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## An Interpersonal Model of Addiction Relapse

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### Abstract

In this article, we review the literature on interpersonal stress and rejection sensitivity and examine how these factors increase the risk of relapse in individuals with alcohol or drug dependence. We begin by considering the constructs of social pain and social threat, examining their evolutionary origins and their neuroanatomical, neuropsychological and neurophysiological dimensions. Together, these perspectives provide insight into the role of interpersonal stress as a powerful and oftentimes destructive factor that affects individuals in recovery from substance dependence. We then review the empirical evidence showing that intrapersonal traits and interpersonal environments interact to increase an addict's risk of relapse. We conclude by proposing that substance-dependent individuals with high trait rejection sensitivity and a critical interpersonal environment are particularly vulnerable to relapse to substance use.

### Introduction

Relapse following treatment for alcohol or drug use disorders is a common problem. Studies indicate that 50–70% of patients are unable to remain abstinent during the first year following addiction treatment (1). A large body of literature, reflecting both animal and human studies, has identified three precipitants of relapse: exposure to a priming dose of a drug, an environmental cue previously associated with drug use, and stress (2). This review will focus on the role of stress, specifically interpersonal stress, as a precipitant to relapse in substance-dependent individuals.

Interpersonal conflict and stress are aversive to humans because of the “social pain” that they elicit. We begin by describing the construct of social pain and examining its evolutionary origins, and neuroanatomical, neuropsychological, and neurophysiological underpinnings. This serves as a foundation to understand how interpersonal stress and conflict can exert powerful and oftentimes destructive effects on individuals in recovery from substance dependence. We then review the constructs of rejection sensitivity, insecure

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attachment, and low self-esteem, integrating these traits and considering how they influence relapse vulnerability. Next, we review the constructs of expressed emotion, perceived criticism, and marital distress, examining how these negative social contexts can contribute to unfavorable outcomes among individuals recovering from substance dependence. We conclude with the testable hypothesis that there exists a subgroup of substance-dependent individuals with high trait rejection sensitivity that is particularly vulnerable to relapse in the context of a harsh and critical interpersonal milieu. We propose that high trait rejection sensitivity is a unique risk factor for relapse that can inform research in this area. We offer several suggestions for future research that could enhance the effects of patient-centered clinical interventions.

## Social Pain

Social pain is defined as “a specific emotional reaction to the perception that one is being excluded from desired relationships or being devalued by desired relationship partners or groups” (3). It is thought that social pain evolved as a mechanism among mammals to help bond infants to their mothers. Thus, mammals lacking social affiliative instincts and skills failed to survive and reproduce, i.e., the capacity for social pain is presumed to reflect a selective evolutionary advantage.

Social pain, like physical pain, causes suffering. Individuals differ in their tolerance of social pain, which is analogous to differences in coping abilities and behavioral responses to physical pain. Schizoid personality disorder, psychopathy and autistic spectrum disorders are psychopathologic conditions in which social exclusion does not elicit a high degree of social pain. Conversely, individuals with borderline personality disorder or social phobia are exquisitely sensitive to real or perceived social exclusion, resulting in high levels of social pain.

## The Evolutionary Origins of Social Pain

Mammals evolved with a unique need for prolonged maternal care to survive. It has been hypothesized that, in this process, mammals co-opted the opioid-based physical pain system to ensure maternal proximity and infant survival (3,4,5,6,7). Because physical pain is aversive, demands attention, and drives behavioral responses to decrease the source of the pain, it is an ideal system, from an evolutionary standpoint, to promote mother-infant proximity (4,6,7). Mammalian pups emit distress vocalizations (DVs) when separated from their mothers. These DVs are mediated by a decrease in the concentration of endogenous opioids and have been likened to opioid withdrawal (4,6,8,9). Opioid antagonists potentiate DVs and, conversely, opioid agonists relieve them (7,9), leading to the observation that the “administration of morphine to rat pups simulates the presence of the mother” (8, page 614).

Both the emission of DVs and the mother’s response to them depend on an intact cingulate cortex. Ablation of the anterior cingulate cortex (ACC) in squirrel monkeys eliminates DVs and stimulation of this area causes spontaneous DVs (4,5,6,7). Similarly, in rats, ablation of the ACC prevents the dam from responding to her pup’s DVs (4,6,7).

