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THE ROLE OF MALADAPTIVE EMOTION SOCIALIZATION IN RISK FOR URGENCY AND PROBLEM DRINKING IN ADOLESCENTS

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THE ROLE OF MALADAPTIVE EMOTION SOCIALIZATION IN RISK FOR
URGENCY AND PROBLEM DRINKING IN ADOLESCENTS

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DISSERTATION
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A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Arts and Sciences
at the University of Kentucky

By
Emily A. Atkinson
Lexington, Kentucky
Director: Dr. Gregory T. Smith Professor of Psychology
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2023

ABSTRACT OF DISSERTATION

THE ROLE OF MALADAPTIVE EMOTION SOCIALIZATION IN THE RISK

PROCESS FOR NEGATIVE URENCY AND SUBSEQUENT PROBLEM DRINKING

IN ADOLESCENTS

Negative urgency (NU; the tendency to act rashly when experiencing negative emotions) is a robust risk factor for a number of problem behaviors, including early adolescent drinking. Little is known about the factors that precede the development of NU, and hence the full etiology of this component of risk. The current study aimed to investigate the possibility that childhood maladaptive emotion socialization (MES; the tendency for children's expressions of emotions to be met with punishment, minimized, or invoke a reaction of distress from their parents/caretakers) increases risk for the development of NU. Secondarily, the study tested whether MES predicts increased drinking over the short term among early adolescents. Self-report measures of NU, facets of MES (punitive, distress, and minimizing reactions to emotions), and problem drinking were collected from a sample of 428 high school students (mean age = 14.7), assessed twice over the course of a semester, reflecting a three-month longitudinal window. Specifically, I examined (1) whether MES would predict increases in NU (2) whether the pattern of relationships would support the possibility that NU mediates the relationship between MES and problem drinking and (3) whether these predictive pathways were invariant by race and gender. Results showed that distress emotion socialization predicted increases in NU, minimizing predicted decreases in NU, and punitive did not provide significant prediction. Additionally, results found that this process was invariant across race and gender, though differences were observed for prediction of problem drinking. Results did not support any mediational processes. Implications of these results are discussed.

Emily A. Atkinson

4/11/2023
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DEDICATION

To my grandmothers, Madonna Atkinson and Ann Rossmann.

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CHAPTER 1. INTRODUCTION

Negative urgency (NU; the tendency to act rashly when experiencing intense negative emotions) is a well-established risk factor for a number of maladaptive behaviors, in both adults and adolescents, including problem drinking, binge eating, smoking, and self-harm (Smith & Cyders, 2016). Urgency theory holds that individuals high on the trait are more disposed than others to act in rash, ill-advised ways to alleviate unwanted emotional states (Cyders & Smith, 2008; Smith & Cyders, 2016). Numerous longitudinal and meta-analytic studies have demonstrated a positive predictive relationship between NU and problem drinking, in particular (Berg et al., 2015; Coskunpinar et al., 2013, Peterson et al., 2018; Smith & Cyders, 2016; Stautz & Cooper, 2013). In the problem drinking risk literature, the focus has been primarily on longitudinal prediction from NU to drinking behaviors (Smith & Cyders, 2016). Interestingly, the relationship between problem drinking and NU appears reciprocal such that each increases risk for the other (Riley et al., 2016). That is, NU predicts problem drinking which then predicts subsequent increases in NU. This is a critical point, given that NU increases risk for other forms of dysfunction (Smith & Cyders, 2016).

Negative urgency is understood to increase risk for problem drinking in the following way. It is hypothesized that individuals often drink alcohol to experience its anxiety reducing effects and to alleviate unwanted emotional states (Cappell & Herman, 1972; Sher & Levenson, 1982), though this appears to be driven more so by depression than anxiety in adolescents (Hussong et al., 2017). Successful reductions in unwanted emotions, as a result of drinking, then reinforce drinking behavior and cause individuals

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to be more likely to drink in response to unwanted emotions in the future (Baker et al., 2004). In adulthood, emotion-based risk models have received robust empirical support: heightened emotional states, regardless of valence, predict problem drinking at both the state and trait level (Atkinson et al., 2019). Because NU is understood to reflect the tendency to act rashly in response to heightened negative affect (Cyders & Smith, 2008), elevations in the trait increase risk for early and excessive engagement in alcohol consumption. In the short-term, individuals experience relief from, or distraction from, distress, thus increasing the likelihood of alcohol consumption when experiencing similar emotional states in the future.

While much is known about the process by which NU predicts engagement in maladaptive behaviors, such as those listed above, much less is known about the etiology of urgency itself. Thus, a crucial next step is to determine how to use this knowledge to advance the public health at large. The current study involves a key step in achieving this goal: further investigation of the etiology of NU with a specific focus on the developmental process of NU in adolescents.

Adolescence is a particularly critical period for the development of NU and subsequent engagement in maladaptive behaviors. Studies have shown that increases in urgency and reciprocal prediction between urgency and problem drinking are observable as early as middle and high school (Riley et al., 2015; Peterson et al., 2018). Adolescence, and the beginning of high school in particular, is also a time of significant developmental changes, increasing independence, and greater access to alcohol and other drugs (Burdzovic Andreas & Jackson, 2015). As a result, this time period is associated

with significant increases in alcohol and drug use, as well as other maladaptive behaviors, such as binging and purging (Brown et al., 2008; Pearson & Smith, 2015; Riley et al., 2016). Given that negative outcomes associated with NU are apparent in adolescence, it makes sense that efforts to identify risk processes for NU be focused on this developmental period.

