



## Perfectionism and self-medication as mediators of the links between parenting styles and drinking outcomes<sup>☆</sup>

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### ABSTRACT

**Objective:** Perfectionism reflects unreasonably high expectations for oneself that are rarely obtainable leading to negative affect. The self-medication model suggests that alcohol consumption is negatively reinforced and subsequently escalated due to reductions in negative affect when drinking (Hersh & Hussong, 2009). Wang (2010) found that parents directly influence perfectionism levels. Parents have also been found to indirectly influence alcohol-related problems (Patock-Peckham & Morgan-Lopez, 2006, 2009). The current study sought to examine the indirect effects of parenting on alcohol-related problems and alcohol use quantity/frequency through perfectionism dimensions, (i.e. order, discrepancy, and high standards) depression, and self-medication motives for drinking. We hypothesized that more critical parenting and perfectionism discrepancy would be associated with heavier drinking by increasing depressive symptoms and promoting drinking for negative reinforcement.

**Method:** A structural equation model with 419 university volunteers was utilized to test our mediational hypotheses.

**Results:** The analyses identified an indirect link between maternal authoritarian parenting and alcohol-related problems operating through perfectionism discrepancy. Higher levels of maternal authoritarian parenting were associated with greater perfectionism discrepancy which contributed to higher levels of depression, and in turn, stronger self-medication motives, as well as more alcohol-related problems.

**Conclusions:** Maternal authoritarian parenting style is directly linked to perfectionism discrepancy along the self-medication pathway to alcohol-related problems. Our results suggest that the reduction of perfectionism discrepancy may be a good therapeutic target for depression as well as inform the development of parent or individual based prevention efforts to reduce risk for alcohol-related problems.

### 1. Introduction

Perfectionism has been defined as setting unreasonably high standards for oneself that are rarely attainable (Wang, 2010). People with perfectionistic concerns often experience amplified concern over others' perceptions of them, pessimistic reactions to failures, and excessive self-doubts (Sherry et al., 2013). According to Sherry et al. (2013), perfectionists also experience a sense of social disconnection, which involves a tendency to believe that they are incapable of satisfying others and that others disapprove of them. These irrational beliefs leave them feeling rejected, alone and unwelcomed by others. As a result of these feelings, people with higher levels of perfectionism are much more vulnerable to obsessive-compulsive symptoms (Rice & Pence Jr, 2006),

depression (Hawley, Ho, Zuroff, & Blatt, 2006), stress (Rice & Van Arsdale, 2010), eating disorders (Ashby, Kottman, & Schoen, 1998), and suicide (Wang, Wong, & Fu, 2013). In addition, there is evidence that individuals who are high in perfectionism are less responsive to treatment for depression (Hawley et al., 2006). Thus, it is crucial to understand the specific components of perfectionism that lead to these problematic consequences.

It is also important to understand the antecedents of perfectionistic tendencies and to expand the range of potential negative consequences of perfectionism to incorporate externalizing problems like substance abuse. The current study sought to address these questions by a) examining parental influences on perfectionism, b) examining relations between perfectionism and both internalizing and externalizing

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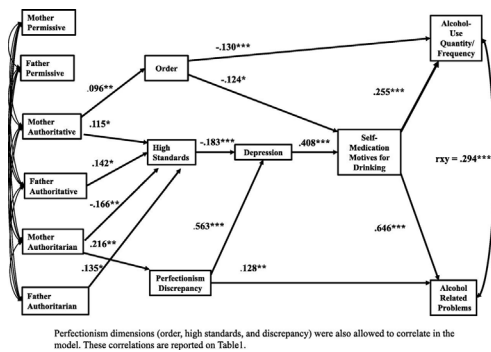


Fig. 1. Perfectionism dimensions (order, high standards, and discrepancy) were also allowed to correlate in the model.

problems, and c) examining indirect effects of parenting on these outcomes operating through perfectionism. Fig. 1 provides a depiction of the full theoretical model outlining potential relations among parenting, perfectionism, and both internalizing and externalizing problems.

Prior studies provide some evidence for a link between parenting and offspring levels of perfectionism. Wang (2010) distinguished between adaptive (i.e., orderliness reflecting keeping things organized and high standards reflecting a desire to achieve excellence) and dysfunctional (i.e., discrepancy reflecting the perceived disparity between personal standards and actual performance) aspects of perfectionism. Although parents transmitted all aspects of perfectionism to their children, only perfectionism discrepancy, was associated with negative psychological outcomes. Specifically, perfectionism discrepancy was associated with higher levels of anxiety and depression and lower self-esteem (Wang, 2010). In contrast, other aspects of perfectionism like the need for order and having high personal standards were either unrelated to psychological health or were protective (e.g., higher standards associated with higher self-esteem). These findings are consistent with the original conceptualization of these distinct aspects of perfectionism (Slaney, Rice, Mobley, Trippi, & Ashby, 2001). Based on this collection of findings (Slaney et al., 2001; Wang, 2010) we hypothesize that high standards may be negatively linked to depression and self-medication reasons for drinking along the alcohol use and related problems pathway.

