2023

The Predictive Effect of Parent Closeness on Substance Use for Coping in Adoptees: An Application of Motivational Models of Substance Use

Alison B. Klein

The Predictive Effect of Parent Closeness on Substance Use for Coping in Adoptees: An Application of Motivational Models of Substance Use

Alison B. Klein

Roger Williams University, Department of Psychology

Thesis Advisor: Dr. Bonita Cade

Defended June 22, 2023

ROGER WILLIAMS UNIVERSITY
GRADUATE PROGRAM IN LEGAL AND FORENSIC PSYCHOLOGY
THESIS PROJECT FORM

Date: February 3, 2023

To: (1) Dean, College of Arts and Sciences - 1 copy
(2) Thesis Chair - 1 copy
(3) Student - 1 copy

Approval is given to: Alison Klein 310889
Student's Name ID #

a candidate for degree of Master of Arts in LEGAL AND FORENSIC PSYCHOLOGY, to complete a thesis titled:
Closeness,Mental Health Symptomology and Substance Use in Adoptees

Declaration and Composition of Committee:

Jacquline Cottle, PhD, MPA — Committee Member (1) — Signature — 11/28/2022 Date
Selby Conrad PhD — Committee Member (2) — Signature — 11/28/2022 Date
Bonita Cade, PhD,JD — Thesis Chair — Signature: Bonita Cade PhD,JD — 11/28/2022 Date

Successful Defense of Thesis Proposal:

Jaculine Cottle, PhD,MPA — Committee Member (1) — Signature — 1/_19/2023 Date
Selby Conrad, PhD — Committee Member (2) — Signature — 1/19/2023 Date
Bonita Cade, PhD,JD — Thesis Chair — Signature: Bonita Cade PhD,JD — 1/19/2023 Date

Successful Defense of Thesis Project

Jacquline Cottle, PhD, MPA — Committee Member (1) — Signature — 6/22/2023 Date
Selby Conrad,PhD — Committee Member (2) — Signature — 6/22/2023 Date
Bonita Cade, PhD,JD — Thesis Chair — Signature: Bonita Cade PhD,JD — 6/22/2023 Date
Erin Tooley, PhD — Psychology Department Chair — Signature: Erin Tooley — 6/26/23 Date
Ben Greenstein, PhD — Dean, College of Arts and Sciences — Signature: Benjamin Greenstein — 6/26/2023 Date

Updated 7/19/21

Abstract

To explain a previously observed triad of substance abuse, adoption, and poor mental health adjustment in adoptees, the proposed study applies the Substance Use Motivation Model. This model would suggest that adoptees are motivated to use substances to negatively reinforce (remove or mitigate) depression and anxiety symptomology. Parent closeness is an established protective factor against negative mental health symptomology and substance use, suggesting closeness may influence the relationship between negative mental health symptomology and motivations to use substances for coping. To test this relationship, 100 adoptees were administered the Substance Use Motives Measure (*SUMM)*, the Personal Health Questionaire-9 (Depression), the Personal Health Questionaire-7 (Anxiety), the Unidimensional Relationship Closeness Scale, and the Inclusion of the Other in Self measure. Much of the sample was of clinical significance on both mental health measures, corroborating previously observed high levels of depression and anxiety in this population. A stepwise regression model was built to determine the strongest predictors of substance use for coping in adoptees. Parent closeness significantly predicted substance use for coping, but in an unexpected way. Findings indicate that participants with higher closeness had higher scores on substance use for coping. Although unexpected, it is possible these results are exhibiting a unique pattern of social learning amongst adoptees and their adoptive parents. Further research is recommended to determine the extent of adoptive parent influence on decisions to use substances for coping with anxiety and depression symptomology.

Keywords: adoption, depression, anxiety, substance use, motivational model of substance use, parent closeness

The Predictive Effect of Parent Closeness on Substance Use for Coping in Adoptees: An Application of Motivational Models of Substance Use

The National Institute on Alcohol Abuse and Alcoholism (2021) reported 14.5 million Americans twelve and older meet the diagnostic criteria for Alcohol Use Disorder. However, there are several populations for which the occurrence of substance abuse is even higher. This includes the population of present interest: adoptees (Grant et al., 2008, Westermeyer et al., 2007; Yoon et al., 2012). Rates of mood and anxiety disorders are also significantly higher amongst adoptees (Borders et al., 2000). The relationship between adoptees and substance use has been shown to be mediated by mental health symptomology (Askeland et al., 2018). These findings indicate that something unique to the adoption experience is driving the relationship between mental health symptomology and substance use. The proposed study introduces the motivational model of substance use to this relationship and tests its efficacy in explaining the increased rates of substance use and mental health symptomology in adoptees.

Motivational Model of Substance Use

At their core, motivational models explain substance use as a form of reinforcement (Lynne et al., 2016). Positive reinforcement explains behavior as being motivated by a desire to gain some reward. Substance use is motivated by positive reinforcements when used to achieve social conformity, disinhibition, confidence, or the recreational effects of substances (Rose & Walters, 2012). Substance use as a negative reinforcement. Negative reinforcement would conceptualize substance use as a behavior intended to reduce the impact of aversive stimuli, such as depression or anxiety symptomology. In this way, substance abuse is being employed as a coping mechanism. Even the earliest motivational models of substance use included the motivation to use substances to reduce negative affect in their paradigm (e.g., Newcomb et al.,

1998). Newcomb et al. (1998) reported a four-factor model of substance use motivation; including removal of negative affect, enhance positive affect and creativity, social cohesion, and addiction. Since this first study, a more nuanced eight-factor model defined the motivations for alcohol and marijuana use to include enhancement, social, conformity, anxiety-coping, depression-coping, boredom-coping, self-expansion, and performance (Bioclatti & Passini, 2019). The distinct benefit of using this newer model is its ability to capture modern motivations to use a range of substances.

