

PARENT-ADOLESCENT ATTACHMENT PATTERNS IN INPATIENT ADOLESCENTS
WITH COMORBID BORDERLINE PERSONALITY DISORDER AND SUBSTANCE
USE

by
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ABSTRACT

Although Borderline Personality Disorder (BPD) is often comorbid with substance use (SU), both have been associated with unique attachment strategies. BPD is associated with preoccupation and disorganization while SU is associated with dismissal and disorganization. Taken together, adolescents with comorbid conditions may appear more disorganized and lack clear pattern of strategies. Previous research on attachment and comorbidity have not studied how these may present differently in adolescence, a period when most symptoms are first presented, and early interventions are most effective. Therefore, the present study examined attachment patterns of inpatient youths (N=392) with BPD and SU alone, as well as with comorbid BPD and SU. Using a multi-method approach, we utilized self- and parent-reported questionnaires and clinical interviews. Our findings suggest that comorbid adolescents were significantly less likely to report disorganization when compared to youth with BPD only. In addition, comorbid adolescents scored higher in dismissal with both parents and idealization with their fathers, though this effect did not reach significance. Overall, our findings provide information on how health care providers can assist adolescents with comorbid conditions based on their specific attachment needs.

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Introduction

Adolescent Substance Use

Adolescent substance use (SU) continues to be a salient public health issue that calls for intervention and treatment enhancement. According to Substance Use and Mental Health Services (2019), there are over 4.9 million new alcohol users, 3.1 million new marijuana users, and 1.9 million new prescription pain reliever misusers, starting as early as 12 years old. It is known that early SU initiation is detrimental to adolescent biopsychosocial development with research linking many health and safety concerns to the matter. To be exact, as a result of SU, alterations in the highly malleable adolescent brain has shown impairments in neurotransmitter connections and cognitive functions that are vital in adulthood (Gruber, Dahlgren, Sagar, Gönenç, & Lukas, 2014; Jacobsen, et al., 2005; Squeglia et al., 2014). In addition, over 20.5 million individuals, starting at the age of 16, are infamous for driving while under the influence of drugs, causing motor vehicle accidents that lead to serious injuries and fatalities (National Institute on Drug Abuse, 2019). Moreover, substance-using adolescents are more likely to engage in risky sexual behaviors, thus increasing the risk of transmitting and contracting sexually transmitted infections (Schulte & Hser, 2014; Salas-Wright, Vaughn, Ugalde, & Todic, 2015). Furthermore, research has shown that SU is a risk factor for suicidal behaviors, especially among those with comorbid disorders (Nock et al., 2013).

So why is SU initiation in youth so common when it leads to such impairment and worsened conditions such as Substance Use Disorder (Richmond-Rakerd et al., 2016; Trenez et al., 2012)? Adolescence is a period of change and development that can be

defined as a critical period in acquiring behaviors, expressions of heightened emotions, and novelty-seeking (Crews, He, & Hodge, 2007). When interpersonal and intrapersonal problems arise, adolescents who are predisposed to vulnerabilities may use substances as a maladaptive behavior to self-medicate from distress (Siegel, 2015). Given that adaptive coping strategies are fostered through positive parent-child relationships across development, this is a crucial base relevant for the development of SU. In fact, SU has been examined in many familial studies, suggesting that low parent-adolescent connectedness or poor relationship quality may influence the development of adolescent SU (see Fairbairn et al., 2018 for a meta-analytic review).

Adolescence and Attachment Theory

Introduced by John Bowlby (1969), attachment theory proposes that beginning in early childhood, an ideal secure base is developed when an attachment figure, often a parent, is consistently available and supportive: promoting autonomy and exploration while tending the child's emotional needs. This is further achieved when the parent guides the child through learning strategies that help them regulate their affect, so that eventually, the child employs these coping strategies when experiencing distress. Over time, when the child's internal working model (IWM), or internalized cognitive representations of the parent-child relationship, develops, the child attains the ability to mentalize relationships with self/other. When all these criteria are successfully achieved, a secure attachment is established, building a positive model of self and others, thus, allowing the child to regulate emotions with a balanced dependence on their parents. Attachment is described as a concept that applies from "cradle to grave," implying that it has a continued role across the lifespan (Bowlby, 1969, 1980). Attachment security

beyond childhood can be viewed not as a physical availability or presence, but as a mutual-respect and responsiveness to the individual's emotional needs (Zhai, 2015), which can serve as a protective factor against the development of psychopathology across the lifespan (Bowlby, 1980).

Conversely, when a parental figure is inconsistently available and does not provide any means of healthy emotion socialization, the IWM of the child is impaired, therefore developing insecure attachment representations. Insecure attachment can serve as a risk factor to various psychopathologies as it fosters unhealthy practices of emotion regulation (Allen, Hauser, & Borman-Spurrell, 1996; Bowlby, 1980; Rosenstein & Horowitz, 1996). According to Ainsworth et al. (1978), among others (Schindler & Sack, 2015; Target, Fonagy, & Shmueli-Goetz, 2003), insecure attachment can be further divided into distinct patterns with each offering unique strategies during times of distress:

- (1) Due to a negative view of the self, accompanied by a positive view of others, an individual with a preoccupied (ambivalent, enmeshed, or anxious) attachment questions the availability and support of their attachment figure. They overly rely on their attachment figures to validate their self-worth. As a result, these individuals maximize or hyperactivate their ways of expressing emotions such as anger and distress in fear of autonomy and separation. When these expectations from their attachment figures are not met, they resort to a preoccupied anger.
- (2) Next, individuals with a dismissive (avoidant or derogative) attachment view themselves positively while others negatively. With a great emphasis on independence and self-reliance, they regulate their emotions by minimizing or deactivating their feelings of distress and distancing themselves from interpersonal closeness. Furthermore, a dismissive attachment may have idealizing

characteristics, such that individuals distort their attachment representations positively; however, these representations are not supported or are not substantiated by their descriptions or narratives (Target, Fonagy, & Shmueli-Goetz, 2003). (3) Lastly, individuals with a disorganized (fearful-avoidant, anxious-avoidant, or unresolved) attachment has been linked to the most severe risk factor to psychopathology as it leads to negative representations of the self and others. Disorganized individuals have no clear attachment strategy and often vacillate between the aforementioned strategies. These individuals can be immensely fearful when it comes to intimacy, as they suffer the most with low self-esteem and dread rejection from others (Schindler & Bröning, 2015).

Parent attachment is a vital factor that may provide protection from future external influences as the adolescent ventures into adulthood. Allen and Land (1999) pointed out that adolescent autonomy is built and maintained when there is a supportive milieu of secure relationships in their environment. A secure attachment may promote exploration, yet at the same time, provide protection from associating with negative relationships and problematic behaviors during adolescence and beyond. This highlights the importance of studying the role of parental attachment in adolescence for further understanding SU and other deviant behavior.

Substance Use and Attachment

Adolescents with heightened emotions use unique personalized strategies to regulate their feelings of distress. SU and attachment have overlapping roles in affect regulation such that both provide distinct coping strategies in times of emotional vulnerability (Cooke, Kochendorfer, Stuart-Parrigon, Koehn, & Kerns, 2019; Siegel, 2015). As described above, secure adolescents can seek help from their attachment

figures and effectively balance their positive and negative affect. However, in the case of an insecure attachment, the availability of the attachment figure is questioned, therefore causing an interruption in the development of secure strategies (Bowlby, 1969). As a result, insecure adolescents may find alternative coping mechanisms, such as engaging in hazardous novelty-seeking behaviors and exploring the mood-manipulating effects of SU. In fact, Cornellà-Font and colleagues (2018) suggested that in order to compensate for the unavailable secure attachment strategy, SU becomes an emotion-regulatory tool used as a secondary strategy in attempt to self-medicate heightened psychological distress. From a neurobiological perspective, researchers (e.g., Burkett & Young, 2012; Insel, 2003; Young, Gobrogge, & Wang, 2011) have found similar processing pathways of attachment and addiction, implying that insecure individuals may use substances as “attachment substitutes” to obtain similar joyful feelings of security (Schindler & Bröning, 2015).