Flett, Hewitt, and Singer (1995) also found links between parenting styles and various types of perfectionism. Baumrind (1971) conceptualized three typical parenting styles: 1) authoritarian, 2) authoritative, and 3) permissive. Authoritarian parenting styles (Buri, 1991), are characterized as having unyielding rules without warmth. This style has been directly linked to internalizing constructs such as neuroticism

(i.e. authoritarian fathering; Patock-Peckham & Morgan-Lopez, 2009), self-concealment (i.e. authoritarian mothering; Hartman et al., 2015), as well as indirectly linked to depression (authoritarian fathering; Patock-Peckham & Morgan-Lopez, 2007) along the alcohol-related problems pathway. Moreover, Flett et al. (1995) found significant positive correlations between socially prescribed perfectionism (the belief that other people expect you to be perfect), and authoritarian parenting by both mothers and fathers among males. Social Learning Theory suggests that offspring imitate the behaviors of their parents (Bandura & Walters, 1963). Thus, an authoritarian parent may end up with a child who may internalize the parent's unrealistic demands on the child. Based on the extant literature as well as Social Learning Theory, we hypothesize that authoritarian parenting styles by either mothers or fathers may be linked to more perfectionism discrepancy.

Authoritative parenting is characterized by warmth with clear guidelines for offspring (Buri, 1991) and has been directly associated with positive behavioral constructs such as self-regulation (Patock-Peckham, Cheong, Balhorn, & Nagoshi, 2001) and with reduced behavioral under-control, such as impulsivity (Patock-Peckham & Morgan-Lopez, 2006). As you may recall, Social Learning Theory suggests that offspring model the behaviors of their parents (Bandura & Walters, 1963). Thus, a positive authoritative parent exhibiting high standards with an organized life may be more likely to have a child with high standards who is also organized. Accordingly, we hypothesize that authoritative parenting may be positively linked to increased positive facets of perfectionism such as order and high standards dimensions.

Permissive parenting reflects relationships more akin to friendship without rules than of a caregiver-child relationship (Buri, 1991). This style has been indirectly linked to delinquency via affiliations with deviant peers (Hinnant, Erath, Tu, & El-Sheikh, 2016). Other investigators have found unique contributions regarding the permissive parent of the same gender as their offspring (i.e. daughters influence by mothers; sons influenced by fathers). For instance, father permissiveness was linked to greater anxiety sensitivity among men, while mother permissiveness was linked to greater anxiety sensitivity among women (Ebbert et al., 2018). In addition, permissive parenting of the same sex parent was indirectly linked to more alcohol use and alcohol-related problems through less self-regulation (or greater impulsivity) and drinking control (Patock-Peckham et al., 2001; Patock-Peckham & Morgan-Lopez, 2006). As negative outcomes are often associated with permissive parenting (i.e. deviance), we expected it to be associated with both less orderliness and fewer high standards. Nevertheless, as both permissive and authoritative parenting styles contain emotional warmth (Baumrind, 1971), we hypothesized they would be unrelated or negatively related to perfectionism discrepancy.

With respect to the second goal of our study, we sought to expand the range of psychological outcomes that may be associated with

Table 1 Means, standard deviations, and correlations among all variables.