Cyders and Smith (2008), proposed a developmental model of urgency (illustrated in Figure 1.) which suggests that temperament and environmental factors jointly predict the development of NU. Temperament, in this case, refers to individual differences in children's typical reactivity to changes in their environment and methods of self-regulation, and is assumed to have a neurobiological basis (Rothbart et al., 2000). Urgency theory posits that both temperament (in particular, the tendency to react to changes in the environment with anger or sadness) and environmental factors (such as parental factors, socioeconomic status, etc.) can operate to create conditions under which children learn to view their negative emotions as unacceptable or intolerable (Cyders & Smith, 2008). Having learned to view experiences of negative emotion in this way, children and adolescents may then engage in rash or impulsive behaviors in an effort to reduce or prevent the experiences of negative emotionality.

To date, there has been some investigation of temperament factors. One longitudinal study found that children higher in anger reactivity were more likely to develop NU in adolescence (Waddell et al., 2021). The same study found that family history of AUD, a strong predictor of drinking behavior, did not appear to directly influence the development of NU (Waddell et al., 2021).

Though both temperament and environmental factors may be important antecedents to the development of NU, specific environmental risk factors may be more useful targets for intervention and prevention efforts given the stable constitutional nature of temperament (Cyders & Smith, 2008). To date, environmental contributors to risk for NU development have not been well elucidated. When one considers the risk model depicted in Figure 1, research into possible pathways from environmental risk to NU is the least developed, despite the likelihood that environmental contributors may be more amenable to intervention than temperament factors. Among the few environmental studies, child-perceived positive parenting was associated with less NU in adolescents (Bui, 2022).

One emerging line of research that has focused on environmental risk has focused on what are known as adverse childhood experiences (ACEs). An example is the childhood experience of emotional abuse and neglect, which appears to confer risk for the development of NU (Shin et al., 2015; Shin et al., 2016; Valderrama & Miranda, 2017). Adults high in NU are more likely to have experienced ACEs, with higher levels of NU associated with greater number of ACEs (Carver et al., 2011; McMullin et al., 2021; Shin et al., 2018). This body of work is quite important, although its contributions to date may be limited in two ways. First, investigations of the link between ACEs and development of NU is primarily cross sectional in nature and focused on retrospective reports from adults. Second, although this work identifies important and traumatic events associated with elevations in NU, it does not investigate the process by which such events might lead to subsequent elevations in NU.

An additional consideration is that some environmental predictors of NU may be sex dependent. One study found that parental educational attainment appeared to be negatively related to NU in female children (Assari, 2021) and another found that, in men, parental instrumental support (i.e., monetary support, guidance on how to take care of adult responsibilities, etc.) may be associated with lower levels of negative urgency in emerging adulthood (Szkody et al., 2020).

When considering prediction from NU to risky behaviors, it should be noted that each predictive pathway yet studied appears invariant across race and gender. At the same time, important differences have been observed for alcohol use and drinking-related problems. Compared to Black and Hispanic adolescents, white adolescents are more likely to drink during junior high and high school and experience more accepting peer norms related to drinking (Weaver et al., 2011). Over a one-year predictive window from 5th grade to 6th grade, for White and Hispanic youth, depression in 5th grade predicted increased drinking or drinking onset in 6th grade. For Black youth, the opposite was true: drinking in 5th grade predicted increased depression in 6th grade (Birkley et al, 2015). Regarding gender, though adult men drink more and have a higher prevalence of Alcohol Use Disorder (AUD) when compared to adult women, this discrepancy does not appear to exist for adolescents (Center for Behavioral Health Statistics and Quality, 2017; Schulte et al., 2010).

The current study aims to contribute to, and expand on, the existing body of literature investigating environmental antecedents of NU by focusing on one possible process by which NU levels might be increased. Specifically, I examined maladaptive

emotion socialization (MES) as a possible risk factor for increased NU and subsequent problem drinking in a sample of adolescents. Emotion socialization, generally, refers to how children learn to view and interpret their emotions through social contexts (Kitzmann, 2012). Maladaptive emotion socialization occurs when children learn to view their emotions as inappropriate or aversive through parental/caretaker responses to emotional expressions. Existing measures of emotion socialization assess six distinct sub-facets, three of which are understood to be maladaptive: punitive (punishing a child in response to the child's negative affect), distress (becoming distressed or upset when a child expresses negative affect), and minimizing (dismissing or trivializing a child's negative affect; Fabes et al., 2002; Krause et al., 2003; Sauer & Baer, 2010). A small number of cross-sectional studies have implicated MES in the development of NU and substance use in adolescents. Hersh and Hussong (2009) identified a significant relationship between MES and increased substance use in adolescence and, in my own work, I have found cross-sectional associations consistent with the possibility that NU mediates the predictive influence of MES on problem drinking in adults (Atkinson et al., 2022).

I propose that MES increases risk for the development of negative urgency in the following way: children who are socialized by their parents or caretakers to view their emotions as negative or inappropriate, learn to experience them as aversive. Given this, they may attempt to avoid experiencing their emotions by engaging in ill-advised, negatively reinforcing behaviors as they get older (examples of such behaviors include heavy drinking, the focus of the current study, as well as other substance use, binge

eating and purging, and self-harm (Smith & Cyders, 2016). Successful reductions in

unwanted emotions as a result of such behaviors then reinforce the tendency to engage in

such ill-advised actions, thus strengthening NU, the disposition to do so. Also reinforced

is the relationship between NU and such behaviors, making it more likely that, for

example, an individual will drink in response to future aversive emotional experiences.