Several more studies have proposed comprehensive models on the indirect and direct effects of attachment on SU, with some studies showing that attachment can act as mediators of psychological and physical maltreatment (Hayre, Goulter, & Moretti, 2019), family structure (Crawford & Novak, 2008), and parenting style (Zeinali, Sharifi, Enayati, Asgari, & Pasha, 2011). Most suggest that security can help build resilience and protect adolescents from SU, while insecure attachment predisposes vulnerable adolescents to SU. (Fairbairn et al., 2018; McLaughlin, Campbell, & McColgan, 2016; Schindler & Bröning, 2015). In fact, when family structure and attachment were compared, attachment more strongly predicted the increase of alcohol and marijuana use in adolescents (Barfield-Cottledge, 2015; Crawford & Novak, 2008). On a similar note, McKay (2015) emphasized the importance of this concept by showing that low parental

attachment only became a significant predictor of moderate (“misusers”) and problematic (“alcoholic-like”) drinking behaviors, but not moderate (“normal drinking”) or abstinent drinkers. Furthermore, longitudinal studies revealed that SU decreased in adolescents who are more attached (more secure) to their family while SU increased in less attached (or less secure) adolescents when assessed contemporaneously and prospectively (Fallu et al., 2010; Henry, Oetting, & Slater 2009; Rosario et al., 2014; Zhai, Kirisci, Tarter, & Ridenour, 2014).

Indeed, these studies have taken account both ends of the spectrum. However, while it is common that studies use bipolar constructs (secure versus insecure; strong versus weak; high versus low) when describing the quality of attachment, there remains a possibility of missing the chance to identify specific boundaries and misinterpret relationship representations that sort what is healthy to what is not. For example, while high/strong levels of attachment can provide protective means, it does not always end with a positive quality bonding. To be exact, according to Gattarmorta and colleagues (2017), high levels of attachment could also mean over-involvement or “enmeshment” with a parental figure, as they unexpectedly found high levels of maternal attachment associated with heavy adolescent alcohol use. In addition, a strong attachment to a drug-using parent has also been shown to be linked with adolescent SU (Drapela & Mosher, 2007). To gain a deeper understanding on the role attachment patterns play in SU development, it can be beneficial to pivot the attention to specific types of insecure attachments as specific strategies may prompt the maladaptive strategy of using substances. Studies emphasize that adolescent SU is mostly associated with a dismissive attachment (Branstetter, Furman, & Cottrell, 2009; Hayre, Goulter, & Moretti, 2019) and

a disorganized attachment (Schindler et al., 2005). It is projected that dismissive adolescents deactivate their attachment system in defense of heightened emotions, which is complemented by the use of substances; while in the case of a disorganized attachment, SU replaces the lack of attachment strategies these adolescents suffer from (Cornellà-Font et al., 2018; Schindler & Bröning, 2015; Schindler, Thomasius, Sack, Gemeinhardt, & Küstner, 2007).

Taken together, it is important to gain a deeper understanding on attachment in relation to SU as it may provide insight on how health care providers can approach adolescents with problematic SU in therapy and treatment. A study done by Fowler, Groat, and Ulanday (2013) found that preoccupied attachment styles predicted better treatment retention in individuals with Substance Use Disorders, compared to those with dismissive attachment styles. More specifically when helping adolescents with insecure attachment, providers can consider attachment-based interventions to repair the quality of the parent-child relationship and mend the IWM of the adolescent (Downs, Seedall, Taylor, & Downs, 2015). Furthermore, by understanding the differential effects each attachment strategies can offer, providers can target specific attachment strategies and assist the adolescent in acquiring more adaptive coping strategies.

Borderline Personality Disorder and Attachment

Borderline Personality Disorder (BPD) is a pervasive pattern of unstable and intense interpersonal relationships, identity disturbances, poor affect-regulation, impulsivity, feelings of emptiness, disruptive fears of abandonment, suicidal and non-suicidal behaviors, and dissociative symptoms (American Psychiatric Association, 2013). In 2017, Chanen, Sharp, Hoffman, and The Global Alliance for Prevention and Early

Intervention for Borderline Personality Disorder declared BPD as a novel public health issue as a growing large body of research provide evidence of its adverse prognosis from adolescence to adulthood. It is important to recognize that BPD symptoms onset in adolescence and that when these individuals fail to receive adequate psychological assistance, they are predisposed to numerous severe impairments. Consistent with adult findings, longitudinal and prospective studies have found that youth with BPD features experienced difficulties in psychosocial functioning (i.e., keeping emotionally sustained relationships), engaged in impulsive behaviors with adverse consequences (i.e., risky sexual activities, reckless driving, drug dependence/addiction), had socioeconomic issues (i.e., low rates of academic completion, high rates of unemployment in adulthood, financial burdens), and engaged in suicidal and non-suicidal self-injury behaviors (Paris, 2019; Winograd, Cohen, & Chen, 2008; Wright, Zalewski, Hallquist, Hipwell, & Stepp, 2016).

In an effort to combat its poor prognosis, researchers and clinicians stress the fundamental need for early BPD diagnosis in youth to prevent exacerbation of the disorder in adulthood (Sharp & Fonagy, 2015). However, before contemporary evidence was able to legitimize BPD in adolescents, others questioned its validity in adolescence, in argument that identity is not yet fully developed and that BPD features are normal to the adolescent development (Meijer, Goedhart, & Treffers, 1998; Shapiro, 1990). Undoubtedly, while it is true that this developmental stage in life show similar characteristics of BPD symptoms (i.e., difficulties in self-regulation, impulsivity, just to name a few), and that these features typically reduce from youth to young adulthood (Bornovalova, Hicks, Iacono, & McGue, 2009), research emphasized overlaps in

adolescent-adult findings as mentioned above. Considering normative developmental trajectories, researchers highlight the need for early psychological assistance to divert from the pathological trajectory of having BPD features, especially for teens whose symptoms persist for more than a year (Bornovalova, Hicks, Iacono, & McGue, 2009; Chanen & Kaess, 2012; Miller, Muehlenkamp, & Jacobson, 2008; Sharp & Fonagy, 2015).

To validate BPD in youth and provide evidence of the need for early intervention, researchers facilitated many studies indicating protective/risk factors of BPD. In this regard, findings report that along with having a biologically sensitive temperament, a predisposing environmental factor, such as attachment difficulties, also play a central role in BPD development (Boucher et al., 2017; Chanen & Kaess, 2012). To be exact, insecure attachment disrupts the ability to effectively mentalize thoughts, emotions, and social interactions, creating a fragmented sense of self and experiencing difficulties in interpersonal relationships (Steele, Bate, Nikitiades, & Buhl-Nielsen, 2015). In fact, Sharp and colleagues (2016) suggested that insecure adolescents with BPD have tendency to hypermentalize. That is, youths with BPD are inclined toward an over-attribution bias, impairing their ability to properly understand and organize interpersonal interactions. Furthermore, Lind, Vanwoerden, Penner, and Sharp (2019) found that adolescents with BPD features had low cohesive narratives when interviewed about their selves and their relationships, suggesting that when directing their current self toward future behaviors, these individuals may fail to learn from their past experiences and instead engage in harmful impulsive acts. To be exact, a large body of evidence studying adolescent attachment link preoccupation and disorganization to BPD as these individuals

