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Aversive Reactivity: A Transdiagnostic Functional Bridge Between Neuroticism and Avoidant Behavioral Coping

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Abstract
Aversive reactivity to negative affect has been described as a transdiagnostic mechanism that links distal temperamental vulnerabilities to clinically relevant behaviors. However, the abundance of constructs reflecting aversive reactivity has resulted in a proliferation of models that may ultimately be redundant. We performed a circumscribed review of studies measuring associations between six constructs – anxiety sensitivity, experiential avoidance, distress intolerance, intolerance of uncertainty, thought-action fusion, and negative urgency – and ten relevant coping behaviors. Results suggested that most constructs were measured in relation to a limited number of coping behaviors. Additionally, constructs were most often measured in isolation, rather than with similar constructs. Implications and suggestions for future research and treatment are discussed.

Keywords transdiagnostic; neuroticism; behavior; aversive reactivity; experiential avoidance

Neuroticism, the tendency to experience negative emotions (Barlow et al., 2014), has been described as a higher-order risk factor for a range common psychiatric conditions (Brown, 2007; Brown & Barlow, 2009; Kessler et al., 2011; Griffith et al., 2010). Recently, Barlow and colleagues have described a functional model of "emotional disorders" (i.e., anxiety, depressive, and related disorders) to explain *how* neuroticism promotes various forms of psychopathology (Barlow et al., 2014; Bullis et al., 2019; Sauer-Zavala & Barlow, 2014). Emotional disorders are thought to develop from and be maintained by a negative reinforcement process in which: (1) frequent and intense negative emotions (neuroticism) are met with (2) aversive reactions to these emotional experiences (e.g., perceiving the emotions as intolerable, uncontrollable or as having negative consequences), leading to (3) behavioral efforts to escape, avoid, or reduce emotional intensity (Bullis et al., 2019; Gross et al., 2011).

In this model, aversive reactivity to emotions refers to the belief that negative emotions are unwelcome, dangerous, or otherwise intolerable. People who respond to negative affective experiences this way are likely to attempt to reduce or alter the intensity of their emotional experience through avoidant coping strategies. Although avoidant coping may offer temporary short-term relief (Campbell-Sills et al., 2006), this approach results in rebound effects where negative emotions become more frequent and intense over time (Abramowitz et al., 2001). In addition, people experience functional impairment as their lives become increasingly characterized by patterns of emotional avoidance (Hayes et al., 2006). Thus, in this model, aversive reactivity functions as the bridge connecting neuroticism with the avoidant behavioral coping that perpetuates a cycle of negative emotions and impairment.

Aversive Reactivity to Emotions: A Transdiagnostic Construct Studied as Isolated Components

Whereas neuroticism is well-accepted as a transdiagnostic vulnerability factor across a range of psychopathology (Barlow et al., 2014; Lahey, 2009;

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Sauer-Zavala et al., 2017), the study of aversive reactivity has been divided among several conceptually similar constructs, each with their own theoretical model and empirical research base. Examples of the varied processes reflecting aversive reactivity to emotions include anxiety sensitivity, experiential avoidance, distress intolerance, intolerance of uncertainty, thought-action fusion, and negative urgency (McHugh et al., 2011; Naragon-Gainey & Watson, 2018). Researchers have typically defined these constructs as distinctly associated with unique forms of psychopathology. For example, anxiety sensitivity and intolerance of uncertainty have historically been implicated in panic disorder and generalized anxiety disorder (GAD; Naragon-Gainey & Watson, 2018), whereas thought-action fusion was initially studied in the context of obsessive-compulsive disorder (Shafran et al., 2006). Developing discrete theoretical models that assign unique risk factors to each *DSM* diagnosis is consistent with a categorical approach to classification. In contrast, experiential avoidance and distress intolerance have been viewed as transdiagnostic processes (McHugh et al., 2011; Naragon-Gainey & Watson, 2018; Spinhoven et al., 2014; Spinhoven et al., 2017); however, the existence of multiple constructs reflecting the same phenomenon has the potential to unnecessarily complicate the field's understanding of psychopathology and its treatment through the creation of an abundance of conceptualizations and treatment approaches.

The goal of this review is to summarize and examine trends in how several distinct constructs representing aspects of aversive reactivity have been studied. We focused our efforts on the six aforementioned constructs in particular (i.e., anxiety sensitivity, experiential avoidance, distress intolerance, intolerance of uncertainty, thought-action fusion, and negative urgency) to explore (1) whether these constructs were more often studied together or separately and (2) the behavioral outcomes with which these constructs were most frequently studied. Although emotion dysregulation is an important and related process, and others have explored its overlap with constructs representing aversive reactivity (e.g., Conway et al., 2020), we chose to exclude it from our review. Emotion dysregulation research is characterized by a broad literature with inconsistent definitions of this construct; some (e.g., Trull et al., 2015; Linehan, 1993) view emotion dysregulation more akin to neuroticism (frequent, intensive, unstable emotions) whereas others (e.g., Gross et al., 2011) consider this construct to reflect ability to modulate emotional responses. These inconsistencies render it difficult to draw conclusions about the nature of the research on aversive reactivity as a unique process.

Anxiety Sensitivity. Anxiety sensitivity refers to the belief that the physical sensations associated with anxiety are inherently dangerous or will have serious negative consequences (Reiss et al., 1986). People higher in anxiety sensitivity view emotion-related physiological changes as dangerous, increasing the intensity of the emotional responses by activating the sympathetic nervous system (Reiss et al., 1986). Anxiety sensitivity includes three distinct manifestations, each related to a feared negative outcome: physical, cognitive, and social (Taylor et al., 2007). A person may notice increased heart rate and worry that they will have a heart attack (physical consequence; e.g., "it scares me when my heart beats rapidly"; Taylor et al., 2007), a loss of control (cognitive consequence; "It scares me when I am unable to keep my mind on a task"; Taylor et al., 2007), or that they will do something embarrassing in public (social consequence; e.g., "I worry that other people will notice my anxiety"; Taylor et al., 2007). Anxiety sensitivity leads to greater awareness and negative interpretations of anxiety symptoms, which promotes avoidant behavioral coping responses as people seek to escape from distressing physiological states (Wheaton et al., 2012). Since anxiety sensitivity is the belief that certain sensations are inherently dangerous, it is a form of aversive reactivity.