Little is known concerning possible variations in this process across race and

gender. The possibility of variation across race and gender with respect to the relationship

between MES and NU is important to investigate.

1.1 The Current Study

Using a two-wave longitudinal design, I examined NU, MES, and problem

drinking, across a four-month longitudinal window, at a large urban high school in

Indianapolis, Indiana. This study had several key aims. First, I sought to investigate the

influence of MES on the development of NU. I hypothesized that MES at wave 1 would

predict increases in NU at wave 2, beyond prediction from NU at wave 1. Second, I

examined whether the pattern of relationships supported the possibility that NU mediates

the relationship between MES and problem drinking. Third, I sought to examine whether

the predictive pathway from MES to NU is invariant by race and gender. Given the

dearth of existing studies examining racial and gender differences in the relationship

between MES and NU, I did not have any a priori hypotheses related to the third aim.

While testing this third aim, I also investigated whether prediction of drinking varied

across race and gender.

Figure 1. A developmental model of urgency and subsequent dysfunction
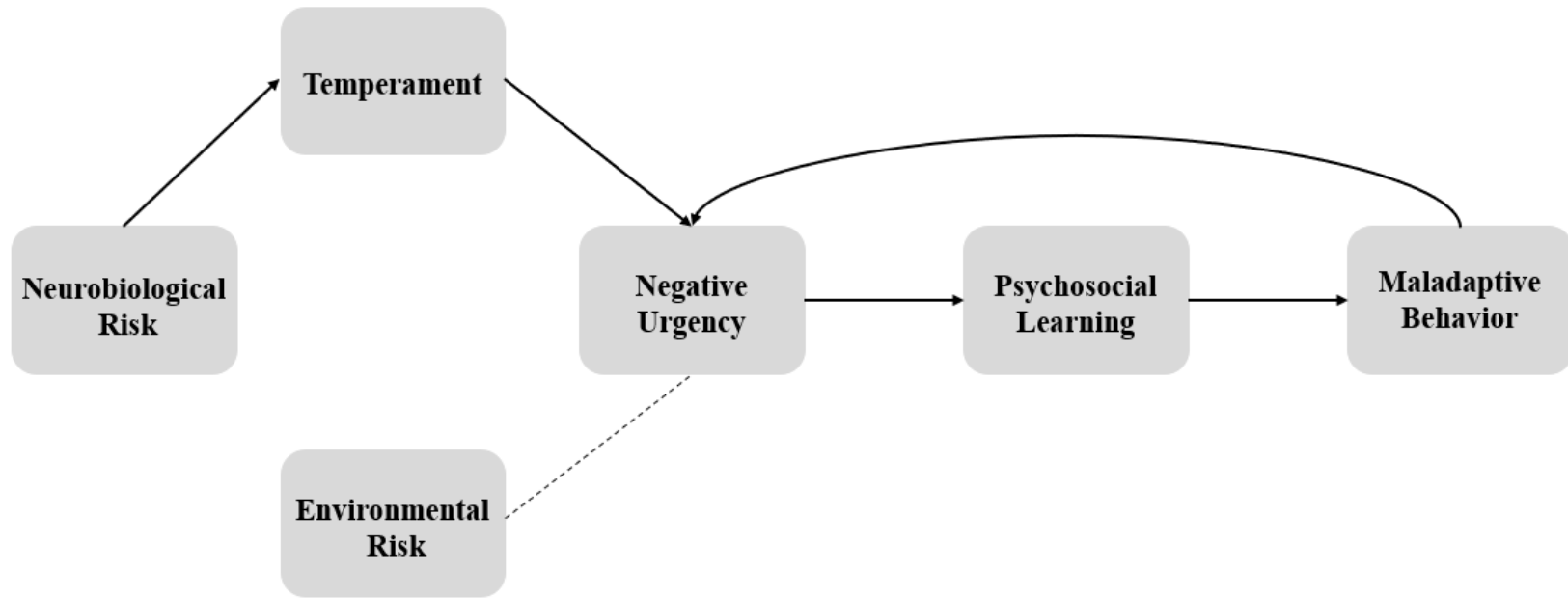
Note: The above model illustrates a developmental model for the development of urgency and subsequent maladaptive behaviors such as problem drinking, as first described in Cyders & Smith, 2008. The pathways with bold lines indicate the presence of longitudinal evidence to support the predictive association. The pathway from environmental risk to negative urgency is thus the focus of the current study

CHAPTER 2. METHODS

2.1   Participants

Participants were 428 high school students aged with a mean age of 14.7 (sd = 0.9) years at the time of wave 1 data collection. They identified as 50% male, 44% female, 2% non-binary, and 4% preferred not to answer or did not specify. Participants also identified as 38% Black, 26% Hispanic, 18% Multiracial, 15% White, and 4% Other/Unknown.

2.2   Measures

2.2.1   Demographic Questionnaire

Participants reported demographic information such as age, gender, race, and ethnicity.

