Attachment and substance use disorders: A review of the literature and a study in drug dependent adolescents

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Abstract
Earlier studies on attachment and substance use disorders using the Hazan and Shaver (1987) self-report mainly indicate a link with “avoidant” attachment styles. Studies working with the Adult Attachment Interview (Main & Goldwyn, 1998) have produced inconsistent results. The present study used the Bartholomew (1990) interview coding system to assess attachment in a sample of 71 German opiate using, drug dependent adolescents (DDAs, age 14–25) and 39 non-clinical controls. Fearful attachment was predominant in DDAs, while controls were predominantly secure. Severity of drug use, as assessed with the European Addiction Severity Index (Gsellhofer, Fahrner, & Platt, 1994) and urinalyses, was positively correlated with fearful attachment, but negatively correlated with dismissing attachment. The presence of comorbid psychiatric disorders was associated with fearful attachment but not with addiction severity.

Keywords: Attachment, drug dependence, adolescence, fearful attachment, addiction severity

Introduction
There has been a growing interest in the connection of attachment and psychopathology in the last decade (Dozier, Stovall, & Albus, 1999; Van IJzendoorn & Bakermans-Kranenburg, 1996), however, there still is comparatively little research on attachment and substance use disorders (SUDs). We think it would be important to learn more about the relation between attachment and SUDs because both include emotion regulation and coping strategies as central concepts (Belsky, 2002; Magai, 1999; Newcomb, 1995; Weinberg, Rahdert, Colliver, & Glantz, 1998). Substance abuse is seen as “self-medication against emotional distress” (Newcomb, 1995, p. 14), as an attempt to cope with “emotional instability and lack of control” (Petrailitis, Flay, Miller, Torpy, & Greiner, 1998) and with an overall pattern of affective, cognitive, and behavioural dysregulation (Dawes, Antelman, Vanyukov, Giancola, Tarter, Susman, et al., 2000; Sullivan & Farrell, 2002). Attachment theory differentiates between distinct patterns of attachment, which imply different types of emotion regulation and coping (Hesse, 1999; Shaver & Mikulincer, 2002). If SUDs were
linked to a certain pattern of attachment, this would enable us to draw conclusions on these processes in substance abusers.

**Review of the literature**

Before we present new data on the relation between attachment and drug dependence in adolescence, we will review the existing literature. Only some of the studies reviewed focus directly on the connection between attachment and SUDs; several other studies include SUDs as a side aspect and do not investigate them systematically. However, we have included all studies that contain information on the relation between different patterns of attachment and SUDs. These studies partly used interviews assessing “attachment representations”, and partly self-report measures assessing “attachment styles”. These different kinds of measures are only moderately associated with each other (see Shaver & Mikulincer, 2002) and difficult to compare. Both supply important information to the question at hand and both assess attachment as an individual variable based on attachment theory. We present studies based on the Hazan and Shaver self-report measure (HSSR; Hazan and Shaver, 1987), on the Bartholomew model (Bartholomew & Horowitz, 1991) and on the Adult Attachment Interview (AAI; Main & Goldwyn, 1998, unpublished; see Hesse, 1999). Tables A–C in the appendix provide an overview of existing studies. For detailed discussions of the different models and measures of attachment see Crowell, Fraley, and Shaver (1999), Bartholomew and Shaver (1998), and a special section of *Attachment & Human Development* (2002, Vol.4(2)).

We have not included any of the numerous studies that use the term “attachment” as a measure of “quality of relationship”. Though relationships with family and peers are important factors for adolescent substance use and though differences in attachment are rooted in experiences of relationships, these studies are beyond the domain of attachment theory. Instead, most of them add further evidence to the well-established findings of links between adolescent substance abuse and “low family cohesion”, “enmeshment”, and a parenting style called “affectionless control” (e.g., Lee & Bell, 2003; Maunder & Hunter, 2001; McArdle, Wiegersma, Gilvarry, Kolte, McCarthy, Fitzgerald, et al., 2002). While it would be interesting to study the associations between SUDs, individual attachment, and quality of relationships, this is beyond the scope of this paper.

**Hazan and Shaver self-report measure (HSSR)**

Hazan and Shaver (1987) have developed a self-report measure consisting of brief descriptions of three attachment styles with respect to experiences in romantic relationships. Respondents are asked to rate how characteristic each style is for them. Attachment styles are defined as “systematic patterns of expectations, needs, emotions, emotion-regulation strategies, and social behaviour that result from the interaction of an innate attachment behavioural system and a particular history of attachment experiences, usually beginning in relationships with parents” (Shaver & Mikulincer, 2002, p. 134). Attachment styles are called secure, anxious-ambivalent, and avoidant, corresponding to Ainsworth’s original classifications of infant attachment (Ainsworth, Blehar, Waters, & Wall, 1978).

Finzi-Dottan, Cohen, Iwaniec, Sapir, and Weizman (2003) published the only study so far on a clinical sample of drug addicts. They used the Hebrew version of the HSSR in a sample of married Israeli men. Participants (n = 56) had a mean age of 39 years and a long history of drug abuse and dependence. About half of them had used heroin, a quarter had mixed heroin and cocaine, and the rest had used other combinations of drugs. The study...
was carried out after detoxification. The majority (61%) of participants classified themselves as avoidant, 27% as secure, and only 12% as anxious/ambivalent. Some authors have raised doubts about the possibility of using self-report measures in these kinds of “hard-to-study samples” (Bartholomew & Moretti, 2002; Bifulco, 2002), but results are consistent with those in non-clinical samples (see below) using the same measure.

Cooper, Shaver, and Collins (1998) studied attachment styles (HSSR), different types of problem behaviour, and emotion regulation in a large representative community sample (n = 1989) of adolescents (age 13 – 19). Substance use was assessed as 6-month prevalence in self-reports. Results show the importance of differentiating between experimental and more severe substance use. Heavier use was linked to insecure attachment, to avoidant, and especially to anxious attachment styles. There was a higher rate of experimental substance use among secure individuals than among avoidant individuals. The authors interpret experimental substance use as exploratory behaviour. Heavier substance use is seen as part of a wider pattern of problem behaviour that in turn is seen as an attempt to cope with distress.

Mickelson, Kessler, and Shaver (1997) also used the HSSR in a large representative US-wide sample (n = 8098) of adolescents and adults (age 15 – 54). Lifetime prevalence of psychiatric disorders, including SUDs, was assessed as DSM-III-R diagnosis, based on the Composite International Diagnostic Interview (CIDI; WHO, 1990). Psychiatric disorders in general were linked to avoidant and anxious attachment. SUDs were the only kind of disorders with a stronger relation to avoidant than to anxious attachment. This is an important study because of its large representative sample, because of its focus on clinically relevant SUDs, and because of the use of the CIDI. A limitation is that SUDs were assessed as lifetime prevalence, with the actual disorders possibly decades in the past, while attachment was assessed as present attachment category. This might weaken the link between attachment and SUDs, which might have been even stronger in a sample of present substance abusers.