Anxiety sensitivity was originally investigated in the context of panic disorder (Reiss et al., 1986). Since then, anxiety sensitivity has been implicated in an increasingly wide range of psychopathology. High levels of anxiety sensitivity have been observed across the anxiety and related disorders, including obsessive-compulsive disorder (OCD; Raines et al., 2014), social anxiety disorder (Ak & Kılıç, 2017), GAD (Deacon & Abramowitz, 2006), and posttraumatic stress disorder (PTSD; Asmundson & Stapleton, 2008). People who engage in alcohol and drug use (Allan et al., 2015a), self-injurious behaviors (e.g., Allan et al., 2015b), and disordered eating (Anestis et al., 2008) also demonstrate elevated levels of anxiety sensitivity (e.g., Allan et al., 2015a). Since anxiety sensitivity was historically investigated exclusively in the context of anxiety disorders, recent work has only begun to break free of these historical limitations and consider the role of anxiety sensitivity across disorders. Anxiety sensitivity is most commonly measured using various iterations of the Anxiety Sensitivity Index (ASI; Reiss et al., 1986), including the ASI-R (Taylor & Cox, 1998) and ASI-3 (Taylor et al., 2007).

Experiential Avoidance. Experiential avoidance is a construct coined and popularized by the developers of Acceptance and Commitment Therapy (ACT; Hayes et al., 2016) to combine a variety of responses to negative internal stimuli. Experiential avoidance has been defined by two primary aspects: (1) an

"unwilling[ness] to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioral predispositions)" and (2) taking "steps to alter the form or frequency of these events and the contexts that occasion them" (Hayes et al., 1996). Because experiential avoidance is defined as a functional process, it may present as any number of unique behavioral responses, depending on the stimulus the person is trying to avoid (e.g., substance use, withdrawal, or self-harm).

Given the breadth of this definition, experiential avoidance was initially conceptualized as an overarching transdiagnostic construct. Indeed, previous reviews (Chawla & Ostafin, 2007) demonstrate the role of experiential avoidance in various forms of psychopathology, including depression (Polusny et al., 2004), GAD (Roemer et al., 2005), PTSD (Tull et al., 2004), substance use (Forsyth et al., 2003), self-harm (Chapman et al., 2006), and BPD (Chapman et al., 2005). Experiential avoidance has been primarily measured in two ways: as a single dimension using the Acceptance and Action Questionnaire (e.g., "I'm afraid of my feelings"; Hayes et al., 2004; Bond et al., 2011), and as six specific manifestations using the Multidimensional Experiential Avoidance Questionnaire (MEAQ; Gámez et al., 2011): behavioral avoidance (e.g., "I won't do something if I think it will make me uncomfortable"), distress aversion (e.g., "If I could magically remove all of my painful memories, I would"), repression/denial (e.g., "I am able to 'turn off' my emotions when I don't want to feel"), distraction/suppression (e.g., "When something upsetting comes up, I try very hard to stop thinking about it"), procrastination (e.g., "I tend to put off unpleasant things that need to get done"), and distress endurance (e.g., "People should face their fears"; Gámez et al., 2011).

Distress Intolerance. Distress intolerance is defined as a person's ability to experience and withstand negative emotions (e.g., "I'll do anything to stop feeling distressed or upset"; Simons & Gaher, 2005), which includes the evaluation of and expectations around experiencing negative emotions, such as tolerability, appraisal, emotion regulation, and disruption of functioning (Simons & Gaher, 2005). For example, people high in distress intolerance perceive distress to be intolerable, have difficulty accepting distress (i.e., feel ashamed of being distressed), use strategies aimed at immediately avoiding or alleviating negative emotions, and feel consumed by the experience of negative emotions, causing significant disruption of functioning (Simons & Gaher, 2005). Distress intolerance is a form of aversive reactivity, as it is characterized by a perceived inability to tolerate and regulate distressing emotional experiences.

Distress intolerance has been commonly studied in the context of substance use disorders. Individuals high in distress intolerance are more likely to experience problems related to alcohol and cannabis use (Buckner et al., 2007) and are prone to relapse sooner (Daughters et al., 2005) than those low in distress intolerance. Distress intolerance is also linked to eating disorders (e.g., Raykos et al., 2009), self-injurious behaviors (e.g., Nock & Mendes, 2008), suicidal ideation (Anestis et al., 2013), hoarding (e.g., Timpano et al., 2009), and rumination (e.g., Feldman et al., 2014). Low levels of distress intolerance have also been observed in emotional disorders such as PTSD (Tull et al., 2013), GAD, and major depressive disorder (Allan et al., 2014). Again, distress intolerance has only recently begun to receive attention in a broader range of emotional disorders outside of substance use disorders. Distress intolerance is most commonly measured with the Distress Tolerance Scale (DTS; Simons & Gaher, 2005)

Intolerance of Uncertainty. Intolerance of uncertainty is defined as difficulty withstanding the experience of not knowing (e.g., "Uncertainty makes me vulnerable, unhappy, or sad", "My mind can't be relaxed if I don't know what will happen tomorrow"; Buhr & Dugas, 2002). Although this construct has historically been considered a symptom of anxiety (Dugas et al., 1997), particularly of GAD, researchers have also described intolerance of uncertainty as a core mechanism maintaining a range of emotional disorders (e.g., Carleton, 2012; Carleton, 2016; Einstein, 2014). Intolerance of uncertainty may represent a specific form of aversive reactivity related to the cognitive features of an emotional experience (i.e., not knowing). The majority of intolerance of uncertainty research has historically centered on anxiety disorders (e.g., GAD [Ladouceur et al., 1999], social anxiety disorder [SAD; Boelen & Reijntjes, 2009], and panic disorder [Smith et al., 2019]). Intolerance of uncertainty has since demonstrated relations with OCD (Hezel et al., 2019; Tolin et al., 2003) as well as with depression (Carleton, 2012; Gentes & Ruscio, 2011) and eating disorders (Brown et al., 2018).

In addition to correlational studies examining relations between intolerance of uncertainty and symptoms of various disorders, experimental manipulations that induce intolerance of uncertainty shed light on its behavioral consequences. For example, using a validated laboratory paradigm, Mosca et al. (2016) asked participants to progressively consider potential outcomes of a possible negative future life event and then read statements designed to induce high or intolerance of uncertainty. The authors reported significantly higher levels of worry in the high intolerance of uncertainty condition, relative to the low intolerance of uncertainty and control conditions.