2.2.2   UPPS-P – Child Version (Zapolski et al, 2010).

NU was assessed via the UPPS-P Impulsive Behavior Scale – Child Version. The measure includes 40 Likert-type items which assess five facets of impulsivity: negative and positive urgency, premeditation, perseverance, and sensation seeking. Validity evidence for the NU scale, for both adults and children, includes convergent and discriminant validity across assessment methods, replicated longitudinal prediction of numerous rash impulsive behaviors, and multiple meta-analyses documenting concurrent prediction consistent with urgency theory (review by Smith & Cyders, 2016). Psychometric properties of NU in the current sample are provided in Table 1.

2.2.3 Socialization of Emotion Scale – Short Form (SES; Sauer & Baer, 2010)

Childhood MES was assessed via the Socialization of Emotion Scale-Short Form, a measure adapted from the Coping with Children's Negative Emotions Scale (CCNES; Fabes et al., 2002; Krause et al., 2003). Six items assess children's perceptions of their parents' or caretakers' typical responses to displays of negative emotions in common situations that may have occurred during participants' childhood (example item: *"If I was panicky and couldn't go to sleep after watching a scary TV show, my caretaker would: (a) encourage me to talk about what scared me (b) get upset with me for being silly (c) tell me I was over-reacting (d) help me think of something to do so that I could get to sleep (e) tell me to go to bed or I wouldn't be allowed to watch any more TV (f) do something fun with me to help me forget about what scared me"*). Participants were asked to respond with the degree to which each parent/caretaker reaction was likely when participants were aged 12 years or younger. MES was calculated by summing the scores from the punitive, distress, and minimizing subscales. An important question is whether to treat the SES as a single score or, instead, study the subscales separately. To date, few studies have examined the relative merits of these two approaches. Though each of the MES subscales is considered distinct, several studies have found strong correlations between them, suggesting that they may assess the same underlying construct (King et al., 2022). Previous studies investigating the role of emotion socialization in the risk process for psychopathology have successfully used an overall score to measure adaptive vs. maladaptive parental emotion socialization (Atkinson et al., 2022; Mirabile et al., 2016; Premo & Kiel, 2016). As described below, I began with a series of factor analyses to guide decisions on the best approach to use.

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2.2.4 Alcohol Use Disorders Identification Task (AUDIT; Babor & Grant, 1989)

Problem drinking was assessed using the Alcohol Use Disorders Identification Task. This 10-item measure assesses drinking frequency, quantity, and drinking related problems associated with AUD symptoms over the past year. The sum total AUDIT score was used to represent problem drinking in participant. The AUDIT is a well-established measure for which there is a great deal of validity evidence.

2.3 Procedure

Students at a large urban high school were approached through a required, semester-long health course and invited to participate in the study. Parental permission was obtained using passive consent procedures, in accordance with the school's policy and preference. The consent process was also approved by the University of Kentucky Institutional Review Board (protocol #70062). The passive consent process was as follows: Parents whose children were enrolled in a health course were informed that their child would be invited to participate in a study on drinking behavior, impulsivity, and emotions through email and Canvas (the school's grading and communication platform). Parents were given access to the questionnaires, in advance, in two ways: (1) a copy was available at the school office for viewing and (2) parents were provided a link to view the questionnaires online, again via email and Canvas. Parents were informed that they could decline their child's participation by emailing or calling a member of the study team or contacting a member of the school's administrative team.

In order to carry out data collection procedures, I, and a research assistant, traveled to Indianapolis four times over the course of an academic year (approximately

nine months). At each study visit, we would attend every available health course, visiting approximately eight classes over the course of several days. Prior to the first study visit of each semester, the school provided me with class rosters for each health class section. Each student enrolled in a health class was then assigned a random code number, created by a random number generator. Only one copy of the list of student names and their corresponding code numbers was kept in a password protected electronic document on a password protected computer accessible only to me. A packet of questionnaires was prepared for each possible participant (i.e., every student in each class). Questionnaires were placed in an envelope labeled with (1) potential participants' names, written on a removable label and (2) participants' code numbers, written directly on the envelope.

Students whose parents did not decline their participation were invited to take part in the study, during their designated health class period, by me or my research assistant. Before providing assent, students were informed that they would not be penalized if they chose not to participate in the study and were also told that they could choose to discontinue the study and withdraw participation at any time. They were also informed that no one outside of the study team would see their answers and that their participation would not impact their class grade in any way. Students who did not wish to participate in the study were asked to sit quietly and complete schoolwork. Those who did wish to participate completed an assent form and were given the questionnaire packet labeled with their name and code number. Prior to beginning the survey, students were asked to remove the label with their name from the envelope, in order to ensure participant responses were deidentified. The packet of questionnaires took no longer than 60 minutes to complete and approximately 20 minutes on average.

Data collection took place once at the beginning and once at the end of both the Fall 2021 and Spring 2022 semesters for a total of two waves across four study visits. A different group of participants were assessed each semester and updated class lists were provided by the school prior to each wave of data collection.

2.4   Data Analytic Method

I first assessed model variables for missingness, normality of distributions, absence of outliers, multicollinearity and singularity, and independence of errors. Descriptive statistics, frequencies, and correlations of key study variables were also obtained.

Those who participated in only a single wave did not differ from those who completed both waves on any key study variables, established via independent samples t-tests. As such, data were assumed to be missing at random and estimation maximization was used to impute values for all missing numerical values. This allowed the use of the full sample for analysis ($N = 428$).

Confirmatory Factor Analyses (CFA) were conducted in Mplus (Muthén & Muthén, 2004-2017) to examine the factor structure of MES and guide decisions on the best way to represent this construct in the current study.