M	SD	Measure	1	2	3	4	5	6	7	8	9	10	11	12	13
24.68	6.04	1. Mother Permissive	1.00												
24.81	6.69	2. Father Permissive	<i>0.42</i>	1.00											
35.54	6.86	3. Mother Authoritative	<i>0.08</i>	<i>-0.15</i>	1.00										
33.26	8.17	4. Father Authoritative	<i>0.02</i>	<i>0.27</i>	<i>0.30</i>	1.00									
31.32	7.25	5. Mother Authoritarian	<i>-0.51</i>	<i>-0.06</i>	<i>-0.28</i>	<i>-0.10</i>	1.00								
34.23	8.41	6. Father Authoritarian	<i>-0.19</i>	<i>-0.56</i>	<i>0.08</i>	<i>-0.37</i>	<i>0.34</i>	1.00							
19.90	5.75	7. Order	<i>-0.05</i>	<i>-0.06</i>	<i>0.19</i>	<i>0.11</i>	<i>0.03</i>	<i>0.08</i>	1.00						
40.24	7.86	8. High Standards	<i>0.00</i>	<i>-0.14</i>	<i>0.23</i>	<i>0.12</i>	<i>-0.14</i>	<i>0.09</i>	<i>0.40</i>	1.00					
40.90	18.20	9. Discrepancy	<i>-0.04</i>	<i>-0.05</i>	<i>-0.11</i>	<i>-0.12</i>	<i>0.21</i>	<i>0.17</i>	<i>-0.08</i>	<i>-0.06</i>	1.00				
34.96	11.12	10. Depression	<i>-0.03</i>	<i>0.01</i>	<i>-0.18</i>	<i>-0.21</i>	<i>0.21</i>	<i>0.11</i>	<i>-0.12</i>	<i>-0.22</i>	<i>0.57</i>	1.00			
14.21	6.43	11. Self-Medication	<i>0.05</i>	<i>0.04</i>	<i>-0.11</i>	<i>-0.08</i>	<i>0.07</i>	<i>0.04</i>	<i>-0.17</i>	<i>-0.18</i>	<i>0.22</i>	<i>0.41</i>	1.00		
1.69	0.70	12. Alcohol Use	<i>0.12</i>	<i>0.05</i>	<i>-0.06</i>	<i>-0.06</i>	<i>0.00</i>	<i>0.07</i>	<i>-0.20</i>	<i>-0.05</i>	<i>0.00</i>	<i>0.01</i>	<i>0.28</i>	1.00	
0.69	0.53	13. Alcohol Problems	<i>0.07</i>	<i>0.07</i>	<i>-0.15</i>	<i>-0.11</i>	<i>0.11</i>	<i>0.08</i>	<i>-0.18</i>	<i>-0.16</i>	<i>0.26</i>	<i>0.34</i>	<i>0.67</i>	<i>0.39</i>	1.00

n = 419.

Italics reflects correlations among the variables in the model.

negative aspects of perfectionism. The existing literature has focused almost exclusively on internalizing outcomes such as anxiety and depression (e.g. Flett et al., 1995; Wang, 2010), despite high levels of comorbidity between internalizing and externalizing disorders. Studies with college students have shown that depressive symptoms in particular are an important risk factor for alcohol-related consequences (King, Karyadi, Luk, & Patock-Peckham, 2011; Patock-Peckham & Morgan-Lopez, 2007). Moreover, Hobbs, Kushner, Lee, Reardon, and Maurer (2011), found that depression and alcohol use disorders were highly comorbid with approximately half of individuals in treatment for alcohol use disorder also suffering from depression. One of the earliest studies to examine the temporal sequence of alcohol use and major depressive disorder (MDD) in adolescents also showed support for the Self-Medication Hypothesis (Deykin, Levy, & Wells, 1987). Although they used the rather conservative criteria of the DSM-III to diagnose alcohol abuse and MDD, almost all of the participants who met criteria for both experienced the onset of depression prior to the development of alcohol abuse (Deykin et al., 1987). This causal sequence may be associated with the use of substances as a means to self-medicate mood-related problems.

The Self-Medication Model suggests that alcohol is a negative reinforcer and that drinking is subsequently escalated due to the reduction of unpleasant affect (Hersh & Hussong, 2009). This model is consistent with other long-standing theoretical models that identify alcohol as a potential source of negative reinforcement (e.g. Tension Reduction Hypothesis; Conger, 1956). Presumably, individuals learn with drinking experience that alcohol reduces negative emotional states, thereby negatively reinforcing use and facilitating further consumption. This pattern of learning may be especially problematic for young adults due to the general increases in alcohol consumption during this developmental period (Grant et al., 2004). For instance, college attendance propels people into new and unique social situations and contexts that may be stressful (Carter, Brandon, & Goldman, 2010; Schulenberg & Patrick, 2012). Individuals experiencing internalizing problems such as anxiety and depression may be particularly susceptible to using alcohol for negative reinforcement. Consistent with this possibility, Stewart and Devine (2000) found that depression was predictive of coping motives for drinking among college students. Given established links between depression and both perfectionism and alcohol-related problems, we hypothesized that perfectionism discrepancy may contribute to a negative-reinforcement pathway to alcohol problems.