A relatively early study using the HSSR was published by Senchak and Leonard in 1992. The study examined attachment styles and marital adjustment among young, newlywed couples participating in a longitudinal study of alcohol use and marital functioning (n = 644). Alcohol use was assessed with the alcohol dependence scale (Skinner & Allen, 1982). Consistent with findings from other studies, avoidant men were most likely to be heavy drinkers. Surprisingly, in women, alcohol use and attachment were unrelated. The authors did not provide any descriptive statistics on this aspect, but this result might be due to low variance in women’s alcohol use.

Brennan and Shaver (1995) studied attachment, romantic relationship functioning, and affect regulation in a college sample (n = 178). Attachment again was assessed with the HSSR. Quantity and frequency of alcohol use as well as drinking motives were assessed in self-report. As expected, authors found “social drinking” not to be related to attachment. “Drinking to cope” was negatively related to secure attachment and positively related to avoidant and anxious attachment. The authors report different coping motives in the two insecure groups. Avoidant individuals were drinking to reduce tension and avoid emotional dependency, while anxious individuals were drinking to reduce anxiety. And finally, consistent with other studies, heavier drinking was related to avoidant attachment.

Though the results of different studies using the HSSR are not completely consistent, in most cases heavier or more problematic forms of substance use were linked to avoidant attachment. If there were a bias in these results, it would be due to the self-report assessment of substance use. There is a tendency of avoidant individuals to underreport problematic behaviour and a complementary tendency of anxious individuals to overreport problematic
behaviour (see Crowell et al., 1999). This would lead to an underestimate of the link between avoidant attachment and substance abuse, and to an overestimate of the link between anxious attachment and substance abuse. In short, the relation between avoidant attachment and substance abuse might be clearer and stronger than represented in these studies. Mickelson, Kessler, and Shaver (1997) reduced this possible bias by using the CIDI, which produces a more valid assessment of SUDs than questionnaires usually do. Without further objective data, underreporting tendencies might even bias a clinical interview.

**Bartholomew self-report measures/interview**

Bartholomew (1990, 1997; Bartholomew & Horowitz, 1991) developed a model of four attachment categories, based on positive and negative internal working models of the self and of others. Bartholomew adopted the secure and preoccupied/anxious attachment patterns from earlier approaches, but differentiated between two avoidant categories: fearful-avoidant (according to the HSSR) and dismissing-avoidant (according to the AAI). Bartholomew developed several self-report measures (assessing attachment styles as defined above) and attachment interviews (assessing representations of childhood attachment and current attachment relationships, see Method section).

McNally, Palfai, Levine, and Moore (2003) studied attachment, alcohol use, and coping motives in a college sample \(n = 366\) using dimensional indices of the internal working model of the self and of others, based on the Bartholomew self-report measure. Level of alcohol use over the past month, drinking-related problems, and coping motives were assessed in self-report. A negative model-of-self (but not model-of-other) was found to be related to drinking-related problems, negative consequences, and “drinking to cope”. In terms of attachment styles, this means fearful and preoccupied attachment was linked to a more problematic use of alcohol, while secure and dismissing attachment was not.

Magai (1999) studied alcohol use and attachment with the Bartholomew interview. Among other things, the study assessed frequency and motives of alcohol use in self-report. Different drinking motives were associated with different attachment categories. Preoccupied individuals drank to reduce negative affect, while dismissing individuals drank to enhance positive affect. Drinking frequency was related to preoccupied attachment.

There is comparatively little research using the Bartholomew model; studies are restricted to alcohol and to non-clinical samples. There is no contradiction between studies using the interview or self-report measures. Both indicate a relation between heavier alcohol use and preoccupied and fearful attachment styles. Since alcohol use was assessed in self-report, results might again be biased by underreporting and overreporting of substance use (see above; Crowell et al., 1999). So the link between preoccupied attachment and alcohol use might be overestimated.

**Adult Attachment Interview**

The Adult Attachment Interview (AAI; Main & Goldwyn, 1998; Hesse, 1999) is a semi-structured interview designed to elicit memories of childhood interaction with parents and assess attachment representations. The interview yields an attachment classification based on the individual’s current state of mental organization expressed in the coherency of thought and feeling regarding attachment. The four AAI classifications (secure-autonomous, preoccupied, dismissing, and unresolved) were designed to parallel the infant
attachment classifications (secure, ambivalent, avoidant, and disorganized) in the similarity of internal working models and in the defensive strategies employed (Hesse, 1999).

Rosenstein and Horowitz (1996) studied a sample of adolescents \((n = 60; n = 29\) substance abusers, age 13–19) in psychiatric inpatient treatment. All participants had primary diagnoses other than SUD. They were partly classified dismissing and partly preoccupied. There was no association between substance abuse and unresolved attachment. Dismissing attachment was found in substance abusers with conduct disorders (CDs), while substance abusers with affective disorders were partly classified dismissing and partly preoccupied. This study shows the importance of comorbid psychiatric disorders. It makes sense to assume different attachment classifications, different emotional states, and different patterns of substance use in adolescents with CDs versus affective disorders. It is difficult to explain mixed results within the subgroup of substance abusers with affective disorders.

Allen, Hauser, and Borman-Spurell (1996) studied a similar sample of adolescent psychiatric inpatients \((n = 66)\) with primary diagnoses other than SUD. They report a relation between “hard drug use” and dismissing attachment, but no association with preoccupied or unresolved attachment. Unfortunately there is no further information on the number of substance users, on the kind of hard drug use, or on its assessment.

Fonagy, Leigh, Steele, Steele, Kennedy, Mattoon and colleagues (1996) studied a sample of adult, mainly female \((82\%)\), non-psychotic psychiatric inpatients \((n = 82)\). Thirty-seven participants additionally suffered from an SUD. Using the three-category version of the AAI, substance abusers were mainly classified preoccupied. When the additional category “unresolved trauma” was included, most substance abusers were classified unresolved. Unfortunately, the authors do not provide any further information on the kind of substances, patterns of substance abuse, or primary diagnoses of substance abusers.