Longitudinal structural equation modeling was conducted to test the primary aims of the study. I used the MLR estimation procedure (maximum likelihood, robust to violations of normality). I did so because I anticipated that AUDIT scores would be positively skewed. To address the first and second aims, I examined a model which assessed for (1) prediction of wave 2 NU from wave 1 MES, (measured as described

below) controlling for wave 1 NU and other variables; and (2) prediction of wave 2 problem drinking from wave 1 MES, mediated by wave 2 NU.

Finally, to address the third aim, I examined whether the above predictive pathways were invariant across race and gender. I assessed model fit when (1) all paths were free to vary across groups, (2) all paths were constrained to be equal across groups, and (3) select paths were free to vary. Two considerations guided my selection of which paths were free to vary across gender or race. The first is the prior work showing different models to predict adolescent drinking for Black and Hispanic youth (Birkley et al., 2015). The second was to keep the focus consistently on the primary goal of the study, which was the prediction of NU from MES. Thus, we tested whether those paths could be constrained to be equal across groups, even when allowing prediction of drinking behavior to vary across groups.

Given that an insufficient number of participants identified as white, or any other race, only differences between Black and Hispanic participants were assessed. The same was true for non-binary and genderqueer participants and thus, only differences between male- and female-identified participants were assessed.

For each model I assessed fit using two relative fit indices, the comparative fit index (CFI) and the Tucker-Lewis index (TFI), and two absolute fit indices, the root mean square error of approximation (RMSEA) and the standardized root mean square residual (SRMR). Guidelines for these indices vary. Using the most stringent guidelines, CFI and TFI values of .95 or higher are described as representing good fit. RMSEA values less than .05 indicate a close fit and SRMR values of .09 or lower tend to indicate good fit (Hu & Bentler, 1999) Additionally, I reported the model chi-square. A significant drop in

model fit was determined by significant increases in model chi-square and significant decreases in relative fit indices (TLI and CFI), defined as a decrease of .01 or more.

CHAPTER 3. RESULTS

3.1   Retention

Retention between waves 1 and 2 was approximately 74%. As noted above, those who participated in only the first wave did not differ from those who participated in both waves on any demographic or trait variable. Given this, I inferred that data were missing at random. Missing data were imputed using the expectation maximization (EM) procedure, allowing me to make use of the full sample of n = 428.

3.2   Descriptives

As stated above, participants were aged, on average, 14.7 years at wave 1 and 15.0 years at wave 2. Additionally, 26% of participants at wave 1 and 25% of participants at wave 2 reported having ever tried alcohol (more than just a sip). Initial skewness values for problem drinking at both waves were in excess of 2.0; values were 4.8 at wave 1 and 4.2 at wave 2. Out of a concern that this violation of normality altered study findings, I conducted square root transformations for problem drinking (which produced skewness values of 1.8 and 1.4, respectively) and reran all analyses described below using the transformed AUDIT variable. No differences in models were observed using the original or transformed variables; accordingly, I report results using the original variables. Table 1 presents scale alphas, skewness values, and descriptive data for NU, three subscales of the SES (punitive, distress, and minimizing emotion socialization), and

problem drinking. Table 2 presents a correlation matrix of these variables at each wave of

the study and drinking frequency is displayed in Table 3.

3.3   Confirmatory Factor Analyses

I first examined the factor structure of MES. The first model was a single factor

model. This analysis produced a covariance matrix that was not positive definite. I then

conducted a series of additional confirmatory factor analyses which involved modeling

three latent variables to reflect the three subscales of interest (punitive, distress, and

minimizing). I modeled both a hierarchical structure, in which each of the three subscales

indicated a common, higher-order factor, and a model in which there were three factors

that were allowed to correlate. Each of these analyses produced at least one correlation

between latent variables of 1.0. Given these results, it was not possible to go forward with

the latent representations of these factors. Instead, I used measured variables in the

primary analyses: measured variable representations of punitive, distress, and

minimizing, correlations were in the .50-.70 range. Because I was using measured

variables for the three SES subscales, I also used a measured variable for NU. Caveats of

this approach and indications for future measurement research on the SES are addressed

in the discussion, below.

3.4   Prediction of Negative Urgency

The primary predictive model, which included NU, punitive, distress, and

minimizing emotion socialization, and problem drinking, fit the data well: X^2 (1) = 0.18;

p = .67; CFI = 1.00; TLI = 1.00; RMSEA = .00 (CI: .00 to .01). SRMR = .003. Results

were partially consistent with the hypothesis that wave 1 MES would predict increases in

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wave 2 NU. Distress emotion socialization at wave 1 predicted increases in NU at wave

2 (β = .12 , p < .01), while punitive did not provide significant prediction (β = .03, p =

.35). Contrary to my hypothesis, minimizing emotion socialization at wave 1 predicted

decreases in NU at wave 2 (β = -.13, p < .05). The three MES scales were entered

together; thus, the above predictive paths reflect, for example, that the variance in

minimizing that is not shared with the punitive or distress scales predicted a decline in

NU across the longitudinal window.

3.5   Mediation

I examined the possibility that punitive, distress, and minimizing emotion socialization

at wave 1 would predict increases in problem drinking at wave 2, mediated by NU at wave

2. Analyses revealed no evidence for indirect effects of wave 1 punitive (β = .002 , p =

.35), distress (β = .01, p = .09), or minimizing (β = -.01, p = .10) emotion socialization on

wave 2 problem drinking, via wave 2 NU.