The ultimate goal of the current study was to examine complex relations among parenting styles, facets of perfectionism, and psychological outcomes with the goal of identifying mechanisms through which parenting contributes to risk for heavy drinking and alcohol-related problems. Based on the literature above, we expected order and high standards to be indirectly protective against alcohol use and problems, while perfectionism discrepancy was expected to be indirectly promotive of alcohol use and problems through the mediating mechanisms of depression and self-medication motives for drinking. We hypothesized that authoritarian parenting would be related to higher levels of alcohol use quantity/frequency and alcohol-related problems through higher perfectionism discrepancy, higher levels of depression, and in turn, more self-medication motives for drinking. Conversely, we expected that authoritative parenting would be related to lower levels of alcohol use quantity/frequency and alcohol-related problems through more adaptive forms of perfectionism (i.e. order and high standards), less depression, and weaker self-medication motives for drinking. We also expected that permissive parenting might be indirectly related to more alcohol use quantity/frequency and alcohol-related problems through less orderliness and fewer high standards.

## 2. Method

### 2.1. Participants

Participants included 646 (330 women, 316 men) university students. Our inclusion criteria was that our participants had to be 18 years of age or older and fluent in English. All participants were recruited from the Introductory Psychology course subject pool which is representative of all majors at Arizona State University. The entire survey battery took approximately 45 min for the average participant to complete and they were all compensated with one Psy101 credit hour for their participation. Our sample only included drinkers of alcoholic beverages, which resulted in a final sample of 419 students (196 women, 223 men). The average age of the sample was 20.19 years ( $SD = 3.023$ ). The sample was mostly Caucasian 58.2%, with 17.3% Hispanic, 11% Asian, 8.8% African American, 1.1% Native American, and 3.5% other.

### 2.2. Procedures

Data collection took place at a major southwestern university using paper-and-pencil questionnaires with full IRB approval. An anonymous drop box was used to ensure participant anonymity.

### 2.3. Measures

#### 2.3.1. Parental Authority Questionnaire

The Parental Authority Questionnaire (Buri, 1991; Buri, Louiselle, Misukanis, & Mueller, 1988) includes 60-items, 30 per parent, based on Baumrind's (1971) prototypes of permissive, authoritative, and authoritarian styles of decision making within a family. A sample item for the 10-item permissiveness scale included: "Most of the time as I was growing up my (mother/father) did what the children in the family wanted when making family decisions." A sample item for the 10-item authoritarianism scale included, "My (mother/father) always encouraged verbal give-and-take whenever I have felt that the family rules and restrictions were unreasonable". A sample item for the 10-item authoritarianism scale included, "My (mother/father) felt that wise parents should teach their children early just who is boss in the family." Responses for the Parental Authority Questionnaire were 1 = *strongly disagree*, 2 = *disagree*, 3 = *unsure*, 4 = *agree*, and 5 = *strongly agree*. The  $\alpha$  reliabilities in this sample were as follows: mother permissive 0.77, father permissive 0.79, mother authoritative 0.84, father authoritative 0.89, mother authoritarian 0.85, and father authoritarian 0.88.