Indeed, worry represents a form of avoidant coping as it creates the illusion that one is reducing the likelihood of already low base rate negative events and may distract from negative affect and its associated arousal (Borkovec & Roemer, 1995; Llera & Newman, 2014). Intolerance of uncertainty is most commonly assessed by the Intolerance of Uncertainty Scale (IUS; Buhr & Dugas, 2002).

Thought-Action Fusion. Thought-action fusion is a form of aversive reactivity that is specifically related to the cognitive component of an emotional experience (i.e., thoughts). There are two ways in which thought-action fusion can manifest (Shafran et al., 1996). First, likelihood thought-action fusion refers to the belief that simply having a thought about an event makes that event more likely to occur (e.g., "If I think of myself falling ill, this increases the risk that I will fall ill"; Shafran et al., 1996). Moral thought-action fusion is the belief that thinking about an action is morally equivalent to actually performing that behavior (e.g., "If I wish harm on someone, it is almost as bad as doing harm"; Shafran et al., 1996). Thought-action fusion is most commonly measured by the Thought-Action Fusion Scale (TAFS; Shafran et al., 1996). Indeed, thought-action fusion is thought to form an intermediate step between an intrusive thought and a compulsive behavior (Rachman, 1998), and is a form of aversive reactivity in the functional model of emotional disorders (e.g., Barlow et al., 2014; Bullis et al., 2019). Thought-action fusion is overwhelmingly most frequently associated with OCD, perhaps limiting our understanding of its transdiagnostic applicability, although it has also been linked to other anxiety disorders, as well as eating disorders (Thompson-Hollands et al., 2013).

Negative Urgency. Negative urgency refers to the tendency to react to emotional distress by engaging in impulsive behaviors (Keough et al., 2017). Initial factor analyses of impulsivity identified four distinct primary factors, including lack of premeditation (e.g., "I have a reserved and cautious attitude toward life" [reverse scored]), negative urgency (e.g., "When I feel bad, I will often do things I later regret in order to make myself feel better now"), sensation seeking (e.g., "I generally seek new and exciting experiences and sensations"), and lack of perseverance (e.g., "I tend to give up easily"; Whiteside & Lynam, 2001). More recent iterations include a fifth factor, positive urgency, or the tendency to act impulsively as a result of intense positive emotions (e.g., "When I am very happy, I tend to do things that may cause problems in my life"; Lynam et al., 2006). While these individual aspects of impulsivity all refer in some way to acting without forethought (Whiteside et al., 2005), negative urgency specifically describes the functional process of negative affect as the driving force behind impulsive behaviors. In particular, negative urgency is associated with giving into cravings, and demonstrates strong associations with neuroticism (Whiteside et al., 2005). Negative urgency has subsequently been linked to multiple high-risk behaviors including binge eating (Fischer et al., 2018), substance use, and non-suicidal self-injury (NSSI; Zhao et al., 2017), although there is a lack of research investigating the role of negative urgency with other emotional disorders outside of borderline personality disorder and substance use disorders (Whiteside et al., 2005). In sum, people high in negative urgency engage in impulsive behaviors to quickly relieve intense negative emotional distress despite possible negative long-term consequences (Fischer et al., 2018). Thus, negative urgency represents a form of aversive reactivity as negative evaluations of emotional experiences drive impulsive avoidant coping behaviors (Keough, et al., 2017). Negative urgency is most commonly assessed with the Urgency, Premeditation (lack of), Perseverance (lack of), Sensation Seeking, Positive Urgency, Impulsive Behavior Scale (UPPS-P; Lynam et al., 2006).

Relationships Among Aversive Reactivity Constructs. In line with a more comprehensive transdiagnostic model of psychopathology, researchers have begun to explore the extent to which these forms of aversive reactivity are distinct. For instance, Spinhoven and colleagues (2017) demonstrated that experiential avoidance and anxiety sensitivity are indicators of a single underlying latent factor, suggesting that these constructs may function similarly. Similarly, Conway and colleagues (2020) performed factor analyses on measures reflecting distress tolerance, anxiety sensitivity, experiential avoidance, and emotion dysregulation, and found evidence supporting a single universal latent factor underlying all constructs. Moreover, some have argued that anxiety sensitivity, intolerance of uncertainty, and experiential avoidance are manifestations of neuroticism itself (Naragon-Gainey & Watson, 2018; Spinhoven et al., 2016). Others argue that these constructs are not synonymous with neuroticism but represent "proximal individual differences that can better describe who is likely to develop which specific symptoms beyond the broad risk conferred by affective traits" (Naragon-Gainey et al., 2018, p. 1177). Finally, given that many of the studies aimed at understanding relationships between aversive reactivity constructs and psychopathology tend to focus only on a portion of the possible relations (e.g., anxiety sensitivity and avoidance; distress intolerance and self-injury, etc.), it is unclear whether these constructs can differentially and meaningfully predict avoidant behavioral coping above and beyond neuroticism and each other.

Why Study Behaviors Instead of DSM Disorder Constructs?

As previously described, emotionally avoidant coping strategies contribute to a reinforcement cycle in which emotional experiences occur more frequently and are viewed more negatively, ultimately increasing the likelihood of continued avoidance (Bullis et al., 2019). Avoidant coping may manifest behaviorally (e.g., leaving an anxiety-provoking situation, using substances to dampen negative emotions) or cognitively (e.g., worrying, ruminating, suppressing unwanted thoughts). Although the typical strategies used may differ based on *DSM* disorder (e.g., people with panic disorder may be more likely to engage in agoraphobic avoidance, rumination may be more common in depression), all of these efforts function to escape from unwanted emotion and can occur across diagnoses (Barlow et al., 2014; Bullis et al., 2019). Unfortunately, because specific avoidant behaviors are typically associated with a particular disorder, the research to date relating various coping strategies to neuroticism and disorder-specific aversive reactivity constructs has been piecemeal. Recent efforts such as the Research Domain Criteria (RDoC; Insel et al., 2010) encourage research that cuts across diagnostic categories to identify functional transdiagnostic processes. To better understand the shared and unique predictive utility of each aversive reactivity construct, it is necessary to conduct more comprehensive research that assesses multiple constructs related to aversive reactivity (e.g., anxiety sensitivity, experiential avoidance, distress intolerance, intolerance of uncertainty, thought-action fusion, and negative urgency) along with a wider range of behavioral outcomes that function to escape emotions (e.g., substance use, checking, self-injury). By examining specific effects captured by these broader assessments, researchers may develop more streamlined and empirically testable models of psychopathology with clear functional relations.