Riggs and Jacobvitz (2002) interviewed a non-clinical sample of expecting parents \((n = 233; n = 26\) substance abusers, mean age 30 years) using the AAI. Lifetime prevalence of SUDs was assessed as DSM-III-R diagnoses. In the three-category version there was no link between SUDs and attachment classifications. In the four-category version, SUDs were linked to unresolved trauma.

AAI studies indicate insecure attachment in substance abusers, but no single classification was consistently linked to SUDs. Most of the studies assessed SUDs as DSM-III-R-diagnoses, and there is no obvious bias due to underreporting of substance abuse. However, none of the AAI studies was designed to inform about SUDs in particular; numbers of participants with SUDs are small or not even reported. All participants in the three clinical studies had a primary diagnosis other than substance abuse. Relations between these primary disorders, SUDs, and attachment classifications are not differentiated. Samples are different in age, gender distribution, and diagnoses. None of the studies give any further information on the severity of SUDs or on the substances that were used. It is likely that samples differ in this way, too. And finally it is possible that attachment representations of individuals with SUDs cannot be described within a single AAI category (see below).

Studies on attachment and aspects of SUDs in adolescence

Summing up the results of the existing studies, SUDs are consistently linked to insecure attachment but results concerning specific categories of insecure attachment are inconsistent across measures. Studies using the HSSR indicate a relatively consistent connection between avoidant attachment and substance abuse. Seen as a whole, AAI studies produced inconsistent results, with substance abuse being linked to preoccupied and dismissing attachment. Two AAI studies indicate a relation between unresolved attachment and
subgroups of adult substance abusers. The few studies using the Bartholomew model indicate a questionable relation between heavier alcohol use and preoccupied and fearful attachment in non-clinical samples.

All studies reviewed are cross-sectional, there is no information on the direction of the relation between insecure attachment and SUDs. It seems plausible that insecure attachment, usually developed during childhood, is a risk factor for SUDs, which usually develop during adolescence. Adolescents with SUDs typically have been exposed to more risk factors than adolescents without SUDs (Sullivan & Farell, 2002; Weinberg et al., 1998). Insecure attachment has been shown to be a risk factor for a variety of mental health problems (Dozier et al., 1999). SUDs have a strong negative impact on relationship quality and so might lead to more insecure attachment classifications. So especially in samples of long-term substance abusers (e.g., Finzi-Dottan et al., 2003), insecure attachment might be in part a consequence of substance abuse.

Most studies rely on self-report measures of substance use. Since substance abuse is usually not a socially accepted behaviour, and the use of illicit substances is even a legal offence, self-reports may lead to an underestimate of the severity of abuse. Clinical interviews are more reliable, because the interviewer estimates severity of substance use, but nevertheless they also depend on what the participant tells the interviewer. Petraitis et al. (1998) criticize that only very few studies use any extraordinary measures (e.g., urinalyses) to reduce underreporting of substance use. This point is especially important with regard to attachment because of underreporting tendencies of dismissing individuals (Crowell et al., 1999; see above).

Though different substances create different emotional states, we do not know whether different categories of attachment might be linked to the use of different substances. With a wide variety of psychoactive substances available, it seems likely that people choose one or more substances according to their emotional effect. To date, there are no systematic comparisons between users of different substances with regard to attachment.

Things get even more complex, because there are different principal motivations of substance use at different levels of severity. According to Moffitt (1993), adolescents are expected to learn how to use at least some psychoactive substances. This developmental task requires experimental substance use, often includes episodes of heavier use, might even go along with other types of problem behaviour, and typically takes place in an adolescent peer context. This “adolescence-limited” substance use does not imply pathological antecedents or consequences (Moffitt, 1993). This model is consistent with the finding of a link between secure attachment and experimental substance use in adolescence that is seen as exploratory behaviour (Cooper et al., 1998). However, about 10% of adolescent substance users show more severe patterns of substance abuse and dependence that typically are not restricted to adolescence but tend to persist into adulthood (Moffit, 1993). This kind of adolescent substance abuse is mainly motivated by attempts to cope with emotional distress (Newcomb, 1995; Weinberg, et al., 1998). When substance abuse is continued beyond this stage, addictive processes themselves (e.g., craving, fear of withdrawal, psychological and physiological dependence) become increasingly important and tend to conceal the original reasons for substance use (Shaffer & Robbins, 1995). From an attachment theory perspective, it would be most fruitful to study the early stages of SUDs, when substance abuse already has a clinical relevance, but its motivation is not yet subdued by addictive processes.

Adolescents suffering from SUDs have high rates of comorbidity with other mental health problems. Depressive and anxiety disorders as well as conduct disorders have been found to be most frequent in adolescent substance abusers (Essau, Stigler, & Scheipl, 2002;
Newcomb, 1995; Thomasius, Jung, & Schulte-Markwort, 2003; Weinberg et al., 1998). The combination of SUD and conduct disorder is linked to impulsivity, aggressiveness, social adversity, school failure, family conflict, and family breakdown. Rosenstein and Horowitz (1996) report mainly dismissing classifications in this group. SUDs in individuals with depressive and anxiety disorders are seen as attempts to cope with the specific emotional states of these disorders (Dadds & McAloon, 2002). Again, Rosenstein and Horowitz (1996) are the only ones to provide attachment data for this group. They report partly dismissing and partly preoccupied classifications in adolescents with SUDs and affective disorders, but do not explain this result. Thus, we need more studies to understand the complex interrelations of attachment, SUDs, and comorbid disorders.

In the literature there are reports of a high proportion of substance abusers who have experienced physical or sexual assault (Clark, Lesnick, & Hegedus, 1997; Sullivan & Farrell, 2002). Though the emotional state of traumatized individuals differs from non-traumatized substance abusers, here too substance abuse is seen as an attempt to cope with the emotional distress caused by these experiences. Accordingly, two studies found a link between SUDs and unresolved attachment in adult samples (Fonagy et al., 1996; Riggs & Jacobvitz, 2002), while two other studies did not find this relation in adolescent samples (Allen et al., 1996; Rosenstein & Horowitz, 1996). These results point towards age as a possibly important variable, though it is not clear why there should be fewer individuals with unresolved trauma among adolescents than among adults. Riggs and Jacobvitz (2002, p. 201) attempt to explain the relation between trauma, SUDs, and unresolved attachment: “The denial and altered state of mind associated with substance abuse function defensively to keep a person from evaluating and reexperiencing the painful reality of having been abused and thereby contribute to the failure to resolve trauma”. This relation between trauma, state of mind, and substance abuse needs to be further addressed in a special study, testing the interpretation of Riggs and Jacobvitz.