#### 2.3.2. The Revised Almost Perfect Scale

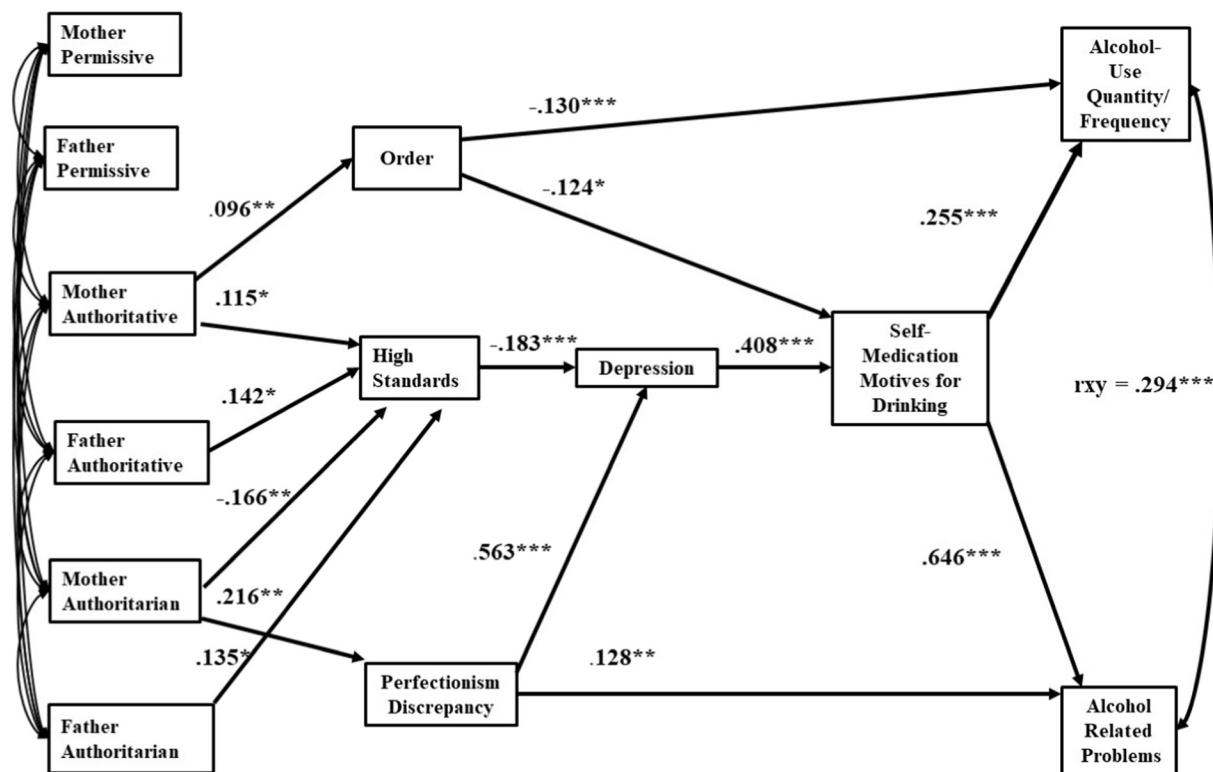
The Revised Almost Perfect Scale (Slaney et al., 2001) is a 23-item measure with 3 factors including Orderliness (4 items), High Standards (7 items), and Perfectionism Discrepancy (12 items). Sample items included: "I like to be organized and disciplined" for Order, "I have a strong need to strive for excellence" for High Standards, and "My best just never seems to be good enough for me" for Perfectionism Discrepancy. The  $\alpha$  reliabilities in this sample were as follows: Orderliness 0.93, High Standards 0.93, and Perfectionism Discrepancy 0.95.

#### 2.3.3. Center for Epidemiologic Studies Depression Scale

The Center for Epidemiologic Studies Depression Scale (CES-D) addresses the current frequency (e.g. during the past week) of depressive symptoms with 20 items reflecting one's affect or mood (Radloff, 1977). Sample items for the CES-D included, "I felt lonely" and "I had crying spells." The  $\alpha$  reliability in this sample was 0.91.

#### 2.3.4. The Reasons for Drinking Alcohol Questionnaire

The Reasons for Drinking Alcohol Questionnaire (Johnson, Schwitters, Wilson, Nagoshi, & McClearn, 1985) is a 12 item scale measuring celebratory (i.e., drinking for a friend's birthday; 4 items)



Perfectionism dimensions (order, high standards, and discrepancy) were also allowed to correlate in the model. These correlations are reported on Table 1.

Fig. 2. Perfectionism dimensions (order, high standards, and discrepancy) were also allowed to correlate in the model. These correlations are reported on Table 1.

and pathological (i.e., drinking to cope with negative affect or self-medication motives; 8 items) reasons for drinking. We only used the pathological reasons items for this study. A sample item for this subscale is “To what extent do you drink when you are sad or lonely.” The  $\alpha$  reliability for this subscale in the current sample was 0.92.

2.3.5. Alcohol use (quantity/frequency measure)

Drinking quantity was measured by a single item (Wood, Nagoshi, & Dennis, 1992), which asked “What is your usual quantity of alcoholic beverages consumed at any one drinking occasion?” Responses included: 1 = one bottle or can of beer, one glass of wine, or one drink of distilled spirits, 2 = two bottles, glasses, or drinks, 3 = three or four bottles, glasses, or drinks, 4 = five or six bottles, glasses, or drinks, and 5 = seven or more bottles, glasses, or drinks. Drinking frequency was also measured by a single item (Wood et al., 1992), which asked participants “How often did you consume alcoholic beverages in the past year or, if a former drinker, when you were regularly drinking?” The responses consisted of: 1 = less than once a month, 2 = once a month, 3 = two or three times a month, 4 = once a week, 5 = two or three times a week, 6 = four or five times a week, 7 = daily or nearly daily. The composite of quantity and frequency was used as a single measure of drinking behavior, and scores were transformed through a log<sub>10</sub> transformation (Wood et al., 1992).

