($N = 364$). The solid dot represents the latent interaction effect. The schemas and latent constructs are standardized and hence the coefficients represent standardized effects. Standard errors are in parenthesis. $*p < 0.05$, $**p < 0.01$, $***p < 0.001$.

Fig. 2.
Association between the Defectiveness/Shame schema and alcohol problems as a function of distress tolerance.

Table 1

Descriptive statistics.

Variable	N	M (SD)	Range	Skewness	Kurtosis
Gender	364	–	101 (M), 263 (F)	0.99	1.99
Distress tolerance	354	3.53 (1.06)	1.00–5.00	–0.38	2.28
DTS – appraisal	354	3.60 (0.82)	1.00–5.00	–0.33	2.39
DTS – absorption	354	3.65 (1.03)	1.00–5.00	–0.48	2.47
DTS – regulation	354	3.48 (0.92)	1.00–5.00	–0.06	2.47
YSQ-abandonment	364	2.54 (1.23)	1.00–6.00	0.60	2.65
YSQ-defectiveness/shame	364	2.10 (1.19)	1.00–6.00	1.02	3.23
YSQ-insufficient self-control	364	2.48 (1.04)	1.00–6.00	0.41	2.61
Alcohol consumption	364	9.64 (10.20)	1–55.00	1.95	7.43
Alcohol problems	362	9.76 (9.15)	0–44.00	1.10	3.70
YAACQ – social	362	1.65 (1.64)	0–6.00	0.92	3.01
YAACQ – control	362	1.38 (1.61)	0–6.00	1.28	4.00
YAACQ – self-P	362	0.70 (1.15)	0–4.00	1.57	4.34
YAACQ – self-C	362	1.19 (1.69)	0–8.00	1.62	5.24
YAACQ – risk taking	362	1.24 (1.59)	0–7.00	1.24	3.78
YAACQ – academics	362	0.61 (1.15)	0–5.00	2.04	6.43
YAACQ – blackouts	362	2.65 (2.31)	0–7.00	0.49	1.96
Alcohol use past 3 months	364	3.03 (1.27)	1.00–8.00	–0.05	2.99

Note: N's differ due to missing data. DTS = Distress Tolerance Scale. YSQ = Questionnaire. M = male (coded 1), F = female (coded 0).

Table 2

Correlation matrix of analysis sample.

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	0.14	0.15
Gender	1.00														
Alcohol consumption	0.31 [‡]	1.00													
YAA-social	0.00	0.42 [‡]	1.00												
YAA-self perc	0.00	0.25 [‡]	0.51 [‡]	1.00											
YAA-self care	0.05	0.36 [‡]	0.48 [‡]	0.52 [‡]	1.00										
YAA-risk taking	0.09	0.50 [‡]	0.63 [‡]	0.48 [‡]	0.51 [‡]	1.00									
YAA-academic	0.07	0.41 [‡]	0.52 [‡]	0.51 [‡]	0.64 [‡]	0.56 [‡]	1.00								
YAA-blackout	0.06	0.53 [‡]	0.61 [‡]	0.37 [‡]	0.46 [‡]	0.66 [‡]	0.46 [‡]	1.00							
YAA-control	0.02	0.47 [§]	0.55 [‡]	0.68 [‡]	0.61 [‡]	0.58 [‡]	0.63 [‡]	0.57 [‡]	1.00						
DTS-appraisal	0.08	-0.04	-0.22 [‡]	-0.29 [‡]	-0.26 [‡]	-0.24 [‡]	-0.26 [‡]	-0.11 [‡]	-0.25 [‡]	1.00					
DTS-absorption	0.09	-0.01	-0.19 [‡]	-0.24 [‡]	-0.22 [‡]	-0.21 [‡]	-0.26 [‡]	-0.12 [‡]	-0.21 [‡]	0.85 [‡]	1.00				
DTS-regulation	0.10	-0.02	-0.13 [§]	-0.16 [§]	-0.17 [§]	-0.13 [§]	-0.19 [‡]	-0.10	-0.15 [‡]	0.70 [‡]	0.76 [‡]	1.00			
DTS-tolerance	0.10	-0.02	-0.21 [‡]	-0.23 [‡]	-0.19 [‡]	-0.20 [‡]	-0.24 [‡]	-0.11 [‡]	-0.21 [‡]	0.76 [‡]	0.86 [‡]	0.73 [‡]	1.00		
YSQ-abandon.	-0.03	0.07	0.18 [‡]	0.34 [‡]	0.24 [‡]	0.26 [‡]	0.26 [‡]	0.14 [‡]	0.29 [‡]	-0.64 [‡]	-0.62 [‡]	-0.48 [‡]	-0.53 [‡]	1.00	
YSQ-defect/Sh.	0.07	0.10	0.19 [‡]	0.27 [‡]	0.25 [‡]	0.30 [‡]	0.25 [‡]	0.16 [‡]	0.26 [‡]	-0.56 [‡]	-0.53 [‡]	-0.42 [‡]	-0.42 [‡]	0.75 [‡]	1.00
YSQ-self control	0.00	0.08	0.22 [‡]	0.27 [‡]	0.26 [‡]	0.24 [‡]	0.18 [‡]	0.11 [‡]	0.25 [‡]	-0.54 [‡]	-0.56 [‡]	-0.46 [‡]	-0.45 [‡]	0.67 [‡]	0.67 [‡]

Note. Gender was coded (male = 1, female = 0). Alcohol consumption = number of alcohol drinks participants reportedly consumed in a typical week for the past 30 days. YAA = Young Adult Alcohol Consequences Questionnaire. DTS = Distress Tolerance Scale. YSQ = Young Schema Questionnaire.

[‡] $p < 0.05$.

[§] $p < 0.001$.

[‡] $p < 0.0001$.