Both the four and eight-factor motivation models have been validated as capturing individuals' reasons for alcohol and marijuana use (Boys et al., 2011; Hasking et al., 2011; Sadeh et al., 2020; Newcomb et al., 1998; Votau et al., 2021). Across multiple studies, coping remains among the top reasons reported for heavy marijuana use reported by both adolescents and adults (Boys et al., 2011; Hasking et al., 2011; Niznik Behavioral Health, n.d., Sadeh et al., 2020; Votau et al., 2021). In fact, 86% of a sample of young polysubstance users reported using their substance to "feel better," and 75% of participants use their preferred substance(s) to "stop worrying" (Boys et al., 2001). This trend exists even amongst non-habitual users. A nationally representative sample found that 27% of respondents cited substance use as a means of self-medicating symptoms of mental illness (Niznik Behavioral Health, n.d.). Additionally, avoidant coping styles have also been identified as strong predictors of substance use (Boys et al., 2011; Hasking et al., 2011). The predictive ability of coping style on substance use suggests substance use may itself be a form of avoidant coping, as suggested by the previously discussed substance use motivation models.

The relationship between psychological symptomology and substance use to cope might also be useful in explaining heightened substance abuse, depression, and anxiety rates amongst

adoptees. As discussed, the relationship has almost been explained by Asekeland et al.'s (2018) findings that adoption mediates the relationship between mental health and substance use; however, there remains a critical missing link. What remains to be answered is what is unique to the adoption experience that motivates adoptees to use substances for coping.

Adoption

The explanation is related to poor adjustment outcomes that are common to adoptees, resulting from a multitude of adoption realities. Most comprehensively, adoption is conceptualized as a personal act, legal process, and social service (Zamostny et al., 2003). Thus, it is a complicated process with myriad factors that contribute to negative adoptee adjustment and outcomes. There are two ways in which a child may be placed for adoption: relinquishment or removal. Relinquishment of parental rights is voluntary. According to Planned Parenthood, the most common reasons cited for the relinquishment of parental rights are socioeconomic limitations, abusive conditions, and pregnancy as a product of sexual assault (Planned Parenthood, n.d.). In addition, these circumstances may also pose neonatal and genetic risks, creating potential adversity even for the 62% of adoptees individuals placed for immediate adoption (Adoption Network, n.d.).

The remaining 38% of adoptees are removed from parental care and placed for adoption after some time with their birth parent(s) (Adoption Network, n.d.). Removal occurs when child welfare agencies deem a parent unfit, typically because they lack the self-awareness or selflessness necessary to relinquish care when their caretaking capacity is compromised. According to the American Academy of Child and Adolescent Psychiatry (2018), these conditions most often involve caregiver abuse, parent physical or mental illness with a nexus to care, parent incarceration, and parental substance abuse. Thus, whether care is relinquished or

terminated by the state, substance use can be a significant genetic and ecological threat for adoptees removed from their biological parents. Although the realities of adoption circumstances appear to contribute to poor mental health and substance use outcomes, learned or later life mitigation strategies may assist with the mental health symptoms that appear to motivate individuals to use substances.

Family Closeness

Some argue a child's experience with family members is one of the most important interpersonal factors to account for in adjustment outcomes (Rosnati & Marta, 2002). Theoretically, family closeness is defined as the extent to which family members are emotionally and behaviorally connected (Fang et al., 2021). The existing research on family closeness and adjustment outcomes achieves some degree of consensus: family closeness predicts psychological distress and substance use outcomes such that as closeness increases, negative mental health and substance use outcomes decrease (Cavanagh, 2008; King et al., 2018; Kolak et al., 2018; Loehlin et al., 2010; Madkour et al., 2017; Samek & Reuter, 2011). Thus, the literature generally describes family closeness as a protective factor against negative adjustment outcomes (Rosnati & Marta, 2002). The family closeness construct encompasses sibling closeness. In the context of sibling closeness, genetic similarity did not moderate this relationship, suggesting the sibling relationship may be more based in bond than biology. Similar findings have not been replicated for parent closeness, lending to the present investigation into whether parent closeness retains its protective nature in the context of adopted parent-child relationships.

Parent-Child Closeness

Parent-child closeness has also been studied independently of family closeness and exhibits similar effects as family and sibling closeness. For example, Madkour et al. (2017)

found that maternal and paternal closeness remains a protective factor against heavy episodic drinking through the transition into early adulthood. Similarly, Loehlin et al. (2010) found a negative correlation between parent-child closeness and externalizing problems, such as substance use. Unlike in sibling relationships, however, parent-child closeness was found to be influenced by genetic relatedness (Loehlin et al., 2010). In a survey of parents and their adopted children on measures of closeness, both parents and children rated themselves as closer when the relationship was biological, rather than adopted (Loehlin et al., 2010).

For this reason, family structure has been an important variable when studying family closeness. King et al. (2018) compared participants living in a non-traditional living environment (operationalized as those either living with a single biological parent or with a biological parent and stepparent) to those living with both biological parents. Findings revealed participants in non-traditional family structures showed higher rates of depressive symptoms, alcohol use, and marijuana use (King et al., 2018). Relatedly, Cavanagh (2008) found living in any alternative family structure (including with two adopted parents) during adolescence increased the odds of marijuana use by 47%.

Based on the above literature, it is evident closeness affects outcomes such as mental health symptomology and substance use. This effect has been observed in adoptees, although tests of the effect of connectedness on adoptees specifically are scarce. As stated, parent-child closeness is influenced by genetic similarity, which may suggest serious implications for adoptees' closeness with their adoptive parents. The present study elaborates on what this implication means for adoptees' pathway of developing motivations to use substances for coping.