may find it extremely difficult to handle intense emotions, such as controlling for feelings of anger, while constantly alternating from an idealizing-devaluating approach (Carlson, Egeland, & Sroufe, 2009; Fossati, Feeney, Maffei, & Borroni, 2014; Steele, Bate, Nikitiades, & Buhl-Nielsen, 2015). Miljkovitch and colleagues (2018) emphasized BPD's approach-avoidance dilemma as they studied adolescents' disorganization towards their mothers and fathers, comparing a clinical group with a non-clinical group. Results revealed that disorganization were present with both parents; however, after controlling for maternal effects, paternal disorganization continued to show significance. In addition, they suggested that having a "secondary secure strategy," or being secure with one of the parents, is "enough" for the opportunity of a better treatment result. This aspect of their finding is supported by Verschueren and Marcoen (1999), indicating the positive effects of both combined (secured with both parents) and differential (secured with at least one parent) parental security. On a similar note, Kim, Sharp, and Carbone (2014), stressed the role of attachment security in building resilience as they found that security with fathers served as a protective factor by encouraging positive emotion regulations. Interestingly, in contrast with Verschueren and Marcoen (1999) who found stronger maternal effects, Kim et al. (2014) and Miljkovitch et al. (2018) found the opposite effect such that effects of paternal attachment were larger than maternal attachment. This inconsistency underlines the need to gain a deeper grasp of how paternal attachment plays a role in BPD development as it is a relatively new interest in literature with the majority of existing research have focused on the effects of maternal variables.

Comorbidity of Borderline Personality Disorder and Substance Use and Attachment

Ha, Balderas, Zanarini, and Sharp (2014) found similar rates of comorbidity among adolescents with BPD that has been found among adults, likely contributing to even worse outcomes for these youth. Results revealed that BPD inpatients met criteria for various comorbid conditions significantly more than inpatients without BPD. In addition, Bornovalova et al. (2018) emphasized the co-occurrences of BPD and SU and the clinical implications of the interplay of these two conditions, given that comorbidity presented an even more pathological trajectory. In fact, they found that increased BPD symptoms increased the likelihood of SU and likewise, problematic SU slowed down the normative decline rate of BPD symptoms in youth. As a result, this may encourage the persistence and pervasiveness of BPD symptoms that may play a part in the likelihood of a full-fledged diagnosis in adulthood. These were supported by longitudinal findings stating that an increase of alcohol consumption prospectively predicted increases in BPD symptoms, suggesting that early SU, such as alcohol use, may be another risk factor that increases vulnerability to BPD diagnosis in adulthood (Lazarus, Beardslee, Pedersen, & Stepp, 2017; Rohde, Lewinsohn, Kahler, Seeley, & Brown, 2001; Thatcher, Cornelius, & Clark, 2005). This co-occurrence of early problematic SU with BPD is not only linked to the impulsivity criterion of BPD (Scalzo, Hulbert, Betts, Cotton, & Chanen, 2018), but is also connected to the maladaptive coping strategy tendencies of individuals with BPD as a form of emotional avoidance and self-medication from intense affect dysregulations (Folk, Williams, & Esposito, 2020; Lazarus et al., 2017). As a result, along with the complexities already presented by BPD itself, its comorbidity with early SU presents an even more bleak prognosis as it elevates the risks and exacerbation of BPD and addiction

individually. Moreover, in the long run, adults with BPD and co-occurring SU have been shown to be placed at a faster track to relapse instead of remission (Walter et al., 2009). Given that a comorbid condition may exacerbate severe impairments, it is necessary to gain further knowledge and implement early treatments, such as attachment-based interventions that can help with adolescents' coping strategies, preventing individual and social impairment.

Interestingly, although people with BPD often have SU problems, attachment strategies associated with these two conditions are quite different; SU is often linked to dismissing attachment and BPD is linked to preoccupied attachment. The only attachment strategy that has been associated with both conditions is attachment disorganization. During therapy, disorganized teens may distrust and misinterpret the provider's attempt to connect with the teen and may alternate between a preoccupied-dismissing emotion-regulatory strategy, posing a challenge for treatment. Given that BPD is conceptualized as a disorder associated with attachment disturbances, there may be important implications in how attachment is represented in adolescent substance users when they simultaneously suffer from the two conditions. It may be, given the differences in attachment representations seen in these two conditions separately, that individuals with comorbid BPD and SU lack clear attachment strategies and appear more disorganized. However, studies in adult settings have found that patients with comorbid BPD and SU are classified more with a dismissive attachment (Barone, Fossati, & Guiducci, 2011; Schindler & Sack, 2015). Yet, to date, no one has considered how attachment may present uniquely in adolescent comorbid conditions when these conditions are presented

in their earliest forms and when early interventions may be meaningful and more effective in preventing complication and exacerbation in the future.

With all things considered, attachment-based interventions may be able to enhance understandings of the self and obtain social support from the youth's caregivers. Working toward a secure attachment may enhance the epistemic trust and mentalization processes between the self and others, for instance, parents and therapists, to lessen the burden associated with BPD and SU (Bo, Sharp, Fonagy, Kongerslev, 2017). In addition, while health providers can utilize attachment theory to inform their approach with these adolescents, they can also use this to strategize a plan with parents to improve or develop parenting skills that promote consistency, care, and warmth, and highlight skills on how to provide an autonomic-supportive behavior towards their children (Boucher et al., 2017). Ultimately, with these in mind, individuals seeking help may be able to appropriately acquire and integrate these secure attachment strategies through adulthood.

Current Study

To address current gaps in literature, the present manuscript aimed to identify specific attachment patterns in adolescents' relationships with both mothers and fathers among patients diagnosed with comorbid BPD and SU. Studies have heavily focused on maternal relationships with only a few (Kim, Sharp, & Carbone, 2014; Miljkovitch et al., 2018) studying unique paternal attachment roles in adolescent BPD studies, posing a need to examine differential effects of each parent in comorbid samples. By doing so, it may provide insight on how attachment, associated with a specific parent, may uniquely affect their adolescent's coping strategies. In addition, this can be utilized in therapeutic settings where clinicians can educate parents about areas that can be repaired to promote

coherence in the parent-adolescent relationship. Moreover, this may highlight the differential and combined working-model effects of each parent as it relates to comorbid BPD and SU.

Patients who have failed previous outpatient treatments need distinct help since the severity of their psychiatric conditions is much higher than those who are not required to be admitted in a unit. Therefore, we studied attachment patterns in adolescents hospitalized in an inpatient setting to provide information on encouraging provider-patient relationship and how this can translate to treatment. Further, we utilized subscales of the clinician-rated Child Attachment Interview (Target, Fonagy, & Shmueli-Goetz, 2003; see *measures* for details) to gain insight on specific attachment strategies and how these may relate to the adolescent's sense of self and others through narrative coherence. In addition, to determine differential relations across self-rated, parent-rated, and clinician-rated symptoms, we took a multi-method approach in assessing BPD, utilizing both self-report questionnaires and clinician-administered interviews.