Mammals need social proximity throughout their lifespan; in addition to being necessary to the survival of mammalian infants, it enhances the adaptation and survival of adult mammals (3). The endogenous opioid-based pain system of mammals has evolved to prevent social separation and to ensure social connection (3,6). Studies have shown that the opioid system mediates affiliative behaviors (3,6). In adult mammals, this system functions not only in cases of actual physical separation, but to ensure that threats to social separation are aversive, thereby modulating behavior to prevent social exclusion (3).

Some investigators have described parallels between narcotic addiction and the formation of social bonds, suggesting that “endorphin addiction” underlies social cohesiveness (8,9). Studies of adolescent rats show that social interactions are rewarding and can induce conditioned place preference (CPP), which can be extinguished and reinstated, similar what is seen with many drugs of abuse (10). Although other neural systems, such as the mesocorticolimbic dopamine system, have also been linked to behaviors associated with reproduction and social interaction (11), a detailed discussion of these systems is beyond the scope of this article.

### **The Neuroanatomy of Social Pain**

Physical pain and social pain share an underlying neuroanatomical substrate: the ACC (6,7). This co-localization was first observed in the 1930s, when cingulotomies were first performed on patients with intractable pain. Although following cingulotomy, patients continued to experience the sensation of pain, they no longer experienced the affective component of pain, so that it was no longer distressing (6,7). Conversely, people with lesions in somatosensory areas of the brain cannot localize their injuries, but experience considerable distress (6). Hence, of the two components of physical pain, affective and somatosensory, it is only the former that shares phenomenological, neuroanatomical, and psychological similarities to social pain (3).

There is convergent evidence that ACC activity mediates social pain (3,6,7). fMRI studies have shown a correlation between the degree of ACC activation and the subjective unpleasantness of physical pain (6). Interestingly, following cingulotomy, patients show less concern over social rejection (6). In a series of experiments, Eisenberger and colleagues showed how the ACC sub-serves the experience of social pain. In an initial study, they found that the experimental manipulation of social distress and physical pain increased ACC activity and the aversive nature of both physical and social pain (6,7). They also found that the ventral prefrontal cortex (VPMFC) regulated ACC activity in response to both physical and social pain (7,12) and that high trait rejection sensitivity (RS) was correlated with ACC activity (7,13). Further, experimental manipulation of either physical or social pain altered subjects’ sensitivity to both types of pain (7). Finally, they found that subjects with greater ACC activity who reacted to experimentally induced social distress also experienced greater feelings of rejection in response to daily social interactions (7,14).

### **The Neuropsychology of Social Pain**

Neuropsychological studies also indicate that the distressing aspects of physical pain and social rejection are closely related (3,6). For instance, both types of pain vary as a function of personality characteristics. Neuroticism and trait depression correlate positively with both types of pain, while extraversion is inversely related to the magnitude of physical and social pain (3,7). Clinical evidence confirms the findings from fMRI studies that the manipulation of either physical or social pain sensitizes individuals to the other kind of pain (6,7), underscoring the overlap of these two systems.

Both physical and social pain serve an evolutionarily important need to detect and warn the individual to a potential threat to safety, i.e., physical injury or social exclusion, and serve as motivation to alleviate the threat (3,6,15). A threat to social inclusion activates non-specific defensive mechanisms such as cortisol elevation, increased autonomic tone and fight/flight behaviors similar to the acute stress response seen with physical threat (3,15). These responses are automatic, undirected, rapid, and without higher cognitive input (3,15). The socially excluded individual equates threats to the “social self” with a threat to physical survival, which elicits a coordinated psychobiologic response similar to that elicited by

physical threat, i.e., the two types of threat trigger the same anatomical substrates and physiologic mechanisms (3,15,16,17,18,19).

### **The Neuroendocrinology of Social Threat**

While social pain refers to the aversive emotional reaction associated with social exclusion, social threat refers to environmental events that are perceived as threatening to one's social status. A large body of research has examined social threat and its relation to hypothalamic-pituitary-adrenal (HPA) axis activation. Non-human primate studies have shown that dominant social status is correlated with lower cortisol concentrations and submissive status and recent defeat are associated with greater cortisol concentrations (16,17,18). The effect of social status is even more pronounced when environmental conditions are highly unstable (17,18). Further, in primates, greater social skills and affiliative behaviors are associated with lower HPA axis activation (18), while social isolation elevates HPA activity in both rodents and primates (3,18).