Present Study

Askeland et al.'s (2018) findings established that the relationship between adoption and substance use outcomes is mediated by mental health symptomology, suggesting something unique to the adoption experience may be motivating adoptees to use substances for coping (Askeland et al., 2018). Hypothesis one is that adoptees will report overall higher rates of substance use for coping compared to the other motivational factors. Because substance use for coping is significantly related to higher rates of substance use, we expect identifying motivations to use will better explain the relationship observed between mental health symptomology and substance use in adoptees (Newcomb et al., 1988). Should this hypothesis be supported, we will have identified adoptees as another "specialized" population with an increased propensity to use substances for coping.

Further, the present study aimed to test the efficacy for adoptees of a known protective factor against poor mental health and substance use outcomes: parent closeness. Based on the heightened rate of depression, anxiety, and substance use in adoptees, the present study finds it pertinent to test whether parent closeness remains a protective factor against these outcomes in this population. The expectation is that it does remain a protective factor for adoptees who experience closeness with their adoptive parents; however, it is expected that this population will report altogether low rates of parent closeness based on Loehlin et al.'s (2010) findings that adoptees and their parents both reported feeling stunted closeness with their adoptive parent/child. Thus, hypothesis two is that parent closeness will remain a protective factor for the limited sample of adoptees who enjoy a high degree of closeness with their adoptive parents.

Method

Participants

Data were collected in Qualtrics from 199 participants. Participants were recruited through adoption and genealogy Subreddit pages. Data from twelve were removed because they were younger than eighteen, 44 were removed because they were not adopted, 33 were removed because they did not use substances, and 10 were removed because they did not complete the Substance Use Motives Measure. After data screening, 100 participants remained for analysis.

The average participant was 33 years old (SD = 10.178), and the average age at adoption was 4.25 (SD = 2.873). Participants were an average of 15.35 years old (SD = 10.698) when they discovered they were adopted. Participants were predominantly non-white, with the leading ethnicities being Native Hawaiian (29%) and Black (25%). White participants represented 13% of the sample. While the sample was optimally diverse, this composition is not representative of the true proportion of adoptions in the United States. In fact, the true representation is quite the opposite, with white children adopted most often and Native Hawaiian and Black children being adopted least often (Zill, 2017). Possible reasons for this deviation are introduced in the discussion section.

Participant Mental Health

The PHQ-9 and the GAD-7 were administered to participants to measure their mental health symptomology. The threshold for severe clinical depression on the PHQ-9 is 21, and the threshold for clinical anxiety on the GAD-7 is 10. Based on preliminary review of participant scores, it became obvious the sample was of clinical significance. Fifty-six percent of participants met the clinical threshold for severe depression, with participant mean score being 20.03 (SD = 5.711). Including participants with a score indicating mild clinical depression, 98%

of participants were clinically depressed. Eighty-one percent of participants met the threshold for clinical anxiety, with participant mean score being 15.56 (SD = 5.119). Only 1% of participants with anxiety were not co-morbid. It was evident the sample was not only clinically relevant but also highly co-morbid. Thus, it became a statistical decision to analyze these variables as a single mental health coping model rather than two distinct pathways to using substances for coping.

Participant Substance Use

Participants were, on average, 18.78 years old (SD = 6.912) when they first used substances and currently use substances about 3.54 days a week (SD = 1.633). Quantity of use per sitting was reported to be on average 2.81 drinks/milligrams/grams (SD = .892), as measured by the standard measure for their preferred substance. See Table 1 for percent breakdowns of participant's preferred substances.

Table 1

Participant's Preferred Substance by Percent

	Percentage
Alcohol	70.3%
Marijuana	19.8%
Non-prescription pills and other drugs	7.9%

Participant responses on the Substance Use Motives Measure were made into composite scores, with all major analysis conducted on the coping composite, which combined score responses to the questions regarding substance use for depression and anxiety coping. The mean SUMM coping score was 25.90 (SD = 7.192) out of 40. Thus, we observed high rates of clinical

mental health problems and apparently high substance use for coping, as was expected to be observed in the sample.

Parent Closeness

Seventy percent of participants reported having two adoptive parents, 25% reporting one adoptive parent, and a remaining 5% reporting three or more adoptive parents. More than half of the participants reported feeling closest to their male adoptive parent (54%), and one participant who reported their closest adoptive parent was a transgender male. When it came to birth-parent relationships, almost half of the participants reported having had past contact with their birth parents (48%), and around the same proportion of participants reporting a known biological predisposition to substance use (50%). Overall, participants rated themselves fairly close to their adoptive parents, with a mean score of 48.69 (SD = 11.642) out of 67.

Measures and Instruments

Frequency Measure

Participants were administered a frequency item validated for use with the Substance Use Motives Measure (Bioclatti & Passini, 2019). The frequency item asked participants to rate from never (1) to every day (6), the frequency with which they use wine, beer, strong drinks, and marijuana. Then, participants completed a version of the SUMM for either alcohol, marijuana, or both (*See Appendix A for list of SUMM Items).*

Substance Use Motives Measure

The *SUMM* is a validated substance use measure created by Bioclatti and Passini (2019) based on the principles of motivational models of substance use. Instruments used in earlier tests of motivation models included fewer motivations. Such led to critique by Lee et al. (2009) who argued pharmacological effects of substances differ, so motivations to use substances are likely

to differ. Bioclati and Passini's (2019) model is a nuanced measure of substance use motivation that addressed such concerns. It is also unique in that it is validated to administer to marijuana users (Bioclatti & Passini, 2019).

The measure has 32 items, with four items to assess each of the eight motivation factors. Four questions gauge the participant's degree of motivation to use alcohol and marijuana for each of the eight motivations. Each measure item is presented as a statement with a five-point response scale ranging from not at all (1) to very much (5), based on how well the statement represents their own motivations to use. Only two substances are validated for use with the *SUMM* at this time, so those were chosen for use in the present study.