First, the current study replicated previous research examining attachment patterns in relation to SU and BPD. In line with previous research, it was expected that substance using adolescents would appear to be dismissive with idealizing characteristics as well as characterized by disorganization, while adolescents with BPD will appear preoccupied and disorganized. Further, it was expected that adolescents with comorbid BPD and SU would score low in attachment coherence, which has been used as a dimensional proxy for attachment security (Venta et al., 2019). Next, the present study evaluated the extent to which attachment differentially relates to BPD in the presence or absence of SU by comparing four diagnostic groups: teens with only a single disorder presentation (SU

only, $n = 130$; BPD only, $n = 45$), teens with neither diagnosis (no SU or BPD; psychiatric control group; $n = 123$), and teens with both diagnosis (comorbid BPD and SU; $n = 83$). Given that the comorbidity of BPD (preoccupied and disorganized) and SU (dismissive and disorganized) may present with an even more conflicting presentation of attachment strategies, we expected comorbid adolescents to be disorganized compared to those with only a single disorder presentation and to those who have neither diagnosis (psychiatric control group). In addition, in line with previous adult studies (Barone, Fossati, & Guiducci, 2011; Schindler & Sack, 2015), we expected dismissing attachment with idealizing characteristics to dominate and that adolescents with comorbid conditions would be more likely to choose to avoid than approach their emotional needs. In summary, we hypothesize the following:

1. Adolescents with SU will score significantly higher on scores of dismissing and idealized attachments compared to adolescents with BPD only. Additionally, they will score significantly lower on attachment coherence compared to adolescents in the psychiatric control group. We also expected substance using adolescents to be more likely to present with a disorganized attachment style than adolescents in the psychiatric control group.
2. Adolescents with BPD will score significantly higher on scores of preoccupation and lower on attachment coherence compared to adolescents with SU only and the psychiatric control group. We also expected this group to have higher rates of disorganized attachment compared to the group with SU only.
3. Adolescents with comorbid BPD and SU will score significantly higher on scores of dismissive and idealized attachment and significantly lower on coherence

compared to all the other groups. Additionally, we expected this group to have the highest rates of disorganization relative to those with a singular diagnosis (BPD only and SU only) and the psychiatric control group.

Methods

Participants

Participants were adolescents from a larger study group (Sharp et al., 2009) who were voluntarily admitted to an inpatient hospital for severe psychiatric problems. A total of 652 consecutively admitted youths and their parents gave consent to take part in the study. Due to several exclusionary criteria: English not the language primarily spoken, an $IQ < 70$, active psychosis, a diagnosis of Autism Spectrum Disorder; the family declining participation or revoking consent; or discharged from the hospital before assessment completion, 152 adolescents were excluded from the study. Of those remaining, 108 adolescents were also excluded due to incompleteness of the clinician-administered SU questionnaire (CRAFFT; see *measures* for details), which was administered during the early parts of the study and then discontinued. To ensure that our sample was not biased due to the exclusion of this group, we conducted group analysis to evaluate whether those who were not included in the analysis differed from those who were included based on age, gender, or main study variables (continuous variables from the CRAFFT, BPFS-C, BPFS-P, CI-BPD, and all CAI variables; see *measures* for details). Results from independent samples t-tests and chi-square tests found that there were no significant differences. Thus, we can conclude that the data was missing at random and the sample of adolescents included for the present analysis are representative of the full patient

sample collected from the larger study group (Sharp et al., 2009). Therefore, the final sample size includes 392 adolescents.

Participant ages ranged from 12 to 17 years old ($M = 15.34$, $SD = 1.45$) with 245 females (62.5%) and 147 males (37.5%). The ethno-racial breakdown of the sample was as follows: 6.6% of the sample were of Hispanic origin, 88.2% were White/Caucasian, 2.3% were Black/African American, 3.4% were Asian, and 6% were multiracial/other. Based on the Diagnostic Interview Schedule for Children (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000), DSM-IV diagnoses of participants upon admission were as follows: 50.5% had a mood disorder, 50.3% had a depressive disorder, 48.2% had an anxiety disorder, 5.1% had a bipolar disorder, 6.9% had an eating disorder, 14.5% had a substance use disorder, and 31.4% had an externalizing disorder (i.e., Attention Deficit/Hyperactivity Disorder, Oppositional Defiant Disorder, Conduct Disorder).

Measures

Borderline Personality Disorder. The *Borderline Personality Features Scale for Children* (BPFS-C; Crick, Murray-Close, & Woods, 2005) was created from the BPD features subscale, BOR, of the adult Personality Assessment Inventory (PAI; Morey, 1991). The BPFS-C is a 24-item self-report questionnaire developed for children ages 9 and up. It consists of 4 main domains similar to the PAI: affective instability (“My feelings are very strong. For instance, when I get mad, I get really really mad. When I get happy, I get really really happy.”), identity problems (“I feel there is something important missing about me, but I don’t know what it is”), negative relationships (“I’ve picked friends who have treated me badly”), and self-harm (“I get into trouble because I do things without thinking”). Participants rated each item using a Likert scale from 1 “not at

all true” to 5 “always true.” Items were summed for a total score with higher scores representing greater features of borderline personality disorder. For the purpose of the study, this measure was administered to both youth and parents.

The items in the parent version of the BPFS (BPFS-P; Sharp, Mosko, Chang, & Ha, 2011) were modified to be more appropriate for the parent perspective; however, the structure and scoring were the same as the youth report. For example, the statement “I get into trouble because I do things without thinking” from the youth report was modified to “My child gets into trouble because my child does things without thinking.” Prior research by Chang, Sharp, and Ha (2011) established validity for both the parent and youth report in the current dataset. They found high correlations between parent-adolescent reports on each of the BPFS subscales, establishing interrater consistency between the two reports. In the present study, both the youth and parent report had a Cronbach’s α of .90, suggesting high internal consistency.

In addition, the *Childhood Interview for DSM-IV Borderline Personality Disorder* (CI-BPD; Zanarini, 2003) was administered to adolescent participants to assess BPD diagnosis. It is a semi-structured interview adapted from the adult version of the BPD module of the DSM-IV Diagnostic Interview for Personality Disorders. Sharp and colleagues (2012) have found that the CI-BPD provides consistent reliability and validity when used in adolescent samples. When administered, participants were asked several questions that fall under 9 DSM-IV and DSM-5 BPD criteria: inappropriate or intense anger, affective instability due to a marked reactivity of mood, chronic feelings of emptiness, identity disturbance, transient stress or severe dissociative symptoms, frantic efforts to avoid real or imagined abandonment, recurrent suicidal behaviors or self-

mutilating behaviors, impulsivity that are potentially self-damaging, and patterns of unstable and intense interpersonal relationships. The interviewer then rated responses for each diagnostic criterion using 0 for “absent symptoms”, 1 for “probably present symptoms”, and 2 for “definitely present symptoms.” A total score of BPD severity was created by summing responses for the 9 CI-BPD criteria. Adolescents were diagnosed with BPD when 5 or more diagnostic criteria were met with ratings of 2. The inter-rater reliability was calculated for 69 randomly selected subjects (18% of the current sample). Kappa statistic for the final diagnostic variable was .637 and the intraclass correlation coefficient for total number of symptoms (based on a one-way random effect model) was .874, which was above the level of acceptability.

Substance Use. The *Car, Relax, Alone, Forget, Family/Friends, Trouble* (CRAFFT; Knight et al., 1999) is an effective brief 6-item measure designed specifically for recognizing adolescent SU and high-risk behaviors associated with SU. It has continuously demonstrated adequate evidence for validity by researchers who have used CRAFFT for measuring adolescent SU (Agle, Gassman, Jun, Nowicke, & Samuel 2015; Dhalla, Zumbo, & Poole, 2011; Gamarel, Nelson, Brown, Fernandez, & Nichols, 2017; Knight et al., 2002), even with the new criteria changes in Substance Use Disorder in the DSM-5 (Mitchell et al., 2014). In clinical settings, adolescents who report use of any substances in the past 12 months are further assessed. In the current study, questions were asked and organized by the acronym CRAFFT with C = if adolescent have ridden a Car driven by someone (including self) who was under the influence of alcohol or drugs; R = if adolescent use alcohol or drugs to Relax; A = if adolescent use alcohol or drugs when Alone; F = if adolescent Forget things while using alcohol or drugs; F = Family or

Friends tell adolescent to cut down on alcohol or drugs; T = if adolescent has gotten in
Trouble while using alcohol or drugs. Participants answered with either yes (1) or no (0).
A total score was created by adding up the responses to the items. For the purpose of the
study, a dichotomous variable indicating the presence of SU was created such that if
participants endorsed one or more items, they were considered to have problematic use.