2.3.6. Alcohol-related problems

These items came from the Problems with Alcohol Use measure (Rhea, Nagoshi, & Wilson, 1993). Each of the 11 items were assessed on a scale from 0 = never to 3 = many times and assessed moderate problems with alcohol use typically seen among college students and emerging adults. These specific problems with the percentage of our sample endorsing each item in parenthesis following each item (i.e. got better ideas (e.g. for work) or more easily came up with ideas when

drinking (39.1%); felt you drank too much possibly damaging your mental and/or physical health (40.8%); used social occasions such as parties as an excuse to drink (60.8%); sneaked drinks and hid bottles and/or always kept a bottle close at hand to drink from (29.8%); had a year of infrequent but long drinking binges, usually resulting in large mood swings and depression (18%); felt depressed and apprehensive after drinking (28%); resented and/or avoided people who commented on my drinking habits (22.2%); found that your job required social drinking (11.1%); felt happy only when drinking (22.1%); drank as an important part of a romantic relationship (25.4%); used drinking as a means to lose emotional and social inhibitions (43%). We dropped the lost control over drinking item which better reflects impaired control over drinking rather than a consequence or problem concerning drinking. These remaining 11 items yielded an  $\alpha$  reliability of 0.88 in the current sample.

2.4. Statistical approach

Structural equation models with bias corrected bootstrapping and full information maximum likelihood (FIML) estimation of missing data were used to evaluate our conceptual model (Fig. 1) and the chi-square statistic, RMSEA (Browne & Cudeck, 1993; Hu & Bentler, 1998), and CFI (Bentler, 1990) were utilized to examine model fit. Initially, we tested a multi-group model by gender to determine if structural paths were equivalent for men and women. In the absence of a decrement in model fit, the models were collapsed across gender. Both direct and indirect effects were examined with tests of indirect effects relying on the bias-corrected bootstrap technique (Efron & Tibshirani, 1993; Manly, 1997; Muthén & Muthén, 1998–2013), which addresses non-normality in the product of coefficients (see Fritz & MacKinnon, 2007, p.5). Consistent with the current literature, 95% asymmetric confidence intervals around the estimates were examined (MacKinnon, Lockwood,

& Williams, 2004; Taylor, MacKinnon, & Tein, 2008).

### 3. Results

We first tested a multi-group model in which parameters were freely estimated for both men and women. Next, we tested a model in which all paths were constrained to be equal among genders. As there was no decrement in model fit  $\Delta \chi^2$  (41df = 48.89,  $p = .19$ ); the multi-group model passed the overall gender invariance test. Thus, we presented the results collapsed across gender. The theoretical model depicted in Fig. 1 provided good fit to the data,  $\chi^2$  (18 df) = 21.72,  $p = .24$ ; RMSEA = 0.022; 90% CI (0.000, 0.051); CFI = 0.995. Unstandardized parameter estimates ( $\beta$ ) and standard errors (s.e.) are presented in the text with standardized coefficients provided in Fig. 2. With respect to relations between parenting styles and facets of perfectionism, neither mother nor father permissiveness were linked to any of the three facets. However, mother authoritarianism was related to positive facets of perfectionism (order,  $\beta = 0.147$ , s.e. = 0.047,  $Z = 3.100$ ,  $p = .002$ ; high standards,  $\beta = 0.131$ , s.e. = 0.064,  $Z = 2.067$ ,  $p = .039$ ). In contrast, mother authoritarianism was related to fewer high standards ( $\beta = -0.177$ , s.e. = 0.074,  $Z = -2.406$ ,  $p = .016$ ) and more perfectionism discrepancy ( $\beta = 0.531$ , s.e. = 0.169,  $Z = 3.138$ ,  $p = .002$ ). Rule bound father styles were related to increased high standards (father authoritative,  $\beta = 0.137$ , s.e. = 0.055,  $Z = 2.486$ ,  $p = .013$ ; father authoritarian,  $\beta = 0.127$ , s.e. = 0.067,  $Z = 1.912$ ,  $p = .056$ ).

With respect to additional hypothesized links along the self-medication pathway, there were several notable relationships. For example, high standards were related to less depression ( $\beta = -0.239$ , s.e. = 0.064,  $Z = -3.727$ ,  $p < .001$ ), whereas perfectionism discrepancy was related to more depression ( $\beta = 0.333$ , s.e. = 0.025,  $Z = 13.097$ ,  $p < .001$ ). In turn, greater depression was related to more self-medication motives ( $\beta = 0.232$ , s.e. = 0.034,  $Z = 6.857$ ,  $p < .001$ ) and self-medication motives were related to more alcohol use ( $\beta = 0.030$ , s.e. = 0.005,  $Z = 5.563$ ,  $p < .001$ ) and alcohol-related problems ( $\beta = 0.053$ , s.e. = 0.003,  $Z = 15.880$ ,  $p < .001$ ).