Family Closeness

The present study administered use the Inclusion of the Other in the Self (IOS) scale as a measure of parent closeness (Aron et al., 1992). This scale is composed of a set of venn diagrams, from not touching to entirely overlapping. After looking at the circles, the participant is asked to select which circle most closely represents their relationship with the target individual, in this case, each parent (See *Figure 1* for the IOS diagram). The IOS takes less than one minute to complete and has a strong nomological net with six other measures of closeness (Gätcher et al., 2015).

In addition, the Unidimensional Relationship Closeness Scale is a 12-item self-report scale measuring the perceived closeness of personal relationships (Dibble et al., 2011). Items cover a range of closeness inquiries, with participants responding from "strongly disagree" (1) to "strongly agree" (7).

Depression and Anxiety Symptomology

Participants then took the Patient Health Questionnaire (PHQ). The PHQ is a self-administered measure used in clinical settings and is validated for use in the general population (Bentley et al., 2021). The depression subscale (PHQ-9) is a 9-item measure that covers a range of depression symptomology (See *Appendix B* for survey questions). Responses range from "not at all" (0) to "nearly every day" (+3). The scale is oriented such that scores above 7 indicate mild depression. The PHQ-9 has an internal consistency of .82-.90, an acceptable Chronbach's alpha (Bentley et al., 2021).

The anxiety subscale (PHQ-7) is a 7-item measure that covers a range of anxiety symptomology (See *Appendix C* for survey questions. Responses range from "not at all" (0) to "nearly every day" (+3). The scale is oriented such that scores above 10 indicate clinical anxiety.

Results

All of the traditional hierarchal regression assumption tests were conducted to ensure the fit of the data. Analysis of the normal P-plot indicated the observed values were closely clustered about the normality line with no significant deviations. The residual scatterplot was analyzed to ensure homoscedasticity assumptions, with variable distributions about zero on both axes. Finally, multicollinearity was assessed using VIF values. The range of VIF values observed was 1.00-2.42, indicating an acceptable degree of collinearity amongst model variables. The non-violation of this assumption is important to note, as depression and anxiety were observed as correlated, but not to a degree that violates the test used.

Prior to analysis, a series of correlation were run to better understand the relationships between variables and ensure the appropriateness of planned statistical tests. As expected, age at adoption was significantly positively correlated with scores on the depression measure such that

those who were adopted later in life scored higher on the depression measure ($r = .217$, $p < .05$). Similarly, age at adoption discovery was significantly positively correlated with both depression scores ($r = .284$, $p < .01$) and anxiety scores ($r = .242$, $p < .05$), indicating that those who learned of their adoption later in life scored higher on both the depression and anxiety measures. Interestingly, age at adoption and age at discovery were not significantly correlated with coping motives for substance use but were significantly correlated with the other substance use motives measured ($r = .755$, $p < .001$; $r = .207$, $p < .05$, respectively). This relationship suggests that individuals who were adopted later in life, along with those who discovered they were adopted later in life did express motivations to use substances, but for reasons like enhancement and conformity rather than coping. The coping motive scores themselves were significantly correlated with the rest of the measure's scores, suggesting participants who used substances to cope also used substances for other reasons as well ($r = .755$, $p < .001$). Such corroborates the findings that participant coping score was significantly correlated with the frequency of use, with participants who reported higher frequencies of substance use also reporting higher rates of substance use for coping ($r = .439$, $p < .01$). As mentioned earlier, depression and anxiety scores were significantly positively correlated, suggesting high rates of co-morbidity in the sample ($r = .743$, $p < .001$). Surprisingly, the correlations revealed that parent closeness was significantly *positively* correlated with reported substance use for coping, such that participants who reported being closer to their adoptive parents reported higher rates of substance use for coping ($r = .284$, $p < .01$). Many interesting non-significant correlations were also observed, and worth noting. See Table 1 for a correlation matrix. Although additional variables were observed in the present study, the correlation table includes the variables expected to aggregate to the greatest predictive effect with specific regard to substance use for depression and anxiety coping.

Table 1

Correlation Matrix of Potential Model Variables

Variable	1	2	3	4	5	6	7	8
1. Coping		.105	.059	.149	.439**	.563**	.388**	-.226**
2. Adoption Age			.522**	.040	.046	.217*	.197	-.153
3. Discovery Age				.011	.052	.242*	.284**	-.240*
4. Quantity of Use					.143	.200*	.075	.014
5. Frequency of Use						.234*	.183	.187
6. Depression Score							.743**	-.406**
7. Anxiety Score								-.397**
8. Biological Disposition								

*Note: * indicates* p< *.05, ** indicates* p < *.01*

Sequential Regression Analysis

A sequential multiple regression was chosen to determine the ability of parent closeness to predict levels of substance use coping motivation scores while controlling for the possible confounding effects of age at adoption, frequency of use, quantity of use, and extent of mental health symptomology scores, which were all significantly correlated with the dependent measure, except for the quantity of use variable, which is otherwise positively correlated with depression scores. In step one of the model, age at adoption, frequency of use, and quantity of use were entered, explaining 18% of the variance observed in coping scores (R^2 = .21). The combination of variables entered in model one significantly predicted variation in SUMM coping scores (F (3, 89) = 7.75, p < .001, Adjusted R^2 = .18) (See Table 2 for model coefficients). The

variables entered in step two strengthen the model, with GAD-7 and PHQ-9 composite scores explaining an additional 21% of variance observed in SUMM coping scores, this predictive ability was significant (F (5, 87) = 12.589, $p < .001$, Adjusted $R^2 = .39$). In step three, parent closeness was entered and explained an additional 6% of variance observed in SUMM coping scores, making parent closeness a significant predictor (F (6, 86) = 13.165, $p < .001$, Adjusted $R^2 = .44$).