3.6   Invariance Testing by Gender

To assess whether the above model (Figure 1) was invariant across gender, I

assessed model fit when (1) no paths were constrained to be equal across gender, (2) all

predictive paths were constrained to be equal across gender, and (3) only paths predicting

NU at wave 2 were constrained to be equal. When no paths were constrained to be equal

the model fit the data well: X^2 (2) = 0.62; *p* = .74*;* CFI = 1.00; TLI = 1.0; RMSEA = .00

(CI: .00 to .10). SRMR = .006. When all paths were constrained to be equal, model fit

dropped significantly: X^2 (12) = 42.2; *p* = .00*;* CFI = 0.76; TLI = 0.55; RMSEA = .12

(CI: .08 to .16). SRMR = .003. When only the paths predicting NU at wave 2 were

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constrained to be equal, there was no significant decrease in model fit when compared to the model in which no paths are constrained to be equal X^2 (6) = 1.46; p = .96; CFI = 1.00; TLI = 1.0; RMSEA = .00 (CI: .00 to .00). SRMR = .01.

Results suggest gender differences in the prediction of problem drinking. Specifically, for females, problem drinking at wave 1 predicted decreases in NU at Wave 2 (β = -.23, p < .01) while, for males, problem drinking at wave 1 may have predicted increases in NU at Wave 2 (β = .06 , p =.065). Further, distress emotion socialization at wave 1 significantly predicted increases in problem drinking at wave 2 for females (β = .28, p <.001), but not for males (β = -.04, p = .32).

3.7   Invariance Testing by Race

To investigate differences in the prediction of NU and problem drinking as a function of race, I used the same process described for gender and assessed model fit when: (1) no constraints that paths be equal across race, (2) all predictive paths constrained to be equal across race, and (3) only paths predicting problem drinking at wave 2 from distress emotion socialization at wave 2 were free to vary. When no paths were constrained to be equal the model fit the data well: X^2 (2) = 0.19; p = .91; CFI = 1.00; TLI = 1.0; RMSEA = .00 (CI: .00 to .07). SRMR = .003. When all paths were constrained to be equal, relative fit indices showed a small drop in model fit, as reflected in the CFI and TLI values: X^2 (12) = 13.13; p = .36; CFI = .99; TLI = .98; RMSEA = .03 (CI: .00 to .10). SRMR = .04. When all paths predicting wave 2 NU were constrained to be equal, but paths predicting wave 2 drinking were not, there was no drop in model fit: X^2 (7) = 5.49; p = .60; CFI = 1.00; TLI = 1.0; RMSEA = .00 (CI: .00 to .09). SRMR =

.03. I then conducted one additional, post hoc analysis: I constrained all paths to be equal

except prediction of wave 2 problem drinking from wave 1 distress emotion socialization.

I did not observe a significant decrease in model fit when compared to the model in

which all paths were free to vary: X^2 (11) = 9.69; p = .56; CFI = 1.00; TLI = 1.0;

RMSEA = .00 (CI: .00 to .09). SRMR = .04.

There was clear evidence of invariance in the prediction of NU across Black and

Hispanic youth. With respect to prediction of drinking, results suggest differences in the

predictive pathways from distress emotion socialization to problem drinking between

Black and Hispanic adolescents. For Hispanic participants, distress emotion socialization

at wave 1 predicted increases in problem drinking at wave 2 (β = .18, p <.05), though

there was no evidence of prediction for Black participants (β = -.06, p = .20).

Table 1. Descriptives of key study variables for both waves (N = 428).

Variable (Range)	Wave 1			Wave 2		
	M(SD)	Alpha	Skew	M(SD)	Alpha	Skew
Age (13-18)	14.7 (0.9)			15.0 (0.9)		
AUDIT (0-40)	.91 (2.2)	.83	4.7	.84 (1.8)	.77	4.2
NU (8-32)	19.6 (5.2)	.81	-.06	19.7 (5.1)	.83	-.05
Punitive (6-42)	19.0 (7.8)	.77	.68	20.3 (7.9)	.80	.46
Distress (6-42)	19.7 (5.8)	.66	.32	20.0 (5.6)	.65	.25
Minimizing (6-42)	19.0 (7.8)	.75	.57	19.8 (7.5)	.76	.46

Table 2. Correlation matrix of key study variables across both waves (N = 428).

	PD1	NU1	Dis1	Pun1	Min1	PD2	NU2	Dis2	Pun2
NU1	**.13**	-	-	-	-	-	-	-	-
Dis1	.05	**.17**	-	-	-	-	-	-	-
Pun1	.07	**.30**	**.55**	-	-	-	-	-	-
Min1	.08	**.24**	**.53**	**.77**	-	-	-	-	-
PD2	**.38**	**.12**	.09	.05	.046	-	-	-	-
NU2	-.02	**.58**	**.17**	**.17**	.09	**.10**	-	-	-
Dis2	-.10	.02	**.54**	**.43**	**.40**	-.01	**.19**	-	-
Pun2	-.08	**.17**	**.46**	**.59**	**.47**	.01	**.23**	**.60**	-
Min2	-.04	.05	**.43**	**.58**	**.59**	.00	**.24**	**.58**	**.78**

Note: Bold text indicates p<.05. PD = problem drinking, NU = negative urgency, Dis = distress emotion socialization, Pun = punitive emotion socialization, Min = minimizing emotion socialization. Numbers correspond to wave of data collection.