Additionally, the prediction of behavioral avoidance strategies, rather than disorder-based symptom severity, may be useful for the prevention of emotional disorders. Occasional emotionally avoidant behaviors are normative (Gross et al., 2011) and in some contexts, adaptive (Hofmann & Hay, 2018). For example, a person may need to distract themselves from suicidal urges in the moment to more adaptively approach and process their emotions in the future. However, the repeated, habitual use of avoidant behaviors in response to negative emotions lays the foundation for the development of an emotional disorder (Bullis et al., 2019). As described previously, engaging in short-term avoidance increases the intensity and distress of future negative emotions and can contribute to functional impairment (Abramowitz et al., 2001; Hayes et al., 2016). Over time, the cycle of negative emotions, aversive reactivity, and avoidant coping behaviors are thought to become more entrenched until a person ultimately crosses the dichotomous diagnostic threshold for a *DSM* disorder. Thus, although neuroticism represents a key vulnerability for the development of psychopathology, aversive reactivity may be the active mechanism contributing to the avoidant behavioral coping that eventually constitutes diagnostically significant syndromes.

Toward a Transdiagnostic Aversive Reactivity Construct: Trends in the Literature

In the section that follows, we review the frequency with which aversive reactivity constructs are studied alongside each other, as well as in the context of ten behaviors that function as avoidant responses to negative affect and that present across common *DSM* syndromes: alcohol use, drug use, compulsions, worry, rumination, binge eating/restricting, self-harm, behavioral withdrawal, situational avoidance, and reassurance-seeking. Although worry and rumination may be classified as cognitive avoidance strategies, we take a behaviorist approach in referring to them as behaviors in this review. By highlighting how frequently certain constructs are studied with specific behaviors (e.g., distress intolerance is most often assessed as a predictor of drug use), we demonstrate the isolated nature of this literature. We hope to underscore the need for more comprehensive investigations of the relations between aversive reactivity and avoidant behavioral coping that can precede and maintain emotional disorders.

Method

We conducted a circumscribed literature review to supplement our theoretical premise that the state of the research on aversive reactivity and avoidant behavioral coping is quite isolated. The scope of our review included a large number of constructs and measures, as well as specific statistical associations, rendering a conventional systematic review or meta-analysis unfeasible. Instead, we searched for peer-reviewed articles that included measures of any of the six aforementioned aversive reactivity constructs and at least one measure of the ten clinically relevant avoidant behaviors. We searched for articles within the APA PsycInfo, Web of Science, and Google Scholar databases by entering each combination of aversive reactivity construct and avoidant behavior (e.g., “experiential avoidance” + “rumination”). A complete list of search terms and the resulting eligible articles is available upon request. Eligibility for inclusion in this review was determined by the following criteria: (1)

use of a validated measure of at least one aversive reactivity construct, (2) use of a measure that specifically captured *behavioral* manifestations of avoidant coping (e.g., Avoidance subscale of the PCL-5; Ruminative Response Scale), and not solely symptom severity, and (3) a reported association between the construct and avoidant behavior (e.g., correlation coefficient, R^2 change, etc.). This list of measures is available in Appendix S1. After initial identification, an independent member of the research team reviewed each article to confirm its eligibility. We initially identified 561 possibly eligible articles. Of these original 561 articles, 26 were duplicates, and 70 more were deemed ineligible after further review by research team personnel. Of the 70 ineligible articles, 31 did not measure an aversive reactivity construct of interest, 31 did not measure a specific behavior of interest, and 8 did not report an association between an aversive reactivity construct and behavior, leaving 465 final studies included (see Figure S1).

Results

The frequency of studies that included associations between aversive reactivity constructs and avoidant behaviors is depicted in Figure 1. Darker colors indicate a higher number of articles that identified an association, whereas lighter colors indicate fewer articles documenting such associations. In addition, a graphical depiction of the frequency with which the aversive reactivity constructs were measured in conjunction with each other is presented in Figure 2. Again, darker colors indicate higher frequencies of articles, and lighter colors indicate lower frequencies. Values on the diagonal indicate the number of articles that only measured the indicated construct and no others. We summarize the results for each construct in the sections below.

Anxiety Sensitivity and Behavioral Coping

We identified 204 articles that measured anxiety sensitivity along with at least one avoidant behavioral response. Out of these 204 studies, anxiety sensitivity was most frequently investigated with alcohol use (k = 73) and drug use (k = 60), indicating the central role anxiety sensitivity is thought to play in the use of substances to avoid uncomfortable sensations associated with anxiety.

Anxiety sensitivity was also studied relatively frequently with worry (k = 35), compulsions (k = 31), self-harm (k = 28), and behavioral or situational avoidance (k = 20). Worry, compulsions, and avoidance are all commonly associated symptoms or sequelae of anxiety disorders; therefore, the frequency of these associations is consistent with the conceptualization of anxiety sensitivity as a bridge between anxious arousal and subsequent clinical syndromes. However, the moderately high number of studies regarding deliberate self-harm was somewhat unexpected given the initially limited scope of anxiety sensitivity. Given that self-harm is often a maladaptive response to intense negative affect, catastrophic interpretations characteristic of anxiety sensitivity may be an important factor in the use of self-harm to escape or distract from these affective experiences.

Anxiety sensitivity was least frequently studied with rumination (k = 15), binge eating/restricting (k = 13), behavioral withdrawal (k = 5), and reassurance seeking (k = 1), underscoring the conceptual silo between anxiety sensitivity and non-anxiety-related disorders. Indeed, the fear of anxiety-related physical sensations may not, at face value, appear relevant to self-harm, rumination, disordered eating, behavioral withdrawal, or reassurance seeking. Yet when considered from the perspective of the negative reinforcement cycle that defines emotional disorders, these behaviors function to escape perceived distress.