#### 3.1. Indirect effects of parenting on drinking outcomes through perfectionism, depression, and self-medication motives

Higher levels of mother authoritarianism were indirectly linked to both increased alcohol use quantity/frequency and alcohol-related problems through higher levels of perfectionism discrepancy, depression, and self-medication motives for drinking [indirect effect for alcohol use = 0.001;  $Z = 2.489$ ,  $p = .013$ ; 95% CI (0.003, 0.025); [indirect effect for alcohol-related problems = 0.002;  $Z = 2.707$ ,  $p = .007$ ; 95% CI (0.001, 0.004)]. In contrast, higher levels of mother authoritarianism were indirectly linked to less alcohol use through increased order [mediated effect =  $-0.003$ ;  $Z = -1.981$ ,  $p = .048$ ; 95% CI ( $-0.007$ ,  $-0.001$ )], though this path did not run through depression and self-medication motives as expected. Although there were no significant indirect effects from parenting variables through high order, increased levels of high standards were indirectly linked to less alcohol-related problems through decreased levels of depression and self-medication motives for drinking, independent of parenting style [mediated effect =  $-0.003$ ,  $Z = -2.882$ ,  $p = .004$ ; 95% CI ( $-0.005$ ,  $-0.001$ )].

### 4. Discussion

Our findings are consistent with and further expand our understanding of self-medication theory (Hersh & Hussong, 2009) by showing that individuals with perfectionism discrepancy are more likely to experience depressive symptoms and use alcohol for self-medication reasons. Our findings extend the theory to explain how authoritarian mothering may directly and indirectly contribute to these relations. Our main hypothesis was based on Flett et al.'s (1995) finding that authoritarian parenting was linked to perfectionism but we expanded this

to include alcohol outcome variables. Our findings are consistent with the extant literature demonstrating a link between perfectionism and depressive symptoms (Hawley et al., 2006; Wang, 2010). Further, they articulate a mediational pathway explaining how certain parenting styles may make conditions ripe for feelings of inadequacy due to perfectionism discrepancy which may, in turn, lead to increased depressive symptoms. These increased depressive symptoms may in turn increase self-medication motives for drinking, thereby leading to both increased alcohol use and alcohol-related problems. These findings represent an important extension of prior work as very few studies have examined relations among both internalizing and externalizing symptoms at the same time with respect to perfectionism and health outcomes.

Our findings are consistent with those of Enns, Cox, and Clara (2002) who found a significant link between harsh parenting and vulnerability to depression, mediated by maladaptive perfectionism (Enns et al., 2002). Our results expand upon these findings by testing more specific facets of perfectionism and particular parenting styles. Specifically, authoritarian parenting by mothers was indirectly linked to higher levels of depression through both increased levels of perfectionism discrepancy, and lower levels of high standards. The pathway from perfectionism discrepancy to alcohol use and problems through depression and self-medication motives was particularly robust ( $Z = 5.174$ ).

The positive relation between authoritarian fathering and high standards in the current study was in conflict with our hypotheses and the findings regarding effects of authoritarian parenting by mothers. We can only speculate that demanded obedience by fathers operates differently than demanded obedience by mothers. It may be perceived as a form of caring by fathers to have rules for offspring even when those rules are unyielding. This suggests that mothers and fathers parenting styles need to be modeled individually and is consistent with the suggestions of other researchers (Chassin & Handley, 2006; Fromme, 2006; Patock-Peckham & Morgan-Lopez, 2006). These findings demonstrate the complexity of parental influences on depression and suggest that there is more than one mechanism involved in this process.

Our analyses also demonstrated that authoritative parenting was linked to adaptive aspects of perfectionism [i.e. order (authoritative mothering) and high standards (authoritative mothering and fathering)]. Authoritative mothering indirectly decreased alcohol use through increased orderliness. While the protective link from authoritative parenting (both mother and father) did not carry all the way through to alcohol use and alcohol problems, it did contribute to increased high standards. This is notable because high standards were protective against alcohol-related problems through fewer self-medication motives for alcohol. These findings are consistent with the extant literature, which shows that authoritative parenting is linked to better executive functioning (Eisenberg, Lei, Ma, & Huang, 2009), positive behavioral control (Patock-Peckham et al., 2001; Patock-Peckham & Morgan-Lopez, 2006), less self-concealment (authoritative fathers; Hartman et al., 2015), less verbal and physical aggression (De la Torre-Cruz, 2014) and a lesser propensity to participate in heavy drinking (Bahr & Hoffman, 2010). Congruent with Social Learning Theory (Bandura & Walters, 1963) this growing body of literature suggests that an authoritative parent who exhibits positive behaviors is likely to have offspring who imitate those same behaviors.