Table 3. Drinker status and drinking frequency for both waves (N = 428).

	Wave 1	Wave 2
Drinker Status		
Have tried alcohol (more than a sip)	115 (27%)	99 (23%)
Drinking Frequency		
Never	349 (82%)	341 (80%)
Monthly or less	65 (15%)	72 (17%)
2-4 times per month	10 (2%)	13 (3)
2-3 times per week	3 (1%)	2 (1%)
4+ times per week	1 (0%)	0 (0%)

Note: Percentages may not total 100 as a result of rounding.

Figure 2. Statistically significant time-lagged pathways predicting negative urgency and problem drinking.

Wave 1   **Wave 2**
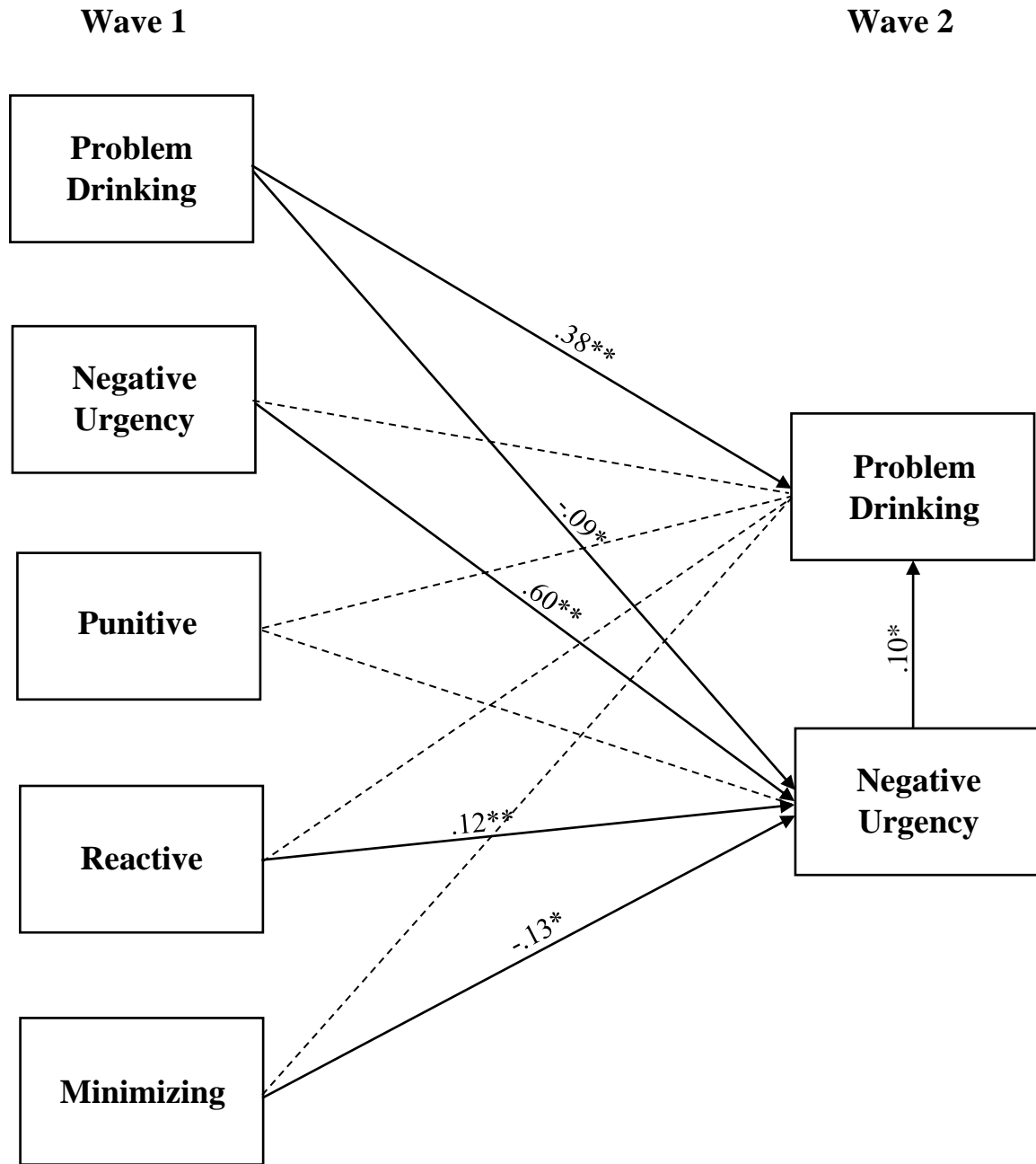
Note: *p<0.05, **p<0.01, CFI=1.00; TLI=1.00; RMSEA = 0.00, SRMR =0.003. Significant predictive pathways are denoted with solid arrows; non-significant predictive pathways are denoted with dashed lines.

CHAPTER 4. DISCUSSION

A large body of research suggests that NU is an important predictor of a number of maladaptive behaviors, including problem drinking, in adolescents. While much of the existing literature is focused on NU as a risk factor, less is known about factors that influence the development of NU itself. Urgency theory posits that temperament and environmental factors interact to increase risk for the development of NU. A few studies have investigated the role of temperament and environmental risk factors, such as positive parenting and MES, in the risk process for NU (Atkinson et al., 2022; Bui, 2020; Wadell et al., 2021). The current study aimed to build on the existing body of literature by further investigating the role of MES in the risk process for NU in a sample of adolescents. Specifically, I used a two-wave longitudinal design to examine (1) whether MES predicts future increases in NU, (2) whether the pattern of relationships supports the possibility that NU mediates the relationship between MES and problem drinking, and (3) whether the predictive pathways from MES to NU and problem drinking are invariant by race and gender, in a sample of high school students.