Psychological stressors also elicit a cortisol response in humans (17,18,19). In community studies, people with greater emotional support have lower cortisol concentrations and sympathetic nervous system (SNS) activity, while individuals who view others with hostility or who are subject to excessive demands and criticism have greater cortisol output (18). Further, acute and chronic social rejection elevate cortisol concentrations, as do negative and unsupportive environments (16,18). Relationships characterized by criticism, rejection, and harassment are also associated with elevated HPA activity (17). Conversely, social integration and a supportive milieu are associated with lower HPA activation (18).

Social Self-Preservation Theory postulates that individuals constantly monitor their environment for threats to their social self (16,17). Threats to social self are characterized by a potential loss of social self-esteem, social status or increased rejection (16,19). The social self reflects the individual's social value and status and is based on others' perception of his or her individual's worth (16,17). Social situations that threaten the social self diminish self-esteem, decrease one's perception of his or her social worth, and elevate cortisol concentrations (16,17). There is also a correlation between plasma cortisol concentrations and the extent to which a negative social evaluation results in reduced self-esteem and an enhanced perception of social threat (16). Just as threats to physical self-preservation lead to fear, increased motivation to alleviate the physical threat, and SNS and HPA activation, threats to the social self lead to shame and lowered self-esteem, efforts to alleviate the social threat, and SNS and HPA activation (16). These findings are consistent with the proposition that a primary and instinctual human goal is to maintain a positive social self and that integrity of the social self is essential to survival (16,17,18).

Experimental evidence also links social support to cortisol and SNS output. In subjects engaged in a challenging task, the presence of a supportive confederate decreased SNS and cortisol output, while the presence of a non-supportive confederate produced the opposite response (18). Similarly, couples that processed disagreements in a hostile manner had higher cortisol concentrations than couples with positive interactions (19).

A recent meta-analysis of 208 laboratory studies of cortisol response to psychological stressors (17) showed that the highest cortisol concentrations were associated with psychological stressors that were either uncontrollable or accompanied by a social evaluative threat (16,19). The average cortisol concentration was tripled in the uncontrollable compared to the controllable stressful task and in the psychological stressor task performed in the presence of a social evaluative threat compared to one without such a threat (17,20). The largest increase in cortisol concentration occurred when both

uncontrollability and social evaluative threat were present (17,20). The time it took for cortisol concentrations to return to baseline in both conditions was also prolonged (17,20).

Greater daily social support and diminished cortisol response to a social stressor were also associated with decreased ACC activation on functional magnetic resonance imaging (fMRI). ACC reactivity to social distress mediated the relationship between high daily social support and low cortisol reactivity to a social stressor (7,21). Individuals with stigmatizing characteristics that make them sensitive to threatening social evaluation—those with high trait rejection sensitivity, or those facing social stressors that they perceive to be out of their control—experience prolonged cortisol elevation (17,20). Although cortisol or SNS activation in response to acute stressors is adaptive, prolonged activation of physiologic stress responses has many adverse psychological and physiologic sequelae (17,20).

## **Intrapersonal Vulnerabilities to Addiction and Relapse**

Interpersonal stressors are regarded by many as the one of the most severe forms of stress and can affect an individual's cognition and behavior. Interpersonal stress is a well-known precipitant of maladaptive drug and alcohol use. In the last past two decades, there has been an effort to define the construct of interpersonal stress and the means by which it contributes to substance use and abuse. The following two sections will review this literature.

First, we will review the extant literature on the related constructs of rejection sensitivity, insecure adult attachment style, and low implicit and explicit self-esteem. Although not identical, all of these constructs contribute to an individual's compromised sense of self and an inability to interact comfortably and effectively with others. Further, they all share a propensity to increase an individual's vulnerability to addiction.

### **Rejection Sensitivity**

Rejection sensitivity (RS) is defined as the disposition to anxiously expect, readily perceive and react intensely to rejection. High-RS individuals interpret ambiguous social cues as indicative of rejection (22,23,24). Individuals entering into a romantic relationship with expectations of rejection attribute insensitive behavior by their partners to hurtful intent. RS also causes people to be dissatisfied in relationships and to anticipate that their partners are dissatisfied and want to end the relationship. High-RS individuals react in ways that undermine their relationships, ultimately serving as “self-fulfilling prophecies” (22,23). High-RS people have lower self-esteem and coping skills than those with low RS, achieve less educationally, and have higher levels of drug use than low-RS individuals (24).