Attachment Representation. The *Child Attachment Interview* (CAI; Target, Fonagy, & Shmueli-Goetz, 2003) was originally developed to assess children during middle childhood (6-12 years old); however, it has since been used in adolescent samples. In fact, findings by Venta, Shmueli-Goetz, and Sharp (2014) demonstrated validity for the use of CAI scores when used in an inpatient adolescent sample. It is a semi-structured interview consisting of 19 questions assessing adolescent attachment with their primary caregivers, which in the current study, was their father and mother. This was done by asking the adolescent to provide examples of experiences with their parents and subsequently asking to reflect on the emotions associated with those experiences. For instance, the interviewer asks the adolescent to provide three adjectives describing how it is like to be with their father and mother. In addition, adolescents were asked to describe about a time when they were sick, injured, experienced a loss, needed help, and spent time away from their parents. With consent, interviews were videotaped for assessment purposes and then the adolescent's verbal and non-verbal behaviors were transcribed in verbatim.

Then, narratives and behaviors were rated into a 1 to 9 scale to 8 dimensional scales: emotional openness, balance of positive and negative reflective to attachment figures, use of examples, preoccupied anger (separately for mother and father),

idealization (separately for mother and father), dismissal (separately for mother and father), resolution of conflicts, and overall coherence. Collectively, results from the CAI were then categorized into two dichotomous variables (one for mother, one for father): secure or insecure; then, if adolescents were classified as insecure, this was further classified as either dismissing or preoccupied. Finally, there is a single dichotomous variable assessing whether the adolescent presents with a disorganized attachment style. For the purpose of the current analysis, dimensional scores of coherence, preoccupied anger, idealization, and dismissal were used with each of the parents. Lastly, an overall disorganized score was used given that the majority (15.3%) of adolescents scored similarly in disorganization for both their mother and father. The inter-rater reliability was calculated for 83 randomly selected subjects (21% of the current sample). One-way random effects models were calculated for continuous variables. Results suggest adequate interrater reliability for the scales of preoccupation with mother and father (.708 for both scales), and idealization with father (.742). The inter-rater reliability for the following scales was poor: idealization with mother (.540), dismissal with mother (.566) and father (.432), and overall attachment coherence (.438). Kappa statistic revealed sub-threshold reliability for the variable of disorganization (.601).

Procedures

All data used in the current study were collected by the Developmental Psychopathology Lab at the University of Houston in collaboration with the Menninger Clinic. The present manuscript was a second analysis from a larger study group by Sharp and colleagues (2009). Data collection was approved by the appropriate institutional review board. Families were approached by research staff upon admission to the hospital,

given information about the study, and invited to participate. First, parents were asked for their approval and once provided, youth were given the opportunity to assent. The measures used included questionnaires and clinical interviews administered by research staff. Researchers were trained licensed clinicians, doctoral-level psychology students, and/or trained clinical research assistants.

Data Analytic Strategy

All data analyses were conducted using IBM SPSS Statistics Version 26. Prior to conducting main study analysis, all study variables were examined using Pearson's bivariate correlation to determine associations between all variables. In addition, mean, SD, skew, and kurtosis were calculated to determine the distribution of variables. Next, to compare mean levels of BPD and attachment strategies across groups of substance users and non-substance users, independent samples t-test were calculated for continuous variables and chi-square tests for categorical variables. Additionally, given that gender and age have been found to be associated with both BPD (Bornoalova, Hicks, Iacono, & McGue, 2009; Paris, 2004) and substance use (Danielsson, Romelsjö, & Tengström, 2011; Gamarel et al., 2017), we included these in preliminary analysis to determine whether they should be included as a covariate in further analyses.

Next, the current study created a combined variable of the dichotomous CRAFFT variable (assessing SU) and CI-BPD variable (representing a full BPD diagnosis) to divide the participants into four diagnostic groups: psychiatric controls (with no BPD or SU; "Control"), substance users (no BPD; "SU only"), a BPD group (with no SU; "BPD only"), and a group with a positive BPD diagnosis as well as reported SU ("BPD + SU"). To control for the revealed effects of the age and gender, a one-way analysis of

covariance (ANCOVA) were used to assess whether attachment strategies were differentially presented across these four groups. In four separate models, each attachment variable was entered as the dependent variable with the four-level combined CRAFFT and CI-BPD variable entered as the fixed factor variable and gender and age entered as covariates. Any significant group differences were further probed with post hoc comparisons using the Bonferroni adjustment that were based on a total of six pairwise comparisons, resulting to a critical p value of .008 (.05/6; Field, 2009, 2016). Additionally, a chi-square test was used to determine the distribution of disorganized attachment between the four groups, although this analysis did not control for age and gender.

Results

Descriptive Statistics

Bivariate correlations between study variables are displayed in Table 1 and tests of mean differences using independent samples t-test and chi-square test are displayed in Table 2. Based on the CRAFFT variable, 219 (55.9%) of the sample reported SU. Prevalence of BPD was 127 (32.4%) based on the CI-BPD interview. As shown in Table 1, it was revealed that substance users ($M = 8.81$, $SD = 5.03$) were rated as higher on BPD severity compared to non-substance users ($M = 7.41$, $SD = 4.88$), although this was only found using CI-BPD and this effect was very small ($d = .03$; Table 2). In other words, for the most part, BPD was not associated with increased SU in this sample. In addition, based on values of skew and kurtosis, distributions of all variables were approximately symmetric (skew and kurtosis $< |1.50|$; West, Finch, & Curran, 1995).

As displayed in Table 1, results revealed that age and gender had positive associations with SU. Based on an independent samples t-test, adolescent substance users were older ($M = 15.85$, $SD = 1.17$) than non-users ($M = 14.71$, $SD = 1.51$). Additionally, chi-square tests showed that of those who are substance users, 51% were female, compared to 49% of females in the non-substance using group. Furthermore, BPD had a very small, but significant negative association with age, though this only occurred for BPFS-C. This suggests that younger adolescents were more likely to have higher self-reported BPD symptoms. In terms of severity, females had higher BPD scores than males, as found in previous research. Along with high scores of attachment coherence, older adolescents also had lower scores of idealizing their mothers and disorganized attachment. Males tended to have higher scores of a dismissing attachment with their mothers but lower scores of a preoccupied attachment with a mother figure. Thus, given that gender and age showed significant associations with BPD, substance use, and attachment, these were included in further analyses as covariates.

Relationships of Attachment and Substance Use

In regard to attachment with mothers (Table 1), contrary to expectations, there were no significant associations between SU and dismissing attachment. Meanwhile, an idealizing attachment with mothers had a significant negative association with SU, although the size of this correlation was small ($r = -.12$), suggesting that substance users were less likely to be rated as idealizing with their mothers. In line with correlations, when comparing substance-users to non-substance-users, scores of idealizing mothers were significantly higher for those who did not report SU ($d = .23$).

Unexpectedly, when looking at attachment scores in relation to fathers, none of the subscales of attachment with a father figure were significantly correlated with SU or showed mean differences between substance and non-substance users. However, the combined disorganized attachment for both parents had a significant negative association with adolescent SU, such that adolescent users were less likely to be disorganized than non-users. Attachment coherence for both parents was not related to SU.