In the final model, multiple variables were significant predictors of variation in SUMM coping scores. These included frequency of use (Standardized Beta = .296, $p < .001$), depression scores (Standardized Beta = .514, $p < .001$), and parent closeness (Standardized Beta = .250, $p < .01$). It is likely the reason anxiety was not predictive in the final model due to the high correlation between the depression and anxiety measures. To confirm this suspicion, the model was run with only anxiety scores, at which point anxiety symptomology was a significant predictor of variation in substance use for coping.

Table 2

Model Coefficients with Adoptive Parent Closeness as the Dependent Variable

Model	Unstandardized Coefficients		Std. Beta	t	Sig.
	Beta	Std. Error			
1 (Constant)	16.646	2.571		6.475	<.001
Frequency	1.863	.420	.423	4.432	<.001
Quantity	.684	.769	.085	.889	.376
Age at Adoption	.207	.237	.083	.876	.384
2 (Constant)	8.856	2.695		3.286	.001
Frequency	1.433	.372	.325	3.852	<.001
Quantity	-.008	.680	-.001	-.011	.991
Age at Adoption	-.032	.210	-.013	-.152.	.880
PHQ Score	.687	.160	.545	4.303	<.001
GAD Score	-.104	.173	-.074	-.602	.549
3 (Constant)	1.906	3.401		.560	.577
Frequency	1.303	.357	.296	3.652	<.001
Quantity	-.165	.650	-.021	-.254	.800
Age at Adoption	-.088	.201	-.035	-.437	.664
PHQ Score	.648	.153	.514	4.244	<.001
GAD Score	-.019	.167	-.014	-.116	.908
Closeness	.154	.049	.250	3.119	.002

Discussion

Mental Health Symptomology

The present findings indicate that among adoptees, substance use is in fact a coping mechanism used to manage depressive and anxiety symptoms. Such a result is critical to substantiate the application of motivational models to previous adoption research paradigms. From this finding, we can confidently say that depressed adoptees are significantly more likely to use substances to cope with their mental health symptomology, as motivated by a negative reinforcement model.

These findings are critical for targeting and rectifying this trend in the adopted population. Based on the understanding that substance use in persons with clinical mental health symptomology can be motivated by the need to cope, it becomes evident that mental health symptomology should become the primary target for treatment.

Parent Closeness

After controlling for all the theoretically and statistically relevant variables, the effect of parent closeness was still determined to be a significant positive predictor of variation in substance use for coping. Thus, it did not act as a protective factor, failing to support the major hypothesis of the present study. The present study expected to find that closeness would not reach a great enough degree to achieve protection against negative substance use outcomes. The pattern observed was such that participants were closer than expected with their adoptive parents; however, such closeness not protective at all, as those who were closer were significantly more likely to use substances for coping. As this relationship is quite perplexing,

and the main interest of the present study, the following sections are an overview of potential explanations for this relationship.

Indebtedness Theory

Content analysis of adoption narratives indicates that adoptive parents often frame adoption to their adopted children by emphasizing "chosen" family and rescue (Hays et al., 2016). It is possible these narratives may cause adoptees who feel close with their adoptive parents to develop feelings of indebtedness or immense gratitude toward their adoptive parents. Although such a sense of gratitude may precipitate feelings of closeness to the adoptive parent, there is great potential for conflicting emotions. If the adoptee still experiences difficulty adjusting to their adoption circumstances despite being told that they were chosen and rescued by their adoptive parents, they may feel they cannot use their relationship with their adoptive parents as an outlet to cope with adoption-related emotions. Thus, according to the proposed indebtedness theory, adoptees are diverting their need to cope to substances to avoid confiding in their adoptive parents the degree of conflict they experience in regard to their adoption. Such avoidance is based on the personal conclusion that one should not be so conflicted with their adoptive circumstance when they were "chosen" and "rescued" by people they feel so close and grateful to.

Social Learning Theory

Bandura's Social Learning Theory states that individuals learn behaviors from role models. Unfortunately, the current study did not measure adoptive parents' substance use, bit it is possible that substance use for coping was a learned behavior from participant's adoptive parents. If they also use substances, then using could be a way to connect and engage with their adoptive parents, making sense of the relationship between closeness and substance use. In much

of the adoption research, focus is placed on the role of biological parents' substance use habits and the subsequent development of adoptees' substance use habits. Yet, one study found rearing environment removed the risk of adoptees developing Alcohol Use Disorder (AUD), even with two biological parents with AUD (Kendler et al., 2016). The nature of taking an adopted child in can be stressful, and it may be that adoptive parents are experiencing increased or first-time mental health effects, thus resorting to substances to cope post-adoption. Because caregivers are responsible for teaching tactics of self-regulation, it very well may be this pathway is environmentally established, rather than biologically determined. Future research should address this possibility; suggestions for doing so are outlined in the Future Directions section.

Racial and Ethnic Identity of Participants

There were some interesting and unexpected findings from the present study which are notable. Although they were not part of our present hypothesis, these findings merit discussion for future studies to follow up on. The present sample reports or reflects a majority of non-white participants, despite findings that white children represent the greatest number of adoptees in the United States (Zill, 2017). Because our sample was collected from community boards, such findings suggest that minority participants are over-represented due to their exacerbated struggle with integrating their biological and adoptive identities, thus turning to social supports garnered through the internet. Considering the majority of participant's closest reported adoptive parent was white, this observation seems apropos.

