

RESEARCH ARTICLE

Fearless but anxious? A systematic review on the utility of fear and anxiety levels to classify subtypes of psychopathy

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Abstract

Psychopathic traits have been linked to anomalies in experiencing fear and anxiety. It remains unclear, however, to what extent fear and anxiety levels are useful parameters to effectively distinguish between subtypes of psychopathy. Therefore, we aimed to elucidate whether different psychopathic phenotypes (primary and secondary psychopathy) can be delineated based on fear/anxiety levels. To investigate associations between psychopathic traits and conscious experiences of fear and/or anxiety a systematic qualitative review of studies was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. Seventeen studies were included in the review. We found some evidence for attenuated fear/anxiety levels in primary psychopathy. In secondary psychopathy, the experience of fear/anxiety seemed rather intact. Moreover, primary psychopathy might be associated with a more positive appraisal of the conscious feeling of fear. We reason that consciously experienced fear and anxiety are distinctly related to primary and secondary psychopathy. Due to a lack of consistent and comprehensive operationalizations of fear and anxiety, however, conclusions about their potential to differentiate psychopathic subtypes should be drawn with caution.

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KEYWORDS

anxiety, fear, primary and secondary psychopathy, psychopathy, subjective experience, subtypes

1 | INTRODUCTION

Psychopathic offenders are often considered to be at high risk for recidivism, causing harm to victims and high costs for society, which emphasizes the importance of psychopathy research (e.g., Ogloff et al., 1990; Shipley & Arigo, 2001). Indeed, there seems to be “nothing the behavioral sciences can offer for treating those with psychopathy” (Gacono et al., 1997, p. 119). It has been argued, however, that psychopaths differ in their symptomatology and responsiveness to treatment (e.g., Skeem et al., 2003). One could infer a possible distinction between psychopathy subtypes or phenotypes that differ in terms of an underlying personality structure, affect, and/or etiological development. In this case, there is hope that “the outlook for treating and managing some variants need not be so pessimistic” (Skeem et al., 2003, p. 515). Accordingly, an accurate description and classification of these phenotypes is of particular theoretical importance (e.g., explaining differing findings in psychopathy research by having a closer look at possible variants) and has considerable practical implications (e.g., providing individual and suitable treatments for variants).

1.1 | Research on subtypes of psychopathy

The conceptualization and operationalization of psychopathy is still being debated and evolving (e.g., Wright, 2009). Traditionally, psychopathy has been regarded as a relatively uniform syndrome (e.g., Cleckley, 1941, 1976). Cleckley (1941, 1976) suggested that psychopathy results from a core deficit in emotional reactivity, especially attributed to decreased emotional responsiveness to guilt or tension and a lack of anxiety. Apart from these emotional deficits, Cleckley described psychopathic individuals in terms of interpersonal features, for example egocentricity or superficial charm as well as antisocial behavior.

Several measures have been developed to assess psychopathic traits based on Cleckley's descriptions, including the Psychopathy Checklist (PCL; Hare, 1980) and its revised version (PCL-R; Hare, 1991, 2003). Although the PCL-R was originally developed to measure psychopathy as a unitary construct, there is evidence from factor analytic- and correlational studies that its items reflect differentiable factors (Hare, 1991, 2003; Patrick & Bernat, 2009; but see: Olderbak et al., 2021) that go beyond Cleckley's concept of psychopathy (e.g., Cooke et al., 2007). Thus, from a conceptual perspective, Hare and Neumann (2005) suggested two broad, moderately correlated factors underlying the PCL-R, with each of them including two subordinate lower-order factors. Factor 1 (F1) is defined by interpersonal (e.g., manipulative) and affective (e.g., callousness) trait-based features of psychopathy. Factor 2 (F2) is characterized by an erratic lifestyle (e.g., need for stimulation) and antisocial features (e.g., poor behavior controls).

In addition, there is seminal theoretical work confirming that there might be at least two subtypes of psychopathy (see Hervé, 2007, or Hicks & Drislane, 2018, for an overview), receiving support from taxonomic studies (e.g., Mokros et al., 2015; Olver et al., 2015; Poythress et al., 2010; Skeem et al., 2007). In fact, the idea of distinguishable psychopathy phenotypes is not new. Already in the early 1940s Karpman suggested that there could be distinct variants of psychopathy (Karpman, 1941, 1948). In particular, he distinguished two variants: primary and secondary psychopathy, whereby he considered only the former type as ‘true’ psychopaths. According to Karpman, characteristics associated with primary psychopathy include interpersonal charm, selfishness, deceitfulness, and manipulation as well as a heritable affective deficit described as callousness, low anxiety experiences, and a lack of empathy.

1.1.1 | Anxiety in primary and secondary psychopathy

In contrast to primary psychopathy, secondary psychopaths seem to be more neurotic and capable of experiencing anxiety (e