Relationships of Attachment and Borderline Personality Disorder

Correlations between attachment and BPD variables in the full sample are shown in Table 1. As expected, all BPD variables, with the exception of BPFS-P, showed significant correlations with attachment coherence and preoccupation in the hypothesized directions. This suggests less secure attachment and more preoccupation with both parents associated with BPD. In addition, the BPFS-C and CIBPD showed a positive association with disorganization, suggesting that BPD is associated with disorganization with both parents, though significance were not reached in the BPFS-P variable. On the other hand, a dismissing or idealizing attachment with both parents were not correlated with either of the BPD variables.

Group Comparisons of Attachment Across Diagnostic Groups

The results of group comparisons of attachment across the four diagnostic groups are displayed in Table 3. There were significant differences across groups on preoccupied attachment with both parents and attachment coherence with small effect sizes ($\eta_p^2 = .026 - .048$). Although there were differences in dismissive attachment (with both parents) and idealization with fathers between some groups: the comorbid BPD + SU group scored higher in dismissive attachment for both parents and idealization with their fathers

relative to the other three groups, this omnibus test did not reach statistical significance, contrary to expectations. After controlling for multiple comparisons and covariates, results from post-hoc group comparisons for ratings of preoccupation and attachment coherence are described in more detail below. Additionally, results from chi-square tests for ratings of disorganization are also described below, though this analysis could not control for the effects of covariates.

Preoccupied Attachment. The BPD + SU group tend to be more preoccupied with their mothers when compared with the control group. The difference in preoccupied attachment with mothers between BPD+SU and control group was only marginally significant when adjusted for multiple comparisons ($p = .076$). On the other hand, the group diagnosed with BPD only was rated as higher on preoccupation with their fathers compared to the group with SU only and the control group. When comparing between the two groups with BPD (BPD only and comorbid BPD + SU group), preoccupied attachment scores with both parents were not significantly different. This suggest that adolescents with BPD tend to be more preoccupied with their father figures compared those without BPD, with no further differences based on the presence/absence of SU. This same pattern appeared as a trend when considering preoccupation with mothers.

Attachment Coherence. The control group and the SU only group scored significantly higher on attachment coherence than the comorbid BPD + SU group. This suggests that in the presence of both BPD and SU, adolescents are lower in attachment security, when compared to other groups. However, the difference between the two BPD groups (BPD only and comorbid BPD+SU) was again not statistically significant,

suggesting again that changes in attachment coherence was largely driven by the presence of BPD rather than comorbid SU.

Disorganization. Using a chi-square test, group comparisons with the dichotomous disorganized attachment across all four groups were analyzed. Although we could not control for the effects of age and gender in this case, results revealed that the BPD only group (35.7%) was significantly more disorganized when compared with the control group (16.5%), SU only group (11.2%), and the BPD + SU group (16.9%). Interestingly, these results suggest that in the case of disorganization, SU served a protective function for adolescents with BPD such that while individuals with BPD were more likely to be disorganized, if they also demonstrated problematic substance use, they were less likely to be disorganized.

Discussion

The current study identified attachment patterns of adolescent inpatients with comorbid BPD and SU. Previous studies have not considered how these may be uniquely represented in adolescence, when early interventions may be most effective in preventing exacerbation of first onset symptoms and having a full-fledged diagnosis in adulthood. In addition, along with maternal attachment, we also assessed the effects of paternal attachment, a concept that has received little attention in the literature. First, we replicated previous studies of attachment in relation to SU and BPD. Then, we evaluated the extent to which attachment differentially relates to BPD in the presence or absence of SU. One major finding suggests that in the case of comorbidity, the presence of SU served as a protective factor against disorganization relative to adolescents diagnosed

with BPD only. Findings for each aim and hypothesis are further discussed in detail, as well as the implications, limitations, and suggestions for the direction of future studies.

First, we expected substance using adolescents to be characterized by dismissive attachment with idealizing characteristics and disorganization. However, our findings regarding attachment representations of substance using youth unexpectedly contradicted the work of others. The only significant finding in this regard was that substance using teens were less likely to be rated as idealizing with their mothers and were less likely to be disorganized than non-substance using psychiatric controls. This may have been due to how SU was measured in our sample. Previous studies assessed SU based on frequency of use (number of times they use substances), quantity of use (how much of each substance they consume per occasion), and the consequences of misusing substances (i.e., getting in trouble or impairments in functioning; Branstetter, Furman, & Cottrell 2009; Hayre, Goulter, & Moretti, 2019; Schindler et al., 2007). While the CRAFFT is a reliable tool in assessing adolescent SU (Agley et al., 2015; Dhalla, Zumbo, & Poole, 2011; Gamarel et al., 2017; Knight et al., 2002; Mitchell et al., 2014), it emphasizes only the consequences related to SU and not so much about the frequency and quantity, which might have resulted in insufficiently capturing the severity and quality of SU of the present sample. Along with the consequences associated with SU, evaluating the frequency and quantity of use are important constructs to accurately capture the severity of SU and the likelihood of its exacerbation (Fairbairn et al., 2018).

Another likely reason is that our overall rates of the CRAFFT variable were low with the mean number of items endorsed being .56 ($SD=.50$). Adolescents in other clinical samples typically endorse ≥ 2 items with a $M=2.96$ ($SD=1.8$; Cook, Chung, Kelly, &

Clark, 2005). On the other hand, adolescents in one community sample endorsed 0 to 1 item with a $M=1.05$ ($SD=1.6$; Rial et al., 2019). Thus, our sample seems to be an outlier in terms of SU relative to other samples of adolescents. Additionally, we dichotomized the total scores of CRAFFT based on the presence/absence of any SU in the past 12 months, which might have also played a role in insufficiently capturing the severity of SU in this sample. This is important to highlight as attachment has been shown to relate to the severity of SU (Schindler et al., 2005, 2007). For example, as mentioned before, McKay (2015) found attachment to more strongly predict problematic-severe drinking but not moderately “normal” drinking (culturally accepted drinking behaviors that meet societal norms).

Additionally, it is also likely that the attachment measure used in this study played a role as well. To be exact, Branstetter and colleagues (2009) found significant associations of adolescent SU with attachment styles, or directly measured attachment patterns measured by self-report questionnaires, which is different from state of mind, or indirectly measured attachment patterns typically captured by interviews. A meta-analytic review by Fairbairn et al. (2018) pointed out that, indeed, most studies have used self-report measures rather than interviews when measuring attachment patterns; however, when analyzed together, attachment and SU demonstrated significant associations with each other regardless the type of attachment measure. Even so, this should be considered in future research to capture both direct and indirect attachment representations in relation to adolescent SU.

On the other hand, our findings apropos to attachment representations of BPD were aligned with our expectations, such that BPD is related to preoccupation,

disorganization, and low coherence across parents. However, it is important to note that BPFSP only showed significance with low attachment coherence and preoccupation with fathers, not with mothers. It is likely that this result, which was demonstrated by all measures of BPD, emphasizes the importance of paternal attachment and its role in BPD youth, similar to what was demonstrated by Kim et al. (2014) and Miljkovitch et al. (2018). Even so, it is important to consider that reports across different informants (self/parent/clinician) may not always directly align with one another (Wall, Ahmend, & Sharp, 2018). Nevertheless, attachment patterns found in the present study were similar across measures of BPD and followed hypothesized directions. Consistent with previous studies, adolescents with BPD are low in attachment coherence and possess a negative view of themselves and others and experience difficulties in maintaining interpersonal relationships and regulating emotions appropriately (Sharp & Fonagy, 2015), all in which are mechanisms of the pathological trajectory of an insecure attachment (Bowlby 1969). Our findings support the associations of BPD with preoccupation and disorganized, such that adolescents with BPD possess similar characteristics with aforementioned attachment patterns. Specifically, teens with BPD who are disorganized with idealizing-devaluating characteristics are likely to choose to approach and maximize their emotion expressions rather than avoid their feelings in response to distress or perceived threat (Carlson, Egeland, & Sroufe, 2009; Fossati, Feeney, Maffei, & Borroni, 2014; Miljkovitch et al., 2018; Steele, Bate, Nikitiades, & Buhl-Nielsen, 2015). Furthermore, since teens with BPD in the current sample were rated as higher in preoccupation with both parents, it should be highlighted that this combined effect may place these vulnerable adolescents at greater risk of worsened impairments, as IWMs with both

parents are impaired. In other words, adolescents with BPD who are already seeking help, perceive that they are failing to obtain the support they need from either or both parents due their insufficient availability. As a result, these adolescents may resort to anger toward their parents, reinforcing these maladaptive IWMs and ineffective emotion-regulatory strategies.