. The literature supports the reality that compromised adjustment outcomes are not uncommon for adoptees placed in adoptive families of multi-racial or multi-ethnic composition (Brooks & Barth, 1999). This appears to be the result of some adoptees experiencing greater difficulty reconciling birth and adoptive family factors and subsequent difficulty with developing

a healthy ethno-racial identity and self-esteem of adoptees, which in turn may impact mental health and coping strategies.

Cited complications with cultural identity include dissatisfaction with ethnic appearance, decreased pride in the birth ethnic group and stronger negative attitudes toward the birth ethnic group (Brooks & Barth, 1999). Thus, it is not outlandish to suspect that the present sample was more ethnically diverse than the true population because these individuals have a greater incentive to find a community of individuals who also face the challenges of a marginalized identity in the context of the dominant culture.

Limitations

As briefly touched upon, a few major limitations exist in the present study. To begin, adoptees were simply asked point in time closeness, rather than lifespan closeness. Without an understanding of closeness at the time of initiation, it is difficult to determine whether closeness may be a protective factor against the *development* of substance use for coping. In any event, it was clear here that parental closeness did not act as a protective factor against the *continued* use of substances for coping.

Another limitation exists regarding the Social Learning Theory explanation. The present study did not ask participants about the substance use habits of their adoptive parents, and information on the substance use of their biological parents was limited to a single item. The relationship observed between closeness and substance use for coping suggests that Social Learning Theory may be involved, but proposed explanations are limited by the questions asked.

Future Directions

Future research should dive deeper into why it is the case that adoptees who report greater feelings of closeness with their adoptive parents were also more likely to use substances

for coping. Specifically, longitudinal studies of adoptees would be critical for mapping the trajectory of adoptive parent closeness and the development of substance use for coping. Multiple point-in-time measures of closeness would be beneficial in determining whether parent closeness is a protective factor against the initiation of substance use for coping, or simply has no protective value at any point.

Finally, the present research provides support for coping with depression as a motivation to use substances. This pathway appears particularly common in adoptees who report mental health symptomology, creating a triad of depression, anxiety, and substance use in this population. Targeting the mental health symptomology of adoptees appears to be the key to mitigating the likelihood of developing substances to cope. Thus, early intervention programs with adoptees could be critical in curbing the mental health symptomology and substance use habits that develop in this population. These interventions can include pre-adoptive psychoeducation, the establishment of an adopted social network, and the introduction of healthy coping strategies to both adoptive parents and the children they adopt. These programs could be made a requirement of adoption to teach adoptive parents warning signs and symptoms of mental health disorders and integrate adopted children into their new homes. Ultimately, the findings of the present study suggest a targeted preventative approach to mental health may be effective in mitigating the overall substance use habits of adoptees.

Appendices

Appendix A

Substance Use Motives Measure (SUMM)

Please rate each reason for using alcohol and marijuana as reasons you use the substance from "not at all" (1) to "very much" (5).

Enhancement

1) Because it's fun
2) Because it is exciting
3) To get high
4) Because it makes me feel good

Social

5) To be sociable
6) As a way to celebrate
7) Because it is customary on special occasions
8) Because it helps you enjoy a party

Conformity

9) So I won't feel left out
10) To be liked
11) Because my friends pressure me to use
12) To fit in with a group I like

Anxiety-Coping*

13) To relax
14) Because I feel more self-confident and surer of myself
15) Because it helps me when I am feeling nervous
16) To reduce my anxiety

Depression-Coping*

17) To cheer me up when I'm in a bad mood
18) Because it helps me when I am feeling depressed
19) To turn off negative thoughts about myself
20) To stop me from dwelling on things

Boredom-Coping

21) Because you wanted something to do
22) To relieve your boredom
23) Because you had nothing better to do
24) To spend time

Self-Expansion

25) To know myself better
26) Because it helps me be more creative and original
27) To understand things differently

28) To be more open to experiences

Performance

29) To improve my performance
30) To give me more energy
31) To study or concentrate
32) For sexual reasons

*dimension of interest

Appendix B

Patient-Health Questionaire-9

Over the last two weeks, how often have you been bothered by the following problems?

1. Little interest or pleasure in doing things
2. Feeling down, depressed, or hopeless
3. Trouble falling asleep, staying asleep, or sleeping too much
4. Feeling tired or having little energy
5. Poor appetite or overeating
6. Feeling bad about yourself-or that you're a failure or have let yourself or your family down
7. Trouble concentrating on things, such as reading the newspaper or watching TV
8. Moving or speaking so slowly that other people could have noticed. Or being so fidgety or restless that you have been moving around a lot more than usual
9. Thoughts that you would be better off dead or of hurting yourself in some way

Appendix C

Patient Health Questionairre-7

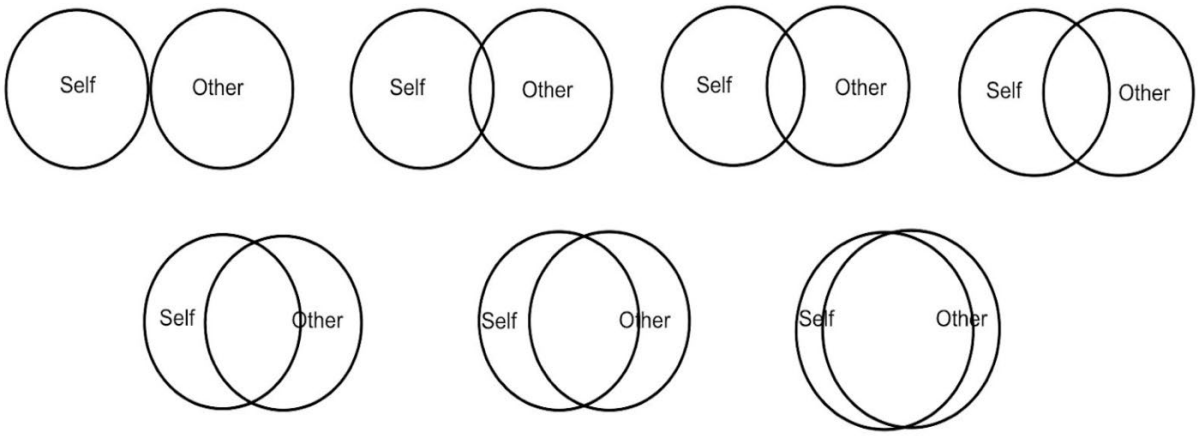
Over the last two weeks, how often have you been bothered by the following problems?