**Attachment and SUDs: An integrative view**

We will now try to integrate the results on preoccupied, anxious/ambivalent, fearful, avoidant, and dismissing attachment within Bartholomew’s model of four attachment categories, keeping in mind that correlations between attachment classifications in the AAI, the Bartholomew interview, and different self-report measures are only modest to moderate (see Shaver & Mikulincer, 2002). Attachment interviews assess representations of attachment and focus on rules for the processing of attachment-related information and on defensive processes. Self-report measures assess attachment styles and put a focus on interpersonal behaviour in romantic relationships.

Secure attachment is more or less the same across measures and does not seem to play any role in explaining SUDs. The attachment category corresponding to the original infant attachment category anxious/ambivalent (Ainsworth et al., 1978) is labelled accordingly in the HSSR, but called preoccupied in Bartholomew’s model and in the AAI. The attachment category corresponding to Ainsworth’s original avoidant classification is called dismissing in the AAI and in Bartholomew’s model. Avoidant attachment in the HSSR is defined differently, corresponding to Bartholomew’s fearful-avoidant category. Shaver and Mikulincer (2002) discuss in detail the different concepts of avoidant, fearful, and dismissing attachment.

There is little empirical support for a link between either preoccupied or anxious attachment and SUDs. Individuals who are coded preoccupied in the AAI show an angrily entangled, confused, and exaggerated preoccupation with attachment figures and
experiences. In reaction to attachment insecurity they tend to use strategies of hyperactivation of the attachment system (Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993) and of closeness seeking in attachment relationships (Hazan & Shaver, 1987; Main, 1991). We do not think that individuals with SUDs use either of these strategies. Substance abuse rather seems to be part of a deactivating and distancing strategy, even though substance use is often initially motivated by the need to get in touch with others (Thomasius et al., 2003), even though an association with substance using peers has long been regarded as one of the main predictors of adolescent substance abuse (Hawkins, Catalano & Miller, 1992). More recent studies question the importance of peer impact (Weinberg et al., 1998), and peer relationships among adolescents with SUDs hardly qualify as closeness seeking in the sense of attachment theory. They do not seem to be stable and lasting enough to qualify as attachment relationships (Hazan & Zeifmann, 1999), and they often merely seem to be a setting for substance use. SUDs, including continuous substance abuse and repeated intoxications, simply disrupt relationships (Newcomb, 1995). When we include family relationships the picture becomes even clearer. Substance abuse in adolescence has been found to be associated with withdrawal from relationships and social alienation, with “low bonding” to family and family conflict and break-up (Hawkins et al., 1992).

There is some inconsistent empirical evidence for a link between dismissing attachment and SUDs in two AAI studies (Allen et al., 1996; Rosenstein & Horowitz, 1996). Additionally there might be an unknown number of “dismissing” individuals in the avoidant category of the HSSR. There is no evidence for a link between dismissing attachment and SUDs from studies using the Bartholomew model. The link between dismissing attachment and SUDs might be underestimated by underreporting of substance abuse (see above). Individuals who are classified dismissing in the AAI claim to have had positive experiences with caregivers, often idealize them, but fail to produce support for this claim and insist on a lack of childhood memories. They actively dismiss attachment needs, experiences, and relationships (Hesse, 1999; Main, 1991). Attachment style concepts describe them as self-reliant and distant in interpersonal relationships (Bartholomew & Horowitz, 1991). This kind of interpersonal behaviour is consistent with findings of withdrawal, social alienation, and “low bonding to family” in substance abusers (Hawkins et al., 1992). There is an important difference between what we know about SUDs and dismissing attachment. Dismissing individuals cope with attachment-related distress by deactivating their attachment system (Kobak et al., 1993). A central motivation of substance use is “self-medication against emotional distress” (Newcomb, 1995, p. 14). When we apply this to attachment-related emotions, it seems likely that the use of psychoactive substances is motivated by a similar goal, the deactivation of the attachment system. The important difference to dismissing attachment is that individuals with SUDs seem to be unable to deactivate their attachment system without the use of psychoactive substances.

The most consistent evidence for a connection between SUDs and a single attachment category is found in the majority of studies using the HSSR. These studies indicate a link between SUDs and avoidant attachment. While the AAI does not include a corresponding category, avoidant attachment corresponds to fearful avoidance in Bartholomew’s model. However, the few studies using the Bartholomew model provide little evidence for a relation between fearful avoidance and substance use. Shaver and Mikulincer (2002, p. 154) point out the differences between dismissing and fearful attachment: “Whereas dismissing avoidance involves the adequate functioning of deactivating strategies and inhibition of acknowledging threat-related cues and attachment needs, fearful avoidance may involve the collapse of these strategies under severely stressful conditions. Fearfully avoidant individuals
simultaneously want closeness to attachment figures but also feel unable to trust and rely on them. This may cause their attachment systems to remain activated while their behavioural strategies suggest deactivation”. Fearful individuals seem to perceive attachment-related distress in the way preoccupied individuals do but, unlike them, they do not view “closeness-seeking as a viable option” (Shaver & Mikulincer, 2002) and they do not adopt a hyperactivating strategy. Also, unlike dismissing individuals, they do not possess the defensive mechanisms of a deactivating strategy. They do not seem to have any attachment strategy of coping with attachment-related emotional distress. The use of psychoactive substances as “self-medication against emotional distress” seems to be one viable option for these individuals. So from an attachment point of view, substance abuse can be understood as an attempt to cope with attachment insecurity, to diminish emotional distress, and to regulate interpersonal relationships. Thus, in theory, the attachment category that fits best with SUDs is fearful avoidance. Empirically, the best-established link is the one between avoidant attachment in the HSSR and SUDs. Because the definitions of these two attachment categories are very similar, an association between fearful avoidance and SUDs seems likely. Yet there is no direct empirical evidence for such a connection.

**Attachment in drug dependent adolescents (DDAs): An empirical study**

Working within the Bartholomew model of attachment, we expected a connection between fearful avoidance and SUDs. We explicitly did not focus on trauma and unresolved attachment because this would require a separate, special study. We examined a sample of DDAs in an early stage of dependence, early enough to assess original motivations of substance abuse but severe enough to be clinically relevant. We took comorbid psychiatric disorders into consideration, but participants had to have a primary diagnosis of substance abuse or dependence to be included in the study. We assessed the kind and severity of SUDs using clinical interviews instead of self-reports and additional urinalyses to prevent underreporting of substance use. Working with a clinical sample, we used the Bartholomew interview and not the self-report measure.