Lastly, we expected comorbid adolescents to be characterized by dismissive attachment with idealizing characteristics considering previous adult findings (Barone, Fossati, & Guiducci, 2011; Schindler & Sack, 2015). We also expected comorbid adolescents to be more disorganized in their attachment representation due to conflicting strategies represented by the co-occurrence of BPD and SU. Our results from comparisons of attachment representations between adolescents with comorbid BPD and SU and the other three diagnostic groups carry important implications about the interplay of BPD and SU in relation to attachment. First, as expected, comorbid adolescents were rated the lowest in attachment coherence in comparison to groups without BPD at all. In other words, as mentioned before, changes in attachment coherence are largely driven by the presence of BPD, highlighting the disruptive effects of insecure relationships and its centrality to BPD. In addition, though only marginally significant, adolescents with comorbid conditions were more likely to appear preoccupied with their mothers than the control group, this may be explained by the presence of BPD and its strong association with preoccupation, contrary to expectations of higher rates of dismissive attachment in the comorbid group. This is partially consistent with Schindler and Sack's (2015) between-groups analyses, which demonstrated that adults with comorbid BPD and SU were more likely to be preoccupied. Furthermore, adolescents with BPD appeared more

preoccupied with fathers than groups without BPD at all, again, emphasizing the unique paternal effects in BPD.

Unexpectedly, when comparing disorganized attachment across groups, individuals with BPD only appeared to have the highest rates (35.7%), compared to adolescents with comorbid BPD and SU (16.9%) and those without BPD at all (<16.5%). Thus, interestingly, it seems that the presence of SU in teens with BPD reflected some protective factor against disorganized attachment. It is plausible that using substances represents a maladaptive secondary strategy, acting as an “attachment substitute”, to compensate for perceived unavailability of attachment figures (Cornellà-Font et al., 2018; Schindler & Bröning, 2015). This finding is supported by other studies suggesting that adolescents with BPD may use substances as a self-medicating tool in times of distress in an attempt to regulate their emotions (Folk, Williams, & Esposito, 2020; Lazarus et al., 2017). The use of substances might be a way to cope with negative affect, rather than seek support from attachment figures. This is consistent with recent findings by Folk, Williams, and Esposito (2020), indicating that adolescents with BPD have an inaccurate perceived control over their feelings as they consume substances in an attempt to self-medicate from negative affect. This damaging perceived coping skill has the potential to exacerbate both BPD symptoms and SU severity, increasing the risk of a full-fledged BPD diagnosis and becoming addicted. It is likely that comorbid adolescents possess these distorted perceptions of coping and replace their lack of attachment strategies with SU, which may explain the reason of less disorganization among youth with comorbid BPD and SU. Overall, this presents an imperative need for interventions that teaches

adolescents healthy ways of emotion regulation while repairing disturbed attachment relationships.

Implications

The present findings have important clinical implications. Knowing the attachment patterns of adolescents with complex conditions, such as comorbid BPD and SU, provides an opportunity to consider attachment-based interventions that focus on repairing disturbed attachments (Downs, Seedall, Taylor, & Downs, 2015; Fowler, Groat, & Ulanday, 2013). An understanding of specific forms of insecure attachment with individuals with comorbid conditions can inform mental health care providers how to approach comorbid adolescents in therapy. With this in mind, providers can utilize such information to cater to specific adolescent attachment needs as they work together in learning secure strategies. For example, providers can help preoccupied individuals come up with strategies on how to regulate overwhelming emotions such as a prolonged anger. Additionally, providers can guide adolescents with dismissive attachment how to face their emotions cohesively instead of turning away and shutting down defensively. Furthermore, though it may be challenging, providers can help disorganized individuals by utilizing both aforementioned guidelines, teaching how to properly approach and face their emotions. Being mindful of the youth's specific needs can enhance the provider-patient relationship that can make them feel heard and understood, ultimately strengthening the epistemic trust of the adolescent and fostering proper mentalization skills (Bo, Fonagy, Sharp, & Kongerslev, 2017). Furthermore, providers can also coach parents how to mend troubled parent-adolescent relationship so that the environment at

home can reinforce learned secure strategies and reduce the chance of relapse following treatment.

In addition, the present findings also have implications for research. To date, the current manuscript was the first to examine attachment representation in inpatient adolescents with comorbid BPD and SU. To educate clinicians and researchers on the importance of preventing the poor prognosis of BPD and SU (presenting with a singular diagnosis or co-occurring), we studied how these may present in their earliest form in adolescence, as it is also a time period where interventions may be most effective. Lastly, we were able to add to the growing body of literature of paternal attachment effects in relation to psychopathology such as comorbid BPD and SU.

Limitations and Future Directions

Despite the study's implications, limitations should be recognized when interpreting the current findings. First and foremost, because the present study was the first to examine how attachment is uniquely represented amongst youth with comorbid BPD and SU, it is imperative that these findings are replicated to assure their reliability. Even though we assessed attachment patterns across parents, the present study did not differentiate between disorganization and coherence across parents. Future studies should address this matter as it provides specificity on the unique role each parent may have in adolescent pathology. In addition, it is important to note that attachment does not only apply to parent-adolescent relationship but also to siblings, peers, and romantic partners. Future studies should examine these variables as well because adolescence is a transitional period when parental attachment and declaration of autonomy may need to be

negotiated as other social influences outside of family context may come to play in the development of BPD and SU (Danielsson, Romelsjö, & Tengström, 2011).

Furthermore, because our sample is particularly high-risk and consists of mostly White/Caucasian decent (88.2%), future studies should also examine ethno-racially diverse community samples to provide stronger generalizability of the findings, as well as implications for early intervention that can prevent hospitalization. To gain a deeper understanding of SU in relation to attachment, future research needs to consider different types of substances that adolescents may misuse as it may relate to different subtypes of insecure attachment. For instance, research suggests that stimulants may be linked to preoccupied attachment; while sedatives may be linked to dismissive attachment (Schindler & Broning, 2015). It should also be considered that the growing popularity of electronic cigarettes/vaping amongst youth may relay important implications for attachment and BPD. Additionally, as discussed, we may have insufficiently captured the severity of SU in this sample due to a focus of consequences of SU and due to dichotomization of responses based on the presence/absence SU. Future studies should utilize a multi-method approach when assessing the frequency and quantity of substance use to better capture severity. Additionally, research using biological specimens such as saliva, urine, or carbon monoxide levels may provide even greater insight into current use of substances.

In addition, it is important to consider how attachment relates to other conditions that co-occur with BPD, such as other internalizing and externalizing conditions (Ha et al., 2014). Along with attachment, mentalization capabilities and epistemic trust of comorbid inpatients should be measured to better assess retention in therapy and strategize how to

enhance provider-patient relationships. Next, as mentioned earlier, future studies should assess attachment using both self-report and interviews to analyze direct and indirect effects of state of minds in relation to comorbidity. Furthermore, the inter-rater reliability was not adequate for ratings of BPD and attachment. Further work must be done to train coders such that ratings are reliable and thus provide more accurate estimates for analysis. Finally, due to the cross-sectional nature of the present study, we cannot conclude causality. Therefore, findings should be replicated in longitudinal designs and assess the efficiency of an attachment-based approach when catering to the patient's needs from start to end of treatment or across development.