High-RS individuals may quickly activate a defensive motivational system (DMS), which acts automatically and at a nonverbal level (22). The DMS results in rapid execution of automatic behavior aimed at self-protection, whether the threat is physical or social (22). Although the DMS is adaptive when a quick automatic defense to threat is required, it is maladaptive when a response requires higher reflective cognition (22). In an experiment using a well-validated measure of DMS activation, Downey and colleagues manipulated rejection cues via representational paintings that depicted rejection themes or acceptance themes, as well as nonrepresentational paintings with negative valence. They found that individuals with high RS had elevated eye blink startle magnitudes when viewing rejection-themed paintings as compared to acceptance or non-representational negatively themed paintings (22). They hypothesized that this provides evidence that high-RS individuals automatically activate the DMS when presented with rejection cues (22,24) found that high-RS women responded to rejection with anger and hostility and high-RS men were at greater risk for domestic violence than low-RS men.



Aggressive and antisocial behaviors in men have been associated with the low-expression allele of the 30-bp variable number tandem repeats polymorphism in the promoter region of the gene encoding the metabolic enzyme monoamine oxidase. Eisenberger et al. (7) examined the neural responses to social rejection in men with the long allele (i.e., MAOA-L) of this polymorphism. MAOA-L individuals had higher interpersonal sensitivity scores and greater ACC responses to social rejection than individuals with the normal expression allele of the monoamine oxidase A gene (*MAOA*) (7). Consistent with previous work, they also found that MAOA-L individuals reported higher trait aggression levels than MAOA-H individuals as measured by self report. Eisenberger reports that the relationship of trait aggression and MAOA polymorphism is partially mediated by self reported interpersonal sensitivity as well as by dACC responses to social rejection. They posited that high RS, not interpersonal indifference, mediated the elevated aggression that was observed in these men (7).

In a series of four human laboratory experiments, Twenge et al. (25) manipulated subjects' sense of social exclusion to see whether it mediated self-defeating behaviors, such as irrational self-defeating risks, unhealthy behaviors, and procrastination. The findings led them to speculate that thwarting a person's fundamental need to belong produces cognitive dissonance, leading to a failure to self-regulate effectively, which is manifested in self-defeating behaviors. To test the hypothesis that social rejection causes a self-regulatory deficit, the same group engaged human subjects in another series of laboratory experiments (26). They manipulated subjects' sense of rejection and then tested their ability to self-regulate. As predicted, subjects in the social rejection group exhibited significant decrements in the ability to self-regulate on a variety of experimental measures (26).

Burkland et al.(13) used fMRI to examine the impact of RS on the response to facial expressions. They found that high-RS subjects showed a specific neural response to disapproving facial expressions, but not to expressions of disgust or anger. However, there is a limited literature exploring the direct association of RS with addiction. Because high-RS individuals react in ways that are automatic, unregulated, self-defeating and hostile, they may be at increased risk for addiction and relapse. More research in this area is needed to test this hypothesis.

### **Insecure Adult Attachment Style**

Hazan and Shaver extended Bowlby's and Ainsworth's theories on infant attachment to adults (27,28). They postulated that adult attachment can be characterized as secure, anxious or avoidant, and that caregiver-infant interactions early in life form the template for adult attachment style. Anxiously attached adults lack self-confidence, are extremely sensitive to interpersonal rejection and lack effective emotion regulation skills, while securely attached adults have high self-worth, perceive that other people are accepting and engage in healthy coping skills (28,29,30). The ability to regulate distressing emotional experiences is theorized to develop during infancy in the context of a responsive and available caregiver (27,28,30). A primary function of attachment, therefore, is the interpersonal regulation of distressing emotional states (27,31). Insecure attachment is marked by deficient mood regulation skills and a propensity to use maladaptive coping methods, such as drugs and alcohol, to modulate distressing affect (27,29,30,31,32). Anxious attachment, therefore, predisposes individuals to heightened interpersonal conflicts due both to their diminished self-worth and their deficits in regulating emotion.