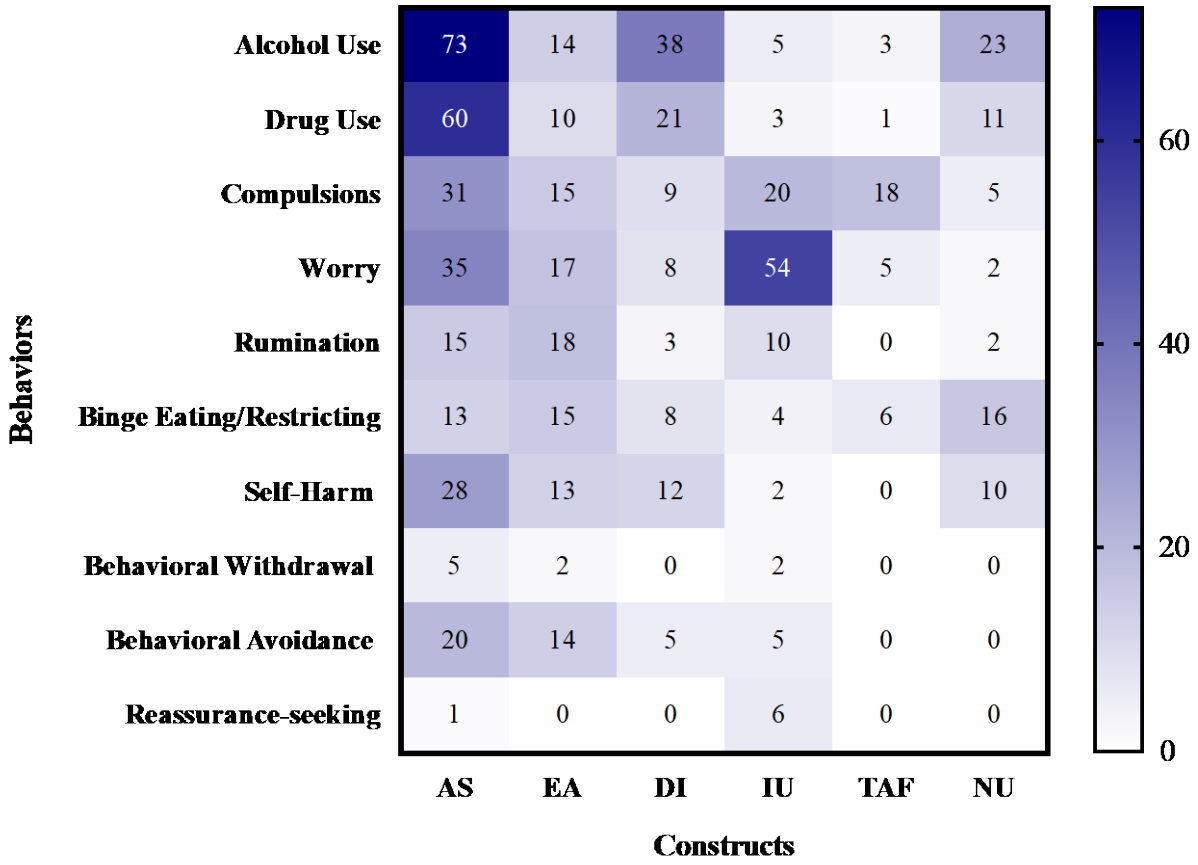
Anxiety Sensitivity with Other Constructs Reflecting Aversive Reactivity

Anxiety sensitivity was measured more frequently than other aversive reactivity constructs (k = 204), and most often in isolation (k = 149; Figure 2). The most commonly paired construct with anxiety sensitivity was distress intolerance (k = 22), which is also highly linked to alcohol and drug use. In descending order, the next constructs most frequently studied with anxiety sensitivity were experiential avoidance (k = 14), intolerance of uncertainty (k = 14), and negative urgency (k = 12). No studies assessed both anxiety sensitivity and thought-action fusion (k = 0). Thus, despite the likelihood that anxiety sensitivity and the other aversive reactivity constructs represent conceptually similar functional mechanisms, these associations have not been investigated in a systematic fashion.

Experiential Avoidance and Behavioral Coping

Consistent with its broad applicability, researchers have studied experiential avoidance in the context of a range of behavioral outcomes across 91 articles (Figure 1). Unlike other measures of aversive reactivity, a similar number of studies have been conducted assessing experiential avoidance and each behavioral outcome assessed here except for withdrawal (k = 2) and reassurance-seeking (k = 0): alcohol use (k = 14), drug use (k = 10), compulsions (k = 15), worry (k = 17), rumination (k = 18), binge eating and restricting (k = 15), self-harm (k = 13), and behavioral avoidance (k = 14). This pattern suggests that researchers have considered the transdiagnostic functional nature of

Figure 1. Frequency of Studies Investigating Associations between Constructs Reflecting Aversive Reactivity and Avoidant Coping Behaviors



Note. Darker colors represent high number of studies investigating the association. AS = Anxiety sensitivity; EA = Experiential avoidance; DI = Distress intolerance; IU = Intolerance of uncertainty; TAF = Thought-action fusion; NU = Negative urgency.

experiential avoidance by testing its relations with a wide range of putatively avoidant behaviors.