Our prediction that permissive parenting would be directly related to less orderliness and fewer high standards was not found. Permissive parenting was unassociated with all three facets of perfectionism. Thus, our findings in this current study illustrate that both good (i.e. order and high standards) and bad (i.e. perfectionism discrepancy) are only directly associated with rule bound parenting styles (i.e. authoritative and authoritarian). Authoritative mothering was directly related to more orderliness and high standards, while both authoritative and authoritarian fathering were directly related to more high standards.

Interestingly, only authoritarian mothering was directly linked to more perfectionism discrepancy.

In summary, our study adds to the literature in several important ways. First, we carefully map out a distinct pathway consistent with the Self-Medication Hypothesis (Hersh & Hussong, 2009) of alcohol use and problems that involves both internalizing and externalizing phenomena. Second, we illustrate how harsh rule bound parenting, specifically authoritarian mothering, can contribute to feelings of inadequacy and how this discrepancy may then indirectly influence alcohol use through increased depressive symptoms and self-medication motives for alcohol use. This finding is also consistent with prior work demonstrating that authoritarian mothering is directly linked to increased self-concealment along the alcohol-related problems pathway (Hartman et al., 2015). Consistent with prior studies, authoritative parenting was associated with positive aspects of perfectionism (i.e., order and high standards) which, in turn, were associated with reduced risk for negative alcohol-related outcomes. Moreover, unlike authoritarian parenting where there were important differences by gender of the parent (e.g., risk associated with mother authoritarian parenting and protection associated with father authoritarian parenting), authoritative parenting was consistently protective for both mothers and fathers.

Despite the potentially important contributions of this work, there are limitations that must be considered. First and foremost, the indirect effects observed in the current study were based on cross sectional data. Thus, it is not possible to determine the temporal precedence of the variables in the model. For example, it is possible that alcohol-related problems could be a cause rather than a consequence of greater depression or self-medication motives for drinking. Similarly, child behaviors may evoke particular parenting behaviors. For example, a child who upholds high standards may evoke less authoritarian parenting from mothers. Thus, future investigations should study these patterns of relationships over time to confirm the proposed causal sequence of associations among the study variables. Further, the average age of our participants was 20 years of age and it is possible that this may contribute to under-reporting of alcohol use. Another limitation is that our alcohol use and alcohol-related consequences variables were measured with self-report rather than with clinical interviews. Our study is also limited in that we only studied parenting styles that reflect rule setting and warmth rather than bonds or attachment to the parent. In addition, our study is limited in that it focused exclusively on emerging adults. It would be interesting to study potentially critical developmental periods in which perfectionistic tendencies appear and progress. Future investigations studying these relationships among individuals in treatment for comorbid alcohol problems and depression would also advance our knowledge of the role of perfectionism in clinically significant internalizing and externalizing problems.

Despite these limitations this work adds to the extent literature in several important ways. First, this study highlights the importance of measuring the distinct parental influences of both mothers and fathers separately while examining styles (Chassin & Handley, 2006; Fromme, 2006; Patock-Peckham & Morgan-Lopez, 2006). Here authoritarian mothering contributed to maladaptive perfectionism (i.e. discrepancy) which is an inability to live up to one's own standards for oneself. In contrast, authoritarian fathers contributed to adaptive aspects of perfectionism by contributing to setting higher standards for oneself. Consistent with the other investigators (Chassin & Handley, 2006; Patock-Peckham & Morgan-Lopez, 2006), our current findings again suggest that mothers and fathers should never be just combined together as authoritarian parents in a global sense while examining important parental influences. Second, our findings point the way for longitudinal researchers to explore these relationships over time; decreasing perfectionism discrepancy with therapeutic interventions may begin with discussions of one's relationship with one's mother and thereby impact depression symptoms along the self-medication pathway to alcohol outcomes. Lastly, these findings translate the

mechanisms by which an authoritarian mother can negatively impact health and well-being through maladaptive and self-punishing cognitions about the self. This is important because negative feelings about the self are associated with self-medication motives for drinking and related problems. Cognitive Behavioral approaches to target distorted thoughts that may have developed from authoritarian mothering may be beneficial for combating perfectionism discrepancy therapeutic concerns.

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### Author contributions

Dr. Julie A. Patock-Peckham designed the study and wrote the protocol, supervised literature searches, conducted the analyses, and was responsible for the majority of the writing involved in the manuscript. Dr. Corbin contributed to the theoretical model, assisted with literature searches, and assisted in the editing of the manuscript.

### Declaration of competing interest

The authors declare no conflicts of interest for this work.

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