Insecure adult attachment is associated with addictive disorders (27,28,29,31,32). Thorberg and Lyvers (30) found that, compared with control subjects, individuals with a substance use disorder scored lower on the "attachment dimension of close" and the "attachment dimension of depend" and higher on the "anxiety dimension" of the Revised Adult Attachment Scale. These measures reflect the extent to which a person feels comfortable

with closeness and intimacy, how much they feel they can depend on others, and how anxious they are of being abandoned or unloved. Those with substance use disorders were also more emotionally reactive than controls (30). Another study by these investigators (31) used the Negative Mood Regulation (NMR) expectancies scale to examine the association between anxious attachment and mood regulation. The NMR measures an individual's ability to regulate and successfully cope with negative affective states. They found an association between anxious attachment and a diminished ability to regulate negative moods and postulated that substance use represents a "mood regulating coping mechanism" (30).

McNally et al. (27) examined the relations between alcohol-related consequences and adult attachment dimensions. They used the adult attachment style conceptualization of Bartholomew and Horowitz, which is similar to that of Hazan and Shaver except that they differentiated avoidant attachment into "dismissive" and "fearful" attachment. Two dimensions exist in this model: view of self and view of others. Securely attached individuals have a positive view of self and others; anxiously attached (renamed "preoccupied") individuals have a positive view of others but a negative view of self; dismissive individuals have a positive view of self but a negative view of others; and fearful individuals have a negative view of both self and others. These investigators found that individuals with a negative view of self (i.e., those with preoccupied and fearful attachment styles) reported greater alcohol-related consequences, which were mediated by the individual's desire to alleviate negative affect. The investigators noted that the "individuals' global feelings of insecurity in relationships and interpersonal interaction, and in particular, their sense of themselves as both inadequate and undeserving (negative model of self) appear to have a direct effect on the motivated use of alcohol to cope with negative affect, and an indirect effect (mediated by coping motives) on drinking-related problems" (p. 1124). They suggested that interventions that focus on bolstering a positive self-view might decrease alcohol consumption that is motivated by coping and also decrease drinking-related problems (27).

Cooper et al. (28) examined attachment styles and their relation to self-concept and risky behaviors in adolescents. Anxiously attached individuals had a lower sense of self-worth and a higher incidence of risky behaviors, including drug use, than their securely attached counterparts. Mediation analysis identified distress as being partially responsible for more risky behaviors in the anxiously attached group (28). Vungkhanching et al. (29) found that insecure attachment style is a risk factor for alcohol use disorders independent of family history. Kassel et al. (32) reported that anxious attachment was associated with drug use frequency and stress-motivated drug use in college students. They found that fears of abandonment and low self-esteem were significantly correlated with drug use.

### **Low Self-esteem**

The construct of self-esteem comprises both explicit and implicit domains. Explicit self-esteem is consciously considered and manipulated by the individual, while implicit self-esteem is unconscious and automatic (33). Although both are formed through early interactions with significant others, they are dissociable in many ways. Implicit self-esteem develops at an early age and remains relatively constant and automatic over time. Explicit self-esteem may change based on dynamic interpersonal interactions (34). DeHart et al. (33) reported that college students with low implicit self-esteem consumed more alcohol in the evening after experiencing daytime negative interpersonal interactions. They also found that explicit self-esteem did not moderate the relation between interpersonal interactions and evening alcohol use. In fact, explicit self-esteem had no effect on the relation between implicit self-esteem and alcohol consumption (33). Trait self-esteem moderated the association between negative encounters with romantic partners and alcohol consumption. Individuals with low trait self-esteem drank more on days when they experienced increased

conflicts with their significant others; greater state self-esteem attenuated this association (35). The authors speculated that people with low trait self-esteem consume alcohol as a means to regulate unfulfilled acceptance needs (35).

## Interpersonal Vulnerabilities to Addiction and Relapse

Perceived criticism (PC) and expressed emotion (EE) are related constructs that are used to measure criticism by family members directed toward the patient (36,37). EE—measured with a semi-structured interview—reflects the degree to which relatives refer to the patient in critical, hostile or over-involved ways (36). Extensive research over the last 35 years has shown that high EE is deleterious to recovery in patients suffering from schizophrenia, depression and bipolar disorder (38). O’Farrell et al. (36) found that alcoholic patients with high EE spouses are also more likely to relapse than their low EE counterparts. They proposed the development of a vicious cycle in which increased criticism leads to increased drinking, which leads to escalating criticism. They also found that behavioral marital therapy that aims to improve communication and decrease criticism reduced relapse in patients with high EE spouses (36). The perceived criticism (PC) measure is operationalized using the single question “How critical is your spouse of you?” Similar to high EE, high PC—a far simpler measure that is less expensive to obtain than EE—significantly predicted relapse to substance use in a sample of alcohol dependent individuals (37).