Results were partially consistent with the hypothesis that MES predicts significant increases in NU. When examining each facet of MES, with each controlled for its overlap with the other two facets, distress emotion socialization at wave 1 predicted increases in NU at wave 2. However, distress was the only facet of emotion socialization that predicted increases in NU across waves. Conversely, minimizing emotion socialization predicted decreases in NU and wave 1 punitive emotion socialization did not predict NU.

To be clear, the negative prediction from minimizing to NU runs contrary to my hypothesis. I do offer a plausible explanation for this effect, with the important caveat

that replication of the unanticipated effect is crucial before confident inferences can be drawn. The possibility is that variance in minimizing emotion socialization that is not shared by distress and punitive emotion socialization may actually be protective. Whatever component of minimizing that does not involve punitive or overly distressed responses may help protect against the development of NU. Again as noted, variance in distress emotion socialization that is unrelated to minimizing and punitive appears to confer risk for NU. This speculative possibility suggests the influence of parental reactions to emotional expressions in children may be more nuanced than previously appreciated. Perhaps when parents minimize emotional reactions only by contextualizing them and guiding children toward adaptive responses, risk for subsequent emotion-based ill-advised rash action is reduced. Perhaps heightened parental emotional reactivity to their children's emotions is the key contributor to an increased disposition to act rashly when distressed.

Results did not support the hypothesis that NU mediates the relationship between facets of MES and problem drinking. Two limitations of these analyses are particularly noteworthy. First, the longitudinal window was quite short for the measurement of sufficient change to detect mediational processes. Indeed, AUDIT scores changed little across the study. Second, indirect effects were tested using only two timepoints which does not allow for a true test of mediation. It is possible that significant indirect effects may be found with a longer prospective window and additional data collection time points and thus, future tests of this model should continue to investigate this possibility.

Last, I investigated whether the above risk pathways differed as a function of race and gender. Most importantly, no invariance was detected across gender (male-female) and

race (Black-Hispanic) in prediction of change in NU from the three MES scales. The findings of the current study thus suggest that the observed longitudinal predictions, and perhaps the risk process they imply, operates in similar ways across the groups studied to date.

In contrast, I did observe differences in the predictive pathways associated with problem drinking. Most notably, NU at wave 1 predicted decreases in problem drinking at wave 2 for females. For males, this relationship was positive yet non-significant; however, given that $p = .06$ for this pathway, it is quite possible that this relationship would reach statistical significance with a larger sample size and may prove meaningful. Given the clear evidence of invariance, I plan to further investigate this difference in future studies.

Invariance testing for Black and Hispanic students revealed significant differences in the predictive pathway from distress emotion socialization at wave 1 to problem drinking at wave 2. Specifically, distress emotion socialization predicted increases in problem drinking for Hispanic, but not Black, participants. This finding is interesting, given the context that initiation of drinking behavior tends to occur later for Black youth (Zapolski et al., 2014). The need to further investigate risk processes specific to different societal groups is clear. Further, the current results underscore the importance of examining differences in risk processes between individual minoritized racial groups, rather than collapsing across identities to create a non-white comparison group. Invariance testing that simply compares White to non-White groups has significant limitations. Collapsing across groups may ignore important differences in risk processes that may be relevant for the development of successful intervention efforts.

The above results should be considered in the light of several limitations. First, the longitudinal measurement period was confined to two time points over a single semester. Though studies have previously shown that changes in NU and problem drinking can be observed over a similar length of time (Atkinson et al., 2021; Riley et al., 2016), it is quite possible that additional data collection time points, across a longer longitudinal window, would yield more robust findings. Additionally, I investigated the possibility that NU mediates the relationship between MES and problem drinking using only two time points. Future tests of this model should include at least one additional time point in order to conduct true mediation analyses. Sample sizes for several racial and gender identity groups were insufficient for invariance testing. As a result, I was only able to examine differences between Black and Hispanic participants and participants who identified as either male or female. It is possible that the above risk processes differ for groups I was unable to compare, including White and non-binary individuals.

A crucial limitation of the current study is that pertaining to the measurement of MES. Neither single factor nor multiple factor latent variable models produced usable results. My use of the scales as measured variables was limited in the relatively modest internal consistency estimates observed, most notably for the distress scale. These realities suggests the need for more extensive investigation and refinement of the SES measure to produce findings for which readers can have greater confidence in the construct validity of the assessment of MES. Although it is always true that the findings of any study should be viewed with healthy skepticism about the degree to which measures validly reflect hypothesized constructs, the requirement of skepticism is perhaps greater than typical in the current study. In addition to evaluating and possibly

refining the SES, future studies might consider additional measures and reporters (such as parents/caretakers).

With these limitations in mind, the present findings provide support for the predictive role of distress emotion socialization in the risk process for the development of NU in adolescents. The current longitudinal findings support further investigation of the current model across an extended measurement period, with additional timepoints. Further investigation of this model, and identification of additional environmental risk factors for NU, may inform the creation of interventions aimed at reducing or preventing the development of NU, thus decreasing risk for a number of maladaptive behaviors and improving the public health.

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