1. Feeling nervous, anxious, or on edge
2. Not being able to stop or control worrying
3. Worrying too much about different things
4. Trouble relaxing
5. Being so restless that it is hard to sit still
6. Becoming easily annoyed or irritable
7. Feeling afraid as it something awful might happen

Appendix D

Inclusion of the Other in the Self Scale

Please circle the picture below that best describes your relationship with your adoptive mother/adoptive father.



References

Adoption Network (n.d.). (2022). *U.S. Adoption Statistics,* https://adoptionnetwork.com/adoption-myths-facts/domestic-us-statistics/

American Academy of Child & Adolescent Psychiatry. (Oct, 2018). *Foster Care.* https://www.aacap.org/AACAP/Families_and_Youth/Facts_for_Families/FFF-Guide/Foster-Care-064.aspx

Aron, A., Aron, E. N. & Smollan, D. (1992). Inclusion of Other in the Self Scale and the Structure of Interpersonal Closeness. *Joural of Personality and Social Psychology, 63*, 596-612.

Askeland, K. G., Siversten, B., Skogen, J. C., La Greca, A. M., Tell, G. S., Aaro, L. E., Hysing, M. (2018). Alcohol and drug use among internationally adopted adolescents: Results from a Norwegian population-based study. *American Journal of Orthopsychiatry, 88*, 226-235

Barth, R. P. & Brooks, D. (1999). Adult transracial and inracial adoptees: Effects of race, gender, adoptive family structure, and placement history on adjustment outcomes. *American Journal of Orthopsychiatry, 69*(1), 87-99. https://doi.org/10.1037/h0080384

Bioclatti, R. & Passini, S. (2019). Development of Substance Use Motives Measure (SUMM): A Comprehensive Eight-Factor Model for Alcohol/Drugs Consumption. *Addictive Behaviors Reports, 10*, https://doi.org/10.1016/j.abrep.2019.100199

Bentley, K. H., Sakurai, H., Lowman, K. L., Rines-Toth, L., McKowen, J., Pedrelli, P., Evins, A. E. & Yule, A. M. (2021). Validation of Brief Screening Measures for Depression and Anxiety in Young People with Substance Use Disorders. *Journal of Affective Disorders, 282,* 1021-1029.

Borders, L. D., Penny, J. M. & Portnoy, F. (2000). Adult Adoptees and Their Friends: Current Functioning and Psychosocial Well-Being. *Family Relations, 49*, 407-418.

Boys, A., Marsden, J. & Strang, J. (2001). Understanding reasons for drug use among young people: A functional perspective. *Health Education Research, 16*, 457-469.

Brooks, D. & Barth, R. P. (1999). Adult transracial and interracial adoptees: Effects of race, gender, adoptive family structure, and placement history on adoption outcomes. *American Journal of Orthopsychiatry, 69*(1), 87-99.

Cavanagh, S. E. (2008). Family Structure History and Adolescent Adjustment. *Journal of Family Issues, 29*, 944-980.

Curtis, R. & Pearson, F. (2010). Contact with birth parents: Differential psychological adjustment for adults adoptes as infants. *Journal of Social Work, 10*(4), 347-367.

Fang, S., Galambos, N. L. & Johnson, M. D. (2021). *Journal of Marriage and Family, 83*, 1176-1193.

Gavazzi, S. M., Sabatelli, R. M. & Reese-Weber, M. (1999). Measurement of Financial, Functional, and Psychological Connections in Families: Conceptual Development and Empirical Use of the Multigenerational Interconnectedness Scale. *Psychological Reports, 84*, 1361-1371.

Grant, B.F., Goldstein, R.B., Chou, S. P., Huang, B., Stinson, F. S., Dawson, D.A., Saha, T.D., Smith, S.M., Pulay, A. J., Pickering, R.P., Ruan, W.J. & Compton, W.M. (2008). Sociodemographic and psychopathologic predictors of first incidence of DSM-IV Substance Use, Mood, and Anxiety Disorders: Results From the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions. *Molecular Psychiatry, 14,* 1051-1066.

Hasking, P., Lyvers, M. & Carlopio, C. (2011). The relationship between coping strategies, alcohol expectancies, drinking motives and drinking behaviour. *Addictive Behaviors, 36,* 479-487.

Hays, A. H., Horstman, H. K., Colaner, C. W., & Nelson, L. R. (2016). "She chose us to be your parents": Exploring the content and process od adoption entrance narratives told in families formed through open. Adoption. *Journal of Social and Personal Relationships, 33*(7), 917-937. DOI: 10.1177/0265407515611494

Kahan, M. (2006). "Put up" on platforms: A history of twentieth century adoption policy in the United States. *Journal of Sociology and Social Welfare, 33*(3), 51-72.

Kenny, P., Higgins, D., Soloff, C., & Swied, R. (2012). Past adoption experiences: National research study on the service response to past adoption practices. *Australian Institute of Family Studies,* 1-257.

Kendler, K. S., Ohlsson, H., Sundquist, K., & Sundkist, J. (2016). The rearing environment and risk for drug abuse: A Swedish national high-risk adopted and not adopted co-sibling control study. *Psychological Medicine, 46*(7), 1359-1366. https://doi.org/10.1017/S0033291715002858

King, V., Boyd, L. M. & Pragg, B. (2018). Parent-Adolescent Closeness, Family Belonging, and Adolescent Well-Being Across Family Structures. *Journal of Family Issues, 39*, 2007-2036.