Armeli et al. (39) used an experience sampling design to examine within-person and within-day associations among interpersonal stress, negative affect, and alcohol consumption. They found that daytime interpersonal stress predicted nighttime alcohol consumption in individuals with high "careless unconcern" alcohol-outcome expectancies (AOE) and that this was mediated by daytime negative affect. They interpreted these findings as showing that individuals with high careless unconcern expectancies consume more alcohol at night because they expect that it will decrease their awareness and concern over antecedent daytime interpersonal criticism and rejection.

Marital distress and spousal criticism are frequently associated with worse outcomes in treatment-seeking addicts (40,41). Family cohesion has been shown to significantly predict the severity of a person's dysfunction resulting from drug use (42), and one study reported that spousal conflict was most frequently identified by male alcoholics as the cause of their relapse (43). Booth et al. (40) showed that support from family and friends, specifically "reassurance of worth," significantly predicted improved treatment outcomes even in patients with high rates of prior recidivism. They argued that enhancing an alcoholic's sense of self-worth would increase the individual's likelihood of recovery and called for treatment interventions that focus on enhancing social support (40). Consistent with this approach, numerous studies have shown a positive association between supportive family and friends and improved drug and alcohol treatment outcomes and enhanced psychological functioning (44,45,46,47).

Empirical evidence supports the ability of alcohol to attenuate the discomfort of social threat and rejection, which negatively reinforces drinking behavior. Individuals who are unable effectively to regulate the negative affective states elicited by interpersonal conflict are at greater risk of becoming substance dependent and to persist in their use of alcohol and drugs despite adverse consequences (48,49). For instance, fMRI studies have repeatedly shown that threatening social cues elicit increased amygdala reactivity. Sripada et al. (48) showed that alcohol attenuates this reactivity and hypothesized that alcohol's ability to reduce stress and anxiety is mediated by its attenuation of threat processing in the amygdala (48). Further evidence for alcohol's negative reinforcing properties comes from a study that used the dot probe task to study alcohol's effect on attentional bias in social phobia patients. Compared



to controls, socially phobic individuals had shorter reaction times to angry faces, demonstrating their vigilance for social threats. Alcohol diminished this threat bias. The authors posited that the reduction in vigilance to social threat reduced anxiety in these patients, thus negatively reinforcing alcohol use (49).

## Conclusion

The desire to affiliate is one of the most fundamental instincts of humans and other mammals. The propensity to affiliate socially is adaptive and has been selected for over millions of years. To accomplish this, mammals adapted the neurobiological substrate of physical pain, localized predominantly in the anterior cingulate cortex and sub-served by the endogenous opioid system, to the experience of social pain.

The anterior cingulate cortex has one of the highest opioid receptor concentrations in the brain (6,21), and the anterior cingulate cortex modulates the affective component of both physical and social pain. We propose that the aversion associated with social pain is secondary to reduced opioid activity during episodes of interpersonal rejection and that individuals with high rejection sensitivity may have a dysregulated opioid system and endogenous opioid deficiency (3). Others have postulated that opioid addiction serves as a substitute for social attachment (6,8). Most personality traits are manifested dimensionally, with extreme phenotypes being maladaptive and pathological. This appears to be the case for social affiliation, with rejection sensitivity and related constructs representing a maladaptive extreme of the desire for social affiliation. A subgroup of substance users is exquisitely sensitive to rejection and social pain. These individuals, when exposed to perceived social rejection, appear to experience an “endogenous opioid withdrawal” that is manifested by severe negative affect and intense craving.

Negative reinforcement of social rejection is not the only mechanism increasing high-rejection-sensitivity individuals' risk for addiction and relapse. Because rejection activates the defensive motivational system, these individuals frequently respond with automatic aggressive behaviors, sometimes assuming a passive form of “going out and getting wasted” to “punish” the person who rejected them. Social rejection also impairs self-regulation, further diminishing the high-rejection-sensitivity individual's ability to employ the strategies and cognitions necessary to avoid relapse.

In view of the findings reviewed here, we hypothesize that high rejection sensitivity identifies a specific subset of substance abusers that is particularly vulnerable to the effects of interpersonal stress and its propensity to cause relapse. Further research is needed to define this construct more fully and examine its clinical implications.

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