1. We analysed the frequencies of attachment categories and the scores on attachment scales of DDAs. We expected fearful attachment to be predominant.
2. DDAs were compared to a sample of non-clinical controls. We expected DDAs to display higher levels or proportions of fearful attachment than controls.
3. We examined the correlations between attachment scales and severity of drug use. We expected a positive correlation between fearful attachment and severity of drug use.
4. Age, gender, and the presence of comorbid psychiatric disorders were controlled as potential confounds.

**Method**

**Participants**

Drug dependent adolescents (DDAs). A total of \( n = 71 \) DDAs were interviewed before the onset of an outpatient family therapy. Their mean age was \( M = 19.18 \) years \( (SD = 3.02; \text{range 14–} 25) \). The 43 men \( (M = 19.80; \ SD = 2.75) \) were significantly older than the 28 women \( (M = 18.17; \ SD = 3.23) \). All participants lived in the metropolitan area of Hamburg, Germany. Income and education of participants’ parents approximately represented the
average distribution in Germany. Most DDAs had not completed secondary education, and school or job attendance was one of the major problem areas. Only four percent of participants were immigrants (from south-eastern Europe). Compared to a percentage of about 15% immigrants in Hamburg, this group was underrepresented.

Criteria for inclusion were a primary diagnosis of opioid dependence (DSM-IV 304.00) or polysubstance dependence (DSM-IV 304.80) including the use of opioids, an “early stage of dependence” (no more than 2 years), contact to parents (weekly or more often), as well as the participation of the adolescent and at least one parent or caregiver in family therapy. These criteria excluded drug addicts at later stages of dependence as well as all those who did not have family relationships any more.

The majority (67%) of participants were suffering from one or several comorbid psychiatric disorders as diagnosed with the DSM-IV. Drug users with psychotic disorders were excluded from the study, but there was a broad range of other diagnoses, covering depressive disorders (22%), anxiety disorders (11%), different types of personality disorders (only diagnosed in participants at least 18 years old, 37%), and adolescence disorders (attention-deficit/hyperactivity conduct, oppositional-defiant, and disruptive behaviour disorders, only diagnosed in participants less than 18 years old, 7%). We examined whether attachment in DDAs with any comorbid disorders differed significantly from those without such disorders. The variety of comorbid disorders and combinations of disorders did not allow for comparisons of attachment between these subgroups. Even the relatively large group of participants with personality disorders was too heterogeneous to allow any further analyses.

Controls. We interviewed a sample of n = 39 non-clinical siblings from the same families. The control group did not differ significantly from the DDA-group in either age (M = 19.53; SD = 6.25), or gender (43% women). Relations between attachment scales and these background variables in DDAs and controls are reported in the result section. The use of siblings allowed us to control for family background and socio-economic status. However, controls had a better and less problematic educational status than DDAs. DDAs and controls did not differ significantly in sibling birth position. Sixty-five siblings existed in all 71 families. The participating 39 siblings were self-selected, they were the ones willing and able to take part in family therapy for the sake of their drug dependent siblings. Though the Addiction Severity Index (see below) was not administered to controls, substance use was screened in the clinical interview. Two siblings who suffered from an SUD were excluded from the control group.

Procedure

Data were collected on admission to the research project “Family therapy with opioid dependent adolescents” at the University Hospital Hamburg-Eppendorf, Germany (Thomasius, 2004). Measures were administered and subsequently coded by four trained clinical psychologists. Assessment took place after a first contact with the family and before the onset of family therapy. We started with an interview with the whole family, informing them about the research project, and assessing the present problems of the family as well as family interaction. Subsequently separate interviews were conducted with DDAs, siblings, and parents, assessing biography and anamnesis, attachment (Bartholomew & Horowitz, 1991) and severity of drug use (European Addiction Severity Index; Gsellhofer et al., 1994). The clinical context we were working in did not allow for independent raters for each measure.
Means of attachment scales within groups were compared with a series of paired-samples t-tests. To compare group means of attachment scales between DDAs and controls we used a matched subsample of DDAs with their only sibling or, in the case of several siblings, with one randomly chosen sibling. All other siblings and all DDAs without any siblings were excluded from this analysis. We thus gained a matched sample of 26 DDAs (age: $M = 19.23; SD = 3.27$; 36% female) and 26 sibling controls (age: $M = 19.12; SD = 6.16$; 41% female). These two groups were compared using paired t-tests for each attachment scale.

DDAs with and without siblings were compared on all four attachment scales, gender, age, and addiction severity. There were no significant differences between adolescents with and without sibling controls.

To analyse the predominance of particular patterns of attachment, we additionally converted the continuous scores into categories. Each participant was assigned to the attachment scale with the highest score. Cases with several equally high scores were distributed in proportion to their frequency. Proportions of attachment categories in DDAs versus controls were compared using a $\chi^2$-test.

An alpha level of .05 was used for all statistical tests. In multiple comparisons, $\alpha$ was Bonferoni-adjusted (Stevens, 2002). For $\alpha = .05$ and $1-\beta = .80$, the sample size of DDAs ($n = 71$) allowed the detection of medium size effects. Sample size of controls ($n = 31$) and the matched-pairs subsample ($n_1 = n_2 = 26$) were sufficient to detect large effects (Cohen, 1988).

**Measures**

**Bartholomew attachment interview coding system**

Attachment was assessed using the German version (Doll, Mentz, & Witte, 1995) of the four-category model of attachment (Bartholomew & Horowitz, 1991). We used the Family Attachment Interview assessing representations of attachment related experiences in the family of origin and with relevant others (Bartholomew & Horowitz, 1991). The semi-structured interview takes about 60 minutes. Bartholomew's model of four attachment categories (Bartholomew, 1990, 1997; Bartholomew & Horowitz, 1991) is based on the approaches of the AAI (e.g., Hesse, 1999) and of Hazan and Shaver (1987). Bartholomew adopted the secure and preoccupied categories of the earlier approaches but differentiated between two avoidant categories: fearful-avoidant and dismissing-avoidant. In this model, Bartholomew employed Bowlby’s (1973) theory of internal working models (IWMs) of the self and the caregiver. The combination of these IWMs in a positive or negative form produces four patterns of attachment: secure, preoccupied, fearful, and dismissing (Bartholomew, 1990, 1997; Bartholomew & Horowitz, 1991). Bartholomew conceptualizes them as prototypes (Bartholomew, 1997; Griffin & Bartholomew, 1994), allowing for a gradual assessment of an individual’s similarity to each prototype. The degree to which a participant resembles each of these prototypical descriptions is coded on 5-point scales in the German version (Doll et al., 1995) as opposed to 7-point and 9-point scales in the original version. Bartholomew and Horowitz (1991) characterize the four prototypes as follows:

- **Secure:** Positive model of self, positive model of other, comfortable with intimacy and autonomy, valuing of intimate friendships, capacity to maintain close relationships without losing personal autonomy, coherence and thoughtfulness in discussing relationships and related issues.
Preoccupied: Negative model of self, positive model of other, preoccupied with relationships, over involvement in close relationships, dependence on other people’s acceptance for a sense of personal well-being, tendency to idealize other people, incoherence and exaggerated emotionality in discussing relationships.