Kolak, A.M., Van Wade, C. L. & Ross, L. T. (2018). Family Unpredictability and Psychological Distress in Early Adulthood: The Role of Family Closeness and Coping Mechanisms. *Journal of Child and Family Studies, 27*, 3842-3852.

Lee, C. M., Hendershot, C. S. & Grossbard, J. R. (2009). Development and preliminary

validation of a comprehensive marijuana motives questionnaire. *Journal of Studies on Alcohol and Drugs, 70*, 279-287.

Loehlin, J. C., Horn, J. M. & Ernst, J. L. (2010). Parent-Child Closeness Studied in Adoptive Families. *Personality and Individual Differences, 48*, 149-154.

Lynne, C. M., Kuntsche, E., Levitt, A., Barber, L. L. & Wolf, S. (2016). Motivational models of substance use: A review of theory and research on motives for using alcohol, marijuana, and tobacco. In K. J. Sher (Ed.), *The Oxford Handbook of Substance Use and Substance Use Disorders* (pp. 375-421). Oxford University Press.

Madkour, A.S., Clum, G., Miles, T.T., Wang, H., Jackson, K., Mather, F. & Shanker, A. (2017). Parental Influences on Heavy Episodic Drinking Development in Transition to Early Adulthood. *Journal of Adolescent Health, 61,* 147-154.

Miller, U. & Perry, B. (2001). Adopted persons' search for and contact with their birth parents II: Adoptee-birth parent contact. *Adoption Quarterly, 4*(3), 39-62.

National Institute on Alcohol Abuse and Alcoholism. (2021). *Alcohol Facts and Statistics,* https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/alcohol-facts-and-statistics

Newcomb, M. D., Chou, C., Bentler, P.M. & Huba, G. J. (1988). Cognitive motivations for drug use among adolescents: Longitudinal tests of gender differences and predictors of change in drug use. *Journal of Counseling Pychology, 35*(4), 426-438.

Niznik Behavioral Health. (n.d.). *Self-Medicating in America: Exploring habits of self-medication with alcohol and illicit substances.* https://www.niznikhealth.com/research-articles/self-medicating-in-america/

Park, K. (2005). *Adoptees' knowledge about and contact with birth parents and their adjustment*

in adolescence and young adulthood (UMI number: 3206739) [Doctoral Dissertation, Utah State University]. Proquest Dissertation Publishing.

Planned Parenthood. (n.d.). *Considering adoption.* https://www.plannedparenthood.org/learn/pregnancy/considering-adoption

Rose, G. S. & Walters, S. T. (2012). Theories of motivation and addictive behavior. In S.T. Walters & F. Rotgers. *Treating substance abuse: Theory and technique.* (pp. 9-27). The Guilford Press.

Repinski, D. J. & Zook, J. M. (2005). Three Measures of Closeness in Adolescents' Relationships with Parents and Friends: Vairations and Developmental Significance. *Personal Relationships, 12,* 79-102.

Rosnati, R. & Marta, E. (2002). Parent-Child Relationships as a Protective Factor in Preventing Adolescent's Psychosocial Risk in Inter-Racial Adoptive and Non-Adoptive Families, *Journal of Adolescence, 20*, 617-631.

Sadeh, N., Miglin, R., Bounoua, N., Beckford, E., Estrada, S., & Baskin-Sommers, A. (2021). Profiles of lifetime substance use are differentiated by substance of choice, affective motivations for use, and childhood maltreatment. *Addictive Behaviors, 113*.

Samek, D. R. & Reuter, M. A. (2011). Considerations of Elder Sibling Closeness in Predicting Younger Sibling Substance Use: Social Learning Versus Social Bonding Explanations. *Journal of Family Psychology, 25*, 931-941.

Sharma, A. R. McGue, M. K. & Benson, P. L. (1996). The emotional and behavioral adjustment of United States adopted adolescents: Part II. Age at adoption. *Children and Youth Services Review, 18*, 101-114.

Spitzer, R. L., Williams, J. B. W. Kroenke, K. (1999). *Patient Health Questionairre,*

https://www.hiv.uw.edu/page/mental-health-screening/gad-7

Van Green, T. (2021). Americans Overwhelmingly Say Marijuana Should be Legal for Recreational or Medical Use. *Pew Research Center,* https://www.pewresearch.org/fact-tank/2021/04/16/americans-overwhelmingly-say-marijuana-should-be-legal-for-recreational-or-medical-use/

Votau, V. R. & Witkiewitz, K. (2021). Motives for substance use in daily life: A systematic review of studies using ecological momentary assessment. *Clinical Psychological Science, 9*(4), 535-562.

Westermeyer, J., Bennett, L., Thuras, O. & Yoon, G. (2007). Substance use disorder among adoptees: A clinical comparative study. *The American Journal of Drug and Alcohol Abuse, 33,* 455-466.

Wilson, S. L. (2004). A current review of adoption research: Exploring individual differences in adjustment. *Children and Youth Services Review, 26,* 687-696.

Yoon, G. Westermeyer, J., Warwick, M. & Kuskowski, M. A. (2012). Substance use disorders and adoption: Findings from a national sample. *Plos One, 7*(11), 1-6.

Zamostny, K. P., O'Brien, K. M., Baden, A. L. & Wiley, M. O. (2003). The practice of adoption: History, trends, and social context. *The Counseling Psychologist, 31*, 651-678.

Zill, N. (2017). *The Changing Face of Adoption in the United States.* https://ifstudies.org/blog/the-changing-face-of-adoption-in-the-united-states