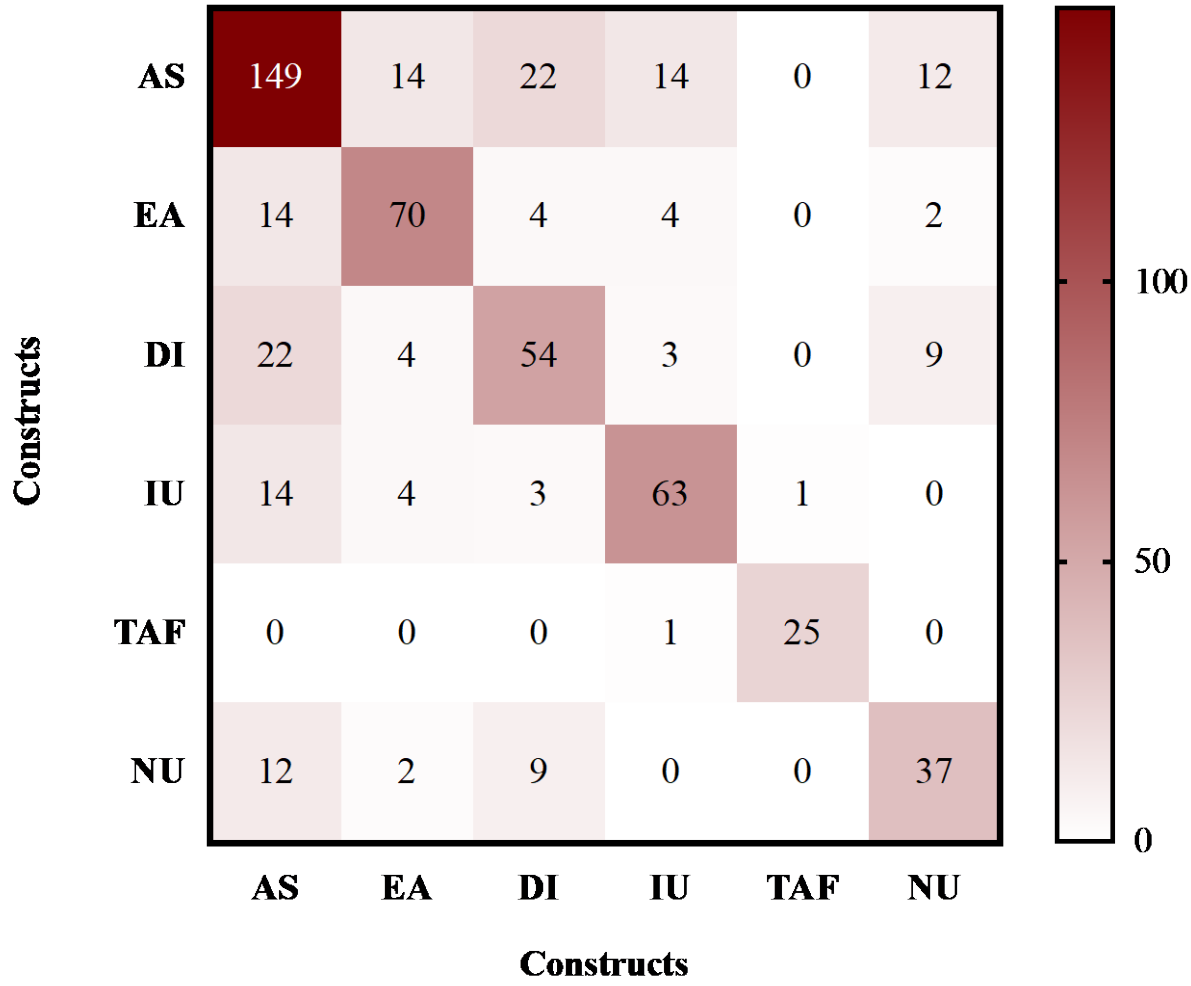
Experiential Avoidance with Other Constructs Reflecting Aversive Reactivity

Although researchers have studied experiential avoidance with a wide range of behaviors, the vast majority of research conducted on experiential avoidance has not included other constructs reflecting aversive reactivity (k = 91; Figure 2). Specifically, experiential avoidance was most frequently studied alongside anxiety sensitivity (k = 14), yet hardly studied alongside negative urgency (k = 2), distress intolerance (k = 4), intolerance of uncertainty (k = 4), and thought-action fusion (k = 0). Researchers have tended to test the relations between avoidant behaviors and experiential avoidance alone (k = 70), rather than in tandem with other relevant constructs. This tendency has made it difficult to establish the degree of statistical overlap between experiential avoidance and other aversive reactivity constructs. Given that experiential avoidance was initially purported to function as an overarching, transdiagnostic process, researchers may not have considered it necessary to include other forms of aversive reactivity, since the broad definition of experiential avoidance was thought to capture these theorized processes.

Distress Intolerance and Behavioral Coping

We identified 85 articles that measured Distress Intolerance along with at least one avoidant behavior. Distress intolerance was most frequently investigated with alcohol use (k = 38) and drug use (k = 21), highlighting the significance of distress intolerance in the use of substances to avoid distressing emotions. Distress intolerance was also relatively frequently investigated with self-harm (k = 12), compulsions (k = 9), worry (k = 8), and binge eating/restricting (k = 8). Given that self-harm and binge eating/restricting can provide immediate relief from intense, negative emotions, researchers may be more likely to examine the role of distress intolerance specifically. Distress

Figure 2. Frequency of Studies Investigating Associations between Constructs Reflecting Aversive Reactivity and Other Related Constructs



Note. The numbers in the diagonal represent the number of studies that measured the construct of interest in isolation. Abbreviations for constructs are as follows, along with the total number of studies that measured each construct in parenthesis: AS = Anxiety sensitivity (k = 204); EA = Experiential avoidance (k = 91); DI = Distress intolerance (k = 85); IU = Intolerance of uncertainty (k = 81); TAF = Thought-action fusion (k = 26); NU = Negative urgency (k = 57).

intolerance was least frequently studied with behavioral avoidance (k = 5), rumination (k = 3), behavioral withdrawal (k = 0), and reassurance seeking (k = 0), which are more common among anxiety and depressive disorders and generally represent less immediate forms of avoidant coping.

Distress Intolerance with Other Constructs Reflecting Aversive Reactivity

Distress intolerance was most commonly studied in isolation (k = 54). When it was studied with another aversive reactivity construct, distress intolerance was most frequently measured with anxiety sensitivity (k = 22), reflecting a similar aversion to physical sensations brought on by intense negative emotions. In descending order, the next constructs most frequently studied with distress intolerance were negative urgency (k = 9), experiential avoidance (k = 4), and intolerance of uncertainty (k = 3). No studies investigated associations between distress intolerance and thought-action fusion (k = 0).

Intolerance of Uncertainty and Behavioral Coping

We identified 81 articles that assessed relationships between intolerance of uncertainty and at least one avoidant behavior. Unsurprisingly, intolerance of uncertainty was most frequently investigated with worry (k = 54). Worry may provide a sense of control over uncertain outcomes, functioning to escape from the aversive state of not knowing (Borkovec, 1994).

Intolerance of uncertainty was studied relatively frequently with compulsions (k = 20) and rumination (k = 10). Given that compulsive behaviors and rumination serve to avoid negative emotions, it makes conceptual sense that researchers would explore associations between these variables. In contrast, intolerance of uncertainty was rarely studied with other forms of behavioral avoidance. This is unfortunate as some have hypothesized that specific forms of uncertainty may lead to different types of avoidant behaviors (e.g., situational avoidance, social withdrawal) and ultimately to the onset of different clinical conditions (Shihata et al., 2017). However, more comprehensive research is needed to draw these conclusions.