Conclusion

Overall, our findings suggest that compared to adolescents with BPD only, the presence of SU represented a protective factor for comorbid adolescents from disorganization, possibly due to substances acting as a substitute for attachment, giving teens with BPD the illusion of being in control of their feelings. This calls for a fundamental need for early interventions that mend adolescents' IWMs, teaching guidelines of healthy coping skills and providing constant support while promoting autonomy. By knowing specific attachment strategies presented in the comorbidity of BPD and SU, providers can cater to specific youth attachment needs. The present finding should be considered and extended in future research in acknowledgement of the aforementioned limitations.

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Table 1.
Pearson Correlation Results of The Full Study Sample

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. CRAFFT	--													
2. BPFS-C	.05	--												
3. BPFS-P	.04	.30**	--											
4. CI-BPD	.14**	.63**	.32**	--										
5. Attachment Coherence	.01	-.15**	-.18**	-.19**	--									
6. Preoccupied-Mother	.06	.11*	.10	.20**	-.20**	--								
7. Preoccupied-Father	.00	.19**	.19**	.23**	-.26**	.41**	--							
8. Idealization-Mother	-.12*	.00	.00	-.00	-.22**	-.30**	.08	--						
9. Idealization-Father	.02	-.04	.00	-.02	-.12*	.12*	-.31**	.32**	--					
10. Dismissing-Mother	.09	-.02	.08	.00	-.48**	-.06	-.05	-.16**	-.06	--				
11. Dismissing-Father	.09	.05	.08	-.00	-.56**	-.06	-.01	.05	-.18*	.68**	--			
12. Disorganized	-.11*	.13*	.10	.14*	-.43**	.07	.15**	.19**	.03	.21**	.18**	--		
13. Age	.39**	-.12*	-.04	-.04	.18**	.03	-.04	-.14**	-.05	-.02	.01	-.16**	--	
14. Gender	.13*	-.22**	-.15**	-.27**	-.08	-.13**	-.05	-.06	-.03	.16**	.10	.02	.07	--
Mean	55.9%	69.58	72.73	8.19	4.29	2.69	2.58	2.39	2.36	4.16	4.71	17%	15.34	62.5%
(SD)	(SU)	(16.28)	(14.43)	(5.00)	(1.88)	(2.32)	(2.34)	(1.98)	(1.99)	(2.63)	(2.72)	(Disorga	(1.45)	(Female)
Skew		-.13	-.12	.13	.36	1.23	1.39	1.23	1.32	.22	-.05	nized)	-.54	
Kurtosis		-.28	-.16	-1.09	-.41	.27	.77	.22	.58	-1.30	-1.37		-.66	

Notes: **p < .01, *p < .05; CRAFFT = Car, Relax, Alone, Forget, Family/Friends, Trouble: Presence or absence of substance use dichotomous variable; BPFS = Borderline Personality Features Scale: Child and parent report total scores; CI-BPD = Childhood Interview for DSM-IV Borderline Personality Disorder: total scores; CAI = Child Attachment Interview: Preoccupied Anger Towards Mother and Father, Idealization Towards Mother and Father, Dismissal Towards Mother and Father, Disorganized combined across parents; SU = Substance Users.

Table 2.

Independent samples t-test and Chi-square test of Main Study Variables with Age and Gender

	Substance Users (n=219) M (SD)/%	Non-Substance Users (n=173) M (SD)/%	<i>t/chi²</i> (df), <i>p</i>	Cohen's D/ Φ
BPFS-C Total score	70.24 (16.06)	68.74 (16.56)	-0.90 (387), .37	.09
BPFS-P Total score	73.18 (14.05)	72.14 (14.94)	-0.69 (370), .49	.07
CI-BPD Total score	8.81 (5.03)	7.41 (4.88)	-2.73 (379), .01	.03
Preoccupied-Mother	2.81 (2.34)	2.54 (2.28)	-1.07 (350), .29	.12
Preoccupied-Father	2.58 (2.37)	2.57 (2.31)	-0.04 (337), .97	<.01
Idealization-Mother	2.18 (1.90)	2.65 (2.10)	2.21 (318.56), .03	.23
Idealization-Father	2.39 (1.94)	2.33 (2.06)	-0.29 (336), .77	.03
Dismissing-Mother	4.37 (2.63)	3.91 (2.61)	-1.64 (351), .10	.18
Dismissing-Father	4.93 (2.67)	4.42 (2.76)	-1.72 (337), .09	.19
Attachment Coherence	4.30 (1.82)	4.28 (1.96)	-0.09 (352), .93	.01
Disorganized	43.3%	56.7%	4.06 (1), .04	-.12
Age	15.85 (1.17)	14.71 (1.51)	-8.22 (318.69), <.01	.08
Gender				
Female	51%	49%	6.23 (1), .01	.13
Male	63.9%	36.1%		

Notes: BPFS = Borderline Personality Features Scale: Child and Parent Report; CI-BPD = Childhood Interview for DSM-IV Borderline Personality Disorder; CAI = Child Attachment Interview: Disorganized combined across parents.

Table 3.

Group Comparisons of Attachment Across Diagnostic Groups Controlling for Effects of Age and Gender.

	Control	SU only	BPD only	BPD + SU	Test Statistic	η_p^2 / Φ
	(n = 114)	(n = 115)	(n = 44)	(n = 77)		
Preoccupied - Mother	2.26 (2.02) ^b	2.50 (2.17)	3.31 (2.74)	3.23 (2.53) ^a	$F(3,344) = 3.04^*$.026
Preoccupied - Father	2.10 (1.95) ^b	2.41 (2.27) ^b	3.80 (2.73) ^a	2.81 (2.49)	$F(3,331) = 5.60^{***}$.048
	(n = 114)	(n = 116)	(n = 44)	(n = 77)		
Idealization - Mother	2.73 (2.10)	2.05 (1.63)	2.42 (2.12)	2.39 (2.15)	$F(3,345) = 1.20$.010
Idealization - Father	2.42 (2.13)	2.35 (1.94)	2.12 (1.89)	2.47 (1.97)	$F(3,330) = 0.56$.005
	(n = 114)	(n = 116)	(n = 44)	(n = 77)		
Dismissing - Mother	3.97 (2.68)	4.34 (2.73)	3.73 (2.46)	4.37 (2.47)	$F(3,345) = 1.01$.009
Dismissing - Father	4.58 (2.80)	4.87 (2.72)	3.95 (2.65)	4.99 (2.62)	$F(3,331) = 1.41$.013
	(n = 115)	(n = 116)	(n = 44)	(n = 77)		
Attachment Coherence	4.40 (1.86) ^a	4.57 (1.87) ^a	3.93 (2.21)	3.88 (1.68) ^b	$F(3,346) = 3.98^{**}$.033
Disorganized (χ^2)	16.5%	11.2%	35.7%	16.9%	13.11 (3), <.01	.19

Notes: All attachment variables were measured using the Child Attachment Interview; Attachment coherence and disorganization was measured across all parents; BPD + SU: Positive diagnosis of BPD with comorbid substance use; *** = $p < .001$; ** = $p < .01$; * = $p < .05$; ^a = $p < .05$ Bonferroni from; ^b = Bonferroni corrections were based on 6 total pairwise comparisons resulting in a critical p value of .008 (.05/6); Chi-square tests (χ^2) were conducted for disorganized variable without controlling for covariates.