Fearful: Negative model of self, negative model of other, fearful of intimacy, socially avoidant, avoidance of close relationships because of a fear of rejection, sense of personal insecurity, distrust of others.

Dismissing: Positive model of self, negative model of other, dismissing of intimacy, counterdependent, downplaying of the importance of close relationships, restricted emotionality, emphasis on independence and self-reliance, lack of clarity or credibility in discussing relationships.

Griffin and Bartholomew (1994) report inter-rater reliabilities of the attachment scales between $\alpha = .87$ and $\alpha = .95$. Concerning the convergent validity of the measure, Bartholomew and Shaver (1998) report a high proportion of agreement (78%) between AAI classifications (Hesse, 1999) and the corresponding three attachment categories in Bartholomew’s system. Fearful attachment was excluded from that study because of a lack of corresponding AAI classification. Evidence for the factorial validity of the measure was established by Brennan, Shaver, and Tobey (1991), who were able to trace back the four attachment scales to two underlying factors (secure vs. fearful and preoccupied vs. dismissing).

There are several German adaptations of the Bartholomew model. Doll, Mentz, and Witte (1995) translated the model into German, retranslated it into English, and had a bilingual expert check the convergence. Their study focused on correlations between attachment, romantic relationships, representations of childhood relationships, sexual orientations, and altruism. Authors report high construct validity and overall psychometric qualities comparable to the original English version. Asendorpf, Banse, Wilpers, and Neyer (1997) report satisfying reliability and validity indices of the German version. Validity was tested as correlations with relationship measures. Grau (1999) found high internal consistencies (.86 to .91) and 6 months retest-reliabilities of .57 to .74.

Since we were the first to use the German version in a clinical sample of DDAs, we conducted several additional psychometric tests. In a pre-study, the same four clinical psychologists as in the main study assessed inter-rater reliabilities. They independently coded a sample of $n = 16$ videotaped interviews with DDAs. Average correlation between two coders of one interview was $R_{adj}^2 = .80$.

In a factorial analysis of our data we were able to replicate the underlying two-dimensional structure reported by Brennan and colleagues (1991; see above).

Additionally, we looked for associations between attachment and personality traits, using the Freiburger Persönlichkeits Inventar (Fahrenberg, Selg, & Hampel, 1989), a standard personality inventory in Germany. A joint factorial analysis of attachment and personality data yielded the same two attachment factors as mentioned above, and two personality factors widely independent from attachment.

**European addiction severity index**

Severity of drug use was assessed using the German version of the European addiction severity index (Gsellhofer et al., 1994), an adaptation of the American addiction severity index (ASI; McLellan, Kushner, Metzger, Peters, Smith, Grissim, et al., 1992). The ASI is a semi-structured, clinical interview assessing drug and alcohol use and related psychological, physical, and social problems. Reliability and validity of the ASI have been shown in several
studies (e.g., McLellan et al., 1992; Scheurich et al., 2000). Interviewer severity ratings on a 10-point scale serve as an overall measure. Inter-rater reliabilities of severity ratings had a mean of $r = .89$. Severity ratings reflect frequency and quantity of substance use, danger of the substances used and the way of consumption, criteria for dependence, treatment necessity, and severity of related problems.

Mean severity of drug use in the ASI (Gsellhofer et al., 1994) was $M = 7.60$ ($SD = 1.27$). This is the lower end of the “extremely problematic” range and equals severity found in samples of methadone patients (Weiler, Vogt, & Kuefner, 2000) and alcohol dependent patients (Scheurich, Müller, Wetzel, Anghelescu, Klawe, & Ruppe, 2000). A severity rating of seven indicates dependence on either drugs or alcohol, along with at least one serious problem in one of the other areas (e.g., comorbid psychiatric disorder, incarceration, infections). A rating of eight involves extreme and hazardous patterns of consumption (e.g., extreme binge drinking, shared needles, crack smoking) and serious problems in several other areas. Grade nine additionally indicates a life-threatening situation.

There was no gender difference in severity of drug use, but an expected significant correlation ($r = .41, p < .01$) between severity of drug use and age. This means older participants used more drugs.

Participants’ reports on their present substance use were validated with urinalyses, taking advantage of the bogus pipeline effect that increases veridicality of self-reports (Rose & Jamieson, 1993).

Results

Table I shows the mean scores of DDAs on the four attachment scales. Mean scores of DDAs on the four scales were compared using a series of $t$-tests with a Bonferroni-adjusted alpha (see Table II). As expected, DDAs were rated significantly higher on the fearful attachment scale than on any other scale. They had the second highest ratings on the preoccupied attachment scale. These again were significantly higher than ratings on dismissing and secure attachment scales.

Table III shows the mean scores of controls on the four attachment scales, Table IV shows the in-group comparisons, which were done in the same way as in DDAs. Controls had the highest scores on the secure attachment scale. Preoccupied, fearful, and dismissing attachment scales were rated significantly lower and did not differ significantly from each other.

To analyse the proportion of attachment scales we converted continuous score into categories. Table V shows that in DDAs fearful attachment was predominant (65%), while in controls secure attachment was predominant (62%), with $\chi^2(1, n = 110) = 37.53; p < .0001; w = .58$.

<table>
<thead>
<tr>
<th>Attachment scale*</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure</td>
<td>2.00</td>
<td>0.82</td>
</tr>
<tr>
<td>Preoccupied</td>
<td>2.92</td>
<td>0.90</td>
</tr>
<tr>
<td>Fearful</td>
<td>3.81</td>
<td>0.91</td>
</tr>
<tr>
<td>Dismissing</td>
<td>2.30</td>
<td>1.10</td>
</tr>
</tbody>
</table>

$n = 71; \text{ *Range } = 1 \text{ to } 5; M = \text{mean; } SD = \text{standard deviation}$
Mean scores on attachment scales of DDAs and controls were compared in a paired-samples $t$-test ($p < .05$, two-tailed, Bonferroni-adjusted) for each attachment scale. This analysis was based on a subsample of $n = 26$ DDAs with one matched sibling each, as described in the procedure section. We did not expect and did not find any significant differences on preoccupied or dismissing attachment scales. As expected, DDAs were rated
significantly higher on the fearful attachment scale. Additionally, DDAs were rated significantly lower than controls on the secure attachment scale. Table VI shows the results in detail.

In addition, we analysed correlations between attachment scales of DDAs and controls. Groups were not significantly correlated on preoccupied ($r = -.14$) and dismissing ($r = -.13$) attachment scales. But there were large significant correlations on secure ($r = .70$) and fearful ($r = -.67$) attachment scales.

As expected, there was a significant correlation between severity of drug use in the EuropASI and the fearful attachment scale ($r = .42; p < .001$). Additionally we found an unexpected inverse correlation between severity of drug use and the dismissing attachment scale ($r = -.28; p < .05$). There were no significant correlations between severity of drug use and secure or preoccupied attachment scales.

To analyse the impact of comorbid disorders, we compared DDAs with and without such additional diagnoses. The presence of comorbid disorders was unrelated to age, gender, secure, preoccupied, and dismissing attachment. There was a significant correlation with the fearful attachment scale ($r = .49; p < .05$). Though addiction severity was correlated with fearful attachment too ($r = .46$), there was no relation between addiction severity and the presence of comorbid disorders.

Though there were no significant mean differences between DDAs and controls in age and gender distribution, correlations between attachment scales and these background variables were analysed by a set of multiple regressions. In DDAs there were no significant associations between attachment and age or gender. As reported above, age was associated with addiction severity ($r = .41; p < .01$). In controls, gender and attachment were unrelated but age was positively correlated with secure attachment ($r = .51; p < .05$) and negatively correlated with preoccupied attachment ($r = -.47; p < .05$).

Conclusions

As expected, fearful attachment was predominant in DDAs, whereas controls were predominantly secure. Differences between DDAs and controls in fearful and secure attachment were large and significant, regardless of whether they were assessed as proportions of attachment categories or as mean scores on attachment scales. At the same time there were no differences in preoccupied or dismissing attachment. Addiction severity in DDAs was positively related to fearful attachment, but unexpectedly negatively related to dismissing attachment. The presence of comorbid psychiatric disorders was associated with fearful attachment but not with addiction severity. In controls, age was related to secure attachment but there was no such association in DDAs. In DDAs, age was related to addiction severity.
The main findings are in tune with what we expected, confirming the hypothesis of a link between fearful attachment and drug dependence. Yet there are open questions concerning the direction of the relations found, the large differences between DDAs and sibling-controls, the relation between dismissing attachment and addiction, the impact of comorbid psychiatric disorders, as well as the interaction between age, addiction severity, and secure attachment.

Addiction severity was positively related to fearful attachment and negatively related to dismissing attachment. Within the group of DDAs, a more dismissing attachment score is associated with relatively less drug use, while a more fearful attachment score is associated with relatively more drug use. These results support the validity of Bartholomew’s (1990) distinction between dismissing-avoidant and fearful-avoidant attachment. Our interpretation is, the more someone is able to cope with attachment related distress in a dismissing way, the less drugs he or she needs. An alternative explanation is that the negative relation between addiction severity and dismissing attachment is due to underreporting of drug use by dismissing individuals. We do not think this is the case, because the use of the EuropASI and its validation by urinalyses (bogus pipeline effect) minimized possible underreporting tendencies.

In DDAs, age was linked to addiction severity. This replicates the general finding of an increasing severity of SUDs across adolescence (Newcomb, 1995; Weinberg et al., 1998).

In controls, we found a relationship between age and secure attachment. This might indicate that controls develop greater security across adolescence whereas DDAs do not. The literature partly supports such a development in non-clinical individuals. Kobak and Sceery (1988) found 16-year-olds to be less secure than adults, while van IJzendoorn and Bakermans-Kranenburg (1996) report 18-year-olds to be as secure as older adults. So far, there are no age-related data on attachment in individuals with SUDs. The most likely interpretation of our results is that increasing drug use suppresses the development of attachment security.

Nonetheless there were significant differences in attachment of DDAs and controls independent of age. This supports the hypothesis of a connection between drug dependence and attachment. We cannot infer the direction of relationships from our cross-sectional design. We think it is likely that fearful attachment is a risk factor for drug dependence, which in turn distorts the development of attachment.

At the same time, the large differences between DDAs and their siblings raise new questions concerning the development of different patterns of attachment among the offspring of one family. Siblings in our study were less fearful and more secure than DDAs, but there were no differences in either preoccupied or dismissing attachment. Factors with a different impact on fearful and secure attachment of siblings could be differences in parental caretaking of different children, different family roles of siblings, critical life events, and differences in genetic disposition or temperament. Certainly, we have to keep in mind that participating siblings represented a selection of all existing siblings. In order to distinguish these different factors, research will have to take a closer look at family structures and patterns of attachment in the families of DDAs.

Fearful attachment was not only related to addiction severity but to the presence of a comorbid psychiatric disorder as well. At the same time, addiction severity and comorbid disorders were unrelated to each other. The relation between fearful attachment and addiction severity cannot be explained by the presence of comorbid disorders. These results suggest that fearful attachment might not be specific for drug users but more generally associated with psychiatric problems. Future studies should address this question.
The use of Bartholomew’s model of four attachment categories in a clinical sample of individuals with SUDs is a novelty. Its main advantage is the distinction between fearful and dismissing attachment. This distinction proved very fruitful in our study and it helps to understand contradictory results of studies conducted with the AAI. The use of the Bartholomew interview avoids concerns about the validity of questionnaire measures in clinical samples. Our sample consisted of drug dependent, opiate-using adolescents at an early stage of dependence who had contact with their family. Our results need to be compared to other samples of substance users (users of other substances, users at later stages of dependence, without family relationships, with specific comorbid disorders), to other clinical groups and to independent, non-clinical controls.

The most consistent finding from earlier studies was the relation between SUDs and avoidant attachment in the HSSR. Avoidant attachment was assumed to correspond to fearful-avoidant attachment in the Bartholomew interview. We did not use the HSSR to formally test this assumption, but our finding of fearful attachment in DDAs is in agreement with it.

Our results are not consistent with the two earlier studies that used the Bartholomew model and reported more preoccupied than fearful attachment in college alcohol users. These different findings might be due to different samples. Additionally the association between preoccupied attachment and substance use might have been overestimated by over- and underreporting tendencies of substance use.

As opposed to AAI studies we did not find a relation between substance abuse and either preoccupied or dismissing attachment. Fearful attachment according to Bartholomew includes aspects of both of these categories. It seems possible that fearful individuals (according to Bartholomew) might have been coded dismissing or preoccupied in the AAI. All of the participants in the AAI studies had primary psychiatric diagnoses other than SUD. Differences in attachment might be due to different clinical samples.

Our study overcomes problems of earlier studies in several ways. First, drug use was assessed according to standards in the field of addiction. Second, we studied a large sample of individuals with SUDs as primary diagnosis. Third, we worked with the Bartholomew model of attachment and this yielded clearer results than studies working within other frameworks. Fourth, we used an attachment interview, avoiding questions concerning self-report measures in clinical samples. At the same time the novelty of this approach is its main limitation; there is a lack of comparable studies.

Concerning clinical implications, our data provide a new perspective on the difficulties of treating SUDs. An attachment category associated with the fearful avoidance of relationships is likely to have an impact on therapeutic relationships. It might account for a significant part of the difficulties in establishing and maintaining a therapeutic alliance with DDAs. From an attachment perspective, the therapeutic alliance could well be the crucial factor in the treatment of drug users. In the future it would be very informative to study the relation between attachment and treatment outcome.

Acknowledgements

The background of this study was the research project “Familientherapeutische Fruehintervention bei Opiatabhaengigkeit—eine vergleichende Querschnitts-und Verlaufsuntersuchung” [Family therapy with opioid dependent adolescents—a comparative cross-sectional and longitudinal analysis]. The entire project was supported by Grant 01-EB – 9412 from the German Federal Ministry of Education, Science, Research, and Technology (BMBF). We thank Vera Des Maraix for editing the English.
References


Attachment and substance use disorders


Appendix. Studies on attachment and substance use

<table>
<thead>
<tr>
<th>Authors and year</th>
<th>Focus of study (attachment and ...)</th>
<th>Sample, age</th>
<th>n (total vs. subst. users)</th>
<th>Substance; severity</th>
<th>Measure of substance use</th>
<th>Attachment styles, repres. linked to substance use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senchak &amp; Leonard, 1992</td>
<td>Marital adjustment</td>
<td>non-clinical newlywed couples, $M=24$ years</td>
<td>644 vs.?</td>
<td>alcohol; ?</td>
<td>alcohol dependence scale</td>
<td>men: avoidant; women: unrelated</td>
</tr>
<tr>
<td>Brennan &amp; Shaver, 1995</td>
<td>Affect regulation, romantic relationships</td>
<td>college, $M=19$ years</td>
<td>242 vs. 178</td>
<td>alcohol; ?</td>
<td>Quantity, frequency, “drinking to cope”</td>
<td>avoidant</td>
</tr>
<tr>
<td>Mickelson et al., 1997</td>
<td>SES, childhood adversities, psychopathology, personality</td>
<td>US-wide repres. 15 – 54 years</td>
<td>8098 vs. 2876(?)</td>
<td>alcohol, drugs; abuse, dependence</td>
<td>DSM-III-R CIDI, lifetime prevalence</td>
<td>avoidant (anxious)</td>
</tr>
<tr>
<td>Cooper et al., 1998</td>
<td>affect regulation, problem behaviour Drug dependence, family cohesion adaptability</td>
<td>Repres. community sample, 13 – 19 years</td>
<td>2011 vs. 1151</td>
<td>alcohol, drugs; (1) experimental, (2) problematic heroin and other; long time addiction</td>
<td>Self-report (6 months prevalence)</td>
<td>(1) secure, anxious, (2) anxious (avoidant) avoidant</td>
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<tr>
<td>Finzi-Dottan et al., 2003</td>
<td></td>
<td>Clinical, detoxified drug addicts, $M=39$ years</td>
<td>56 vs. 56</td>
<td>?</td>
<td>?</td>
<td>?</td>
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<tr>
<td>Authors and year</td>
<td>Focus of study (attachment and ...)</td>
<td>Sample, age</td>
<td>n (total vs. subst. users)</td>
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<tr>
<td>Allen et al., 1996</td>
<td>psychopathology, longitudinal</td>
<td>psychiatric patients, 14 – 25 years</td>
<td>66 vs. ?</td>
<td>hard drug use; ?</td>
<td>?</td>
<td>dismissing</td>
</tr>
<tr>
<td>Rosenstein &amp; Horowitz, 1996</td>
<td>Psychopathology</td>
<td>psychiatric patients, 13 – 19 years</td>
<td>60 vs. 29</td>
<td>? ; abuse</td>
<td>DSM-III-R: (1) conduct disorder &amp; SUD (2) affective disorder &amp; SUD</td>
<td>(1) dismissing (2) preoccupied, dismissing</td>
</tr>
<tr>
<td>Fonagy et al., 1996</td>
<td>Psychopathology, Psychotherapy</td>
<td>psychiatric patients, adults, 82% women</td>
<td>82 vs. 37</td>
<td>? ; abuse</td>
<td>DSM-III-R</td>
<td>unresolved, preoccupied</td>
</tr>
<tr>
<td>Riggs &amp; Jacobvitz, 2002</td>
<td>Parenthood, mental health, family history</td>
<td>non-clin. middle class expectant parents, M = 30 years</td>
<td>233 vs. 26</td>
<td>alcohol, drugs; abuse</td>
<td>Mental health survey, DSM-IV, lifetime prevalence</td>
<td>unresolved</td>
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<tr>
<td>Authors and year</td>
<td>Focus of study (attachment and ...)</td>
<td>Sample, age</td>
<td>n (total vs. subst. users)</td>
<td>Substance; severity</td>
<td>Measure of substance use</td>
<td>Attachment styles/ repres. linked to Substance use</td>
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<tr>
<td>Magai, 1999(^1)</td>
<td>affect regulation, personality traits</td>
<td>non-clinical, ?</td>
<td>? vs. ?</td>
<td>alcohol; “light, moderate, heavy drinkers”</td>
<td>frequency; drinking motives: (1) reduce neg. affect (2) enhance pos. affect self-report (30-days prevalence)</td>
<td>Preoccupied (1) preoccupied (2) dismissing</td>
</tr>
<tr>
<td>McNally et al., 2003(^2)</td>
<td>coping motives, drinking problems</td>
<td>college, 18 – 23 years</td>
<td>366 vs. 366</td>
<td>Alcohol; use</td>
<td>preoccupied/ fearful (“negative self model”)</td>
<td>Fearful</td>
</tr>
<tr>
<td>Schindler et al., 2005(^1)</td>
<td>drug dependence</td>
<td>clinical, family therapy sample, 14 – 25 years</td>
<td>71 vs. 71</td>
<td>heroin and other drugs; dependence</td>
<td>DSM-IV, addiction severity index, urinalyses</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\)Bartholomew interview coding system; \(^2\)Bartholomew self-report measure