Intolerance of Uncertainty with Other Constructs Reflecting Aversive Reactivity

In relation to other constructs representing aversive reactivity to emotion, intolerance of uncertainty was most often studied in isolation (k = 63). The most commonly paired construct was anxiety sensitivity (k = 14), followed by experiential avoidance (k = 4), distress tolerance (k = 3), and thought-action fusion (k = 1). No studies investigated associations between intolerance of uncertainty and negative urgency. The piecemeal nature of the work examining relations between aversive reactivity constructs makes it difficult to draw conclusions about the extent to which these constructs are unique in predicting specific forms of avoidant behavioral coping.

Thought-Action Fusion and Behavioral Coping

We identified 26 articles that assessed relations between thought-action fusion and at least one avoidant behavior. The relatively low number of articles assessing this construct is likely because thought-action fusion is often studied in the context of OCD *symptoms*. Studies that reported the association between thought-action fusion and the frequency of compulsions, the *behavioral* avoidance strategy associated with OCD, were relatively uncommon (k = 18). The other forms of behavioral coping studied in tandem with thought-action fusion include binge eating (k = 6), worry (k = 5), alcohol use (k = 3), and drug use (k = 1). Worry makes conceptual sense in this context because, like obsessional thinking, it is a form of repetitive thought. It is also worth noting that a body image-specific form of thought-action fusion (i.e., thought-shape fusion; TSF) was tested in relation to the frequency of eating behaviors (e.g., Shafran & Robinson, 2004); the specific construct of TSF indicates that the tendency to view thoughts as dangerous facts is indeed transdiagnostic, although separate measures contribute to fragmentation of this literature.

Thought-Action Fusion with Other Constructs Reflecting Aversive Reactivity

With regard to co-occurrence of thought-action fusion and other forms of aversive reactivity, only one study with behavioral outcomes included another construct (k = 1), indicating that thought-action fusion was most commonly studied in isolation (k = 25). This pattern suggests that thought-action fusion has historically been seen as its own unique construct, relevant only in a few narrow contexts, and separate from other forms of aversive reactivity. However, given that thought-action fusion may indeed function similarly as a means of escaping or avoiding negative affect, the paucity of literature that measures thought-action fusion in conjunction with other relevant constructs limits the applicability of findings.

Negative Urgency and Behavioral Coping

We identified 57 articles that measured negative urgency along with at least one avoidant behavior. The most commonly investigated behavior was alcohol use (k = 23), highlighting researchers' interest in alcohol use as an impulsive response to negative emotions. Similarly, several studies included assessments of both negative urgency and drug use (k = 11). The next most commonly investigated behaviors studied with negative urgency were binge eating/restricting (k = 16) and self-harm (k = 10), which are often impulsive responses to distress that fit with the conceptual notion of negative urgency. Negative urgency was studied least frequently with compulsions (k = 5), worry (k = 2), rumination (k = 2), behavioral withdrawal (k = 0), behavioral avoidance (k = 0), and reassurance-seeking (k = 0).

Negative Urgency with Other Constructs Reflecting Aversive Reactivity

Negative urgency was the second-least frequently studied construct in our review (k = 57); however, like many of the other constructs, it was also more often studied in isolation (k = 37) than with other constructs. The most commonly paired construct with negative urgency was anxiety sensitivity (k = 12), which also has a strong literature base in alcohol and drug use. Next, negative urgency was investigated with distress intolerance (k = 9) and experiential avoidance (k = 2) to a lesser extent. Distress intolerance and negative urgency research overlaps in several behavioral domains, including alcohol/drug use and self-harm. However, the paucity of research involving negative urgency and experiential avoidance, as well as the complete lack of studies investigating negative urgency with both intolerance of uncertainty and thought-action fusion suggest that these constructs are not historically perceived to be related, despite the functional similarities in aversive reactivity.

Discussion

In this review, we conceptualize aversive reactivity to emotions as a transdiagnostic, functional mechanism linking temperamental risk factors (i.e., neuroticism) and clinical syndromes. We contend that six supposedly unique psychological processes (i.e., anxiety sensitivity, experiential avoidance, distress intolerance, intolerance of uncertainty, thought-action fusion, and negative urgency) all reflect the tendency to find negative emotional experiences aversive. Experiential avoidance, for instance, is considered a general unwillingness to experience unpleasant internal states; similarly, distress intolerance is the perceived inability to tolerate subjective distress. Several further constructs reflect aversive reactions to specific aspects of an affective experience. For example, anxiety sensitivity refers to distress over anxiety-related physical sensations, whereas both intolerance of uncertainty and thought-action fusion represent negative evaluations of cognitions. Finally, negative urgency is the impulsive urge to engage in behaviors that will provide relief from strong negative emotions. In our estimation, these constructs all serve similar functional purposes as the intermediate bridge between negative affect and maladaptive coping behaviors.

However, the foundational research trends on which these constructs are based have not reflected the conceptual similarities between constructs and continue to perpetuate isolated research strategies, contributing to an unnecessary overabundance of psychopathological models that hinders transdiagnostic research and clinical development. For example, categorial diagnostic models such as the DSM have produced numerous conceptualizations and models for each distinct diagnostic category, despite findings that several of the most common emotional disorders may simply represent variations of shared underlying mechanisms (Blashfield et al., 2014; Lilienfeld, 2014). Clinically speaking, the existence of many disorder-specific interventions (i.e., single-disorder protocols [SDPs]) places additional burden on clinicians to learn and administer different SDPs, contributing to clinician burnout and preventing patients from receiving care that they need (Kazdin, 2008; Kazdin & Blase, 2016; McHugh & Barlow, 2010). Recently, researchers have begun to more comprehensively investigate the degree to which aversive reactivity constructs relate to neuroticism (Naragon-Gainey & Watson, 2018), to one another (Conway et al., 2020; Spinhoven et al., 2017), and to other related constructs such as emotion dysregulation (Conway et al., 2020; Juarascio et al., 2020). From a clinical perspective, empirical efforts to compare transdiagnostic cognitive-behavioral interventions (i.e., the Unified Protocol [UP]) to disorder-specific protocols demonstrated that the UP resulted in equivalent symptom reduction, suggesting equal effectiveness with less attrition and less clinician burden (Barlow et al., 2017). Thus, although the isolated nature of these constructs has been perpetuated for decades, it is clear that researchers are moving toward more empirical comparisons and integrations of these constructs.

As a supplement to our theoretical review, we sought to characterize overarching patterns in the study of constructs reflecting aversive reactivity to negative emotions alongside clinically relevant avoidant behaviors by conducting a circumscribed literature review. In support of the view that this literature has been conducted in a piecemeal fashion, our findings demonstrate that aversive reactivity constructs were most often studied in isolation. This suggests that researchers view these constructs as primarily circumscribed to particular DSM diagnoses and associated behaviors. It is possible that this isolated study of aversive reactivity constructs is a result of theoretical/empirical traditions; in other words, foundational studies in particular fields may have emphasized relations between one aversive reactivity construct and one DSM disorder (e.g., early research on panic disorder and anxiety sensitivity; Reiss, 1991), resulting in follow-up studies that perpetuate this pattern. Indeed, most constructs were typically associated with one or two primary behaviors, except for experiential avoidance, again reinforcing the perception that most constructs are seen as tied to specific disorders based on established research paradigms.

Of course, we do not assume that the aversive reactivity constructs are entirely overlapping; for example, anxiety sensitivity may indeed demonstrate incremental power in predicting agoraphobic avoidance. However, without comprehensive assessment of all six aversive reactivity constructs alongside a wide swath of behavioral outcomes, the points of convergence and divergence remain unclear. We encourage future researchers to investigate the degree to which these aversive reactivity constructs differentially predict specific avoidant behaviors. For example, using longitudinal factor analysis to assess the relations between the multiple aspects of aversive reactivity and avoidant behaviors has the potential to illuminate these relations and the degree to which aversive reactivity constructs overlap or demonstrate unique factor structures. Such work has the possibility to accomplish three aims. First, it may replicate and extend previous cross-sectional work showing the relatively unitary nature of aversive reactivity. Second, it would allow researchers to explore the added degree

of variability, if any, in avoidant behaviors that is explained by specific aspects of aversive reactivity. Third, it would allow researchers to better validate the construct of aversive reactivity by decomposing state and trait components of its variability.

Such fundamental and naturalistic studies further have the potential to improve the measurement and assessment of mechanisms that maintain emotional disorders and further streamline psychological interventions to target these factors. For example, evidence that the full range of emotional disorders are maintained by a general aversive reactivity factor would warrant a single transdiagnostic treatment. In this vein, transdiagnostic treatments such as the UP (Barlow et al., 2017; Cassiello-Robbins et al., 2020) and ACT (Hayes et al., 2016) demonstrate efficacy across diagnostic categories, equivalent to single-disorder protocols, supporting the utility of transdiagnostic interventions to treat a range of psychopathology. However, if certain constructs are uniquely relevant to particular clinical presentations, targeted interventions may be necessary. If future research indicated that specific forms of behavioral avoidance were most commonly predicted by a particular facet or subfactor of an overarching aversive reactivity factor, then targeted interventions could be developed to address these facets. Patients exhibiting difficulties in these specific areas could then receive these targeted interventions, either in addition to or in place of treatment targeting aversive reactivity more broadly. The assessment of underlying mechanisms has the potential to reduce therapist burden by streamlining interventions to treat transdiagnostic processes that can reach patients across diagnostic categories (Southward & Sauer-Zavala, 2020). Clinicians could select from a small number of mechanism-focused interventions to treat nearly all patients in general practice (Sauer-Zavala et al., 2020).

We conceptualized our circumscribed literature review as a supplement to our theoretical thesis to provide a "snapshot" of quite a large literature. However, limitations of this work still warrant comment. First, our methods may have resulted in the omission of some studies, despite efforts to be comprehensive. Given the number of constructs and behaviors within the scope of this review, it would have been impractical to carry out a more systematic review. For example, whereas constructs such as emotion dysregulation and stress reactivity may not fall precisely within the scope of aversive reactivity, they are at the very least neighboring constructs that would benefit from additional exploration to more fully determine their relations to aversive reactivity and avoidant behavioral coping.

Additionally, given our focus on behavioral outcomes (not symptom severity), it is possible that avoidant coping strategies that are more amenable to measurement may have been overemphasized. For example, alcohol and drug use, which were consistently some of the most commonly measured behaviors across constructs, are more easily assessed as discrete behaviors than worry or rumination, for instance. Other behavioral strategies like reassurance-seeking or rumination were less commonly measured overall and are more typically assessed indirectly through the lens of symptom severity or as markers of subjective distress. Furthermore, certain behaviors like reassurance-seeking and withdrawal were rarely measured across constructs, likely due to the fact that there are few assessment tools that specifically tap into these behaviors. These measurement issues may explain the imbalance in capturing certain behaviors relative to others. Furthermore, our review was limited in that the field relies primarily on self-report measures of behaviors. However, given their potential importance to the development of clinically relevant psychopathology, we encourage future researchers to develop psychometrically valid and reliable ways of measuring these behaviors.

Overall, our review suggests that the majority of research trends to date fail to make headway in better understanding comorbidity and contribute to the problem of having an overabundance of models related to only one disorder or problem behavior. Research progress suffers from a lack of parsimony as a result of unwieldy theoretical models, which further translates to limited clinical utility. The overall point of this review is to shed light on the fragmented state of the research. By more comprehensively understanding these relations, we can move toward a better conceptualization of the functional processes that maintain emotional disorders, streamline assessment procedures, and help refine treatment interventions.

Additional Information

Public Health Statement

The current study reviewed the existing literature to observe how often researchers measured associations between possibly redundant constructs reflecting aversive reactivity to affect (i.e., the tendency to view negative emotions as intolerable) and clinically relevant coping behaviors (e.g., avoidance, substance use, etc.). Most of the time, these constructs were only measured with a small number of behaviors, and rarely with other similar constructs. Future research should consider if these constructs are truly different from one another, in order to help develop more streamlined and universally applicable treatments.

Supplementary Materials

Supplementary materials for this article can be viewed here: https://osf.io/43j6d/

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Conflict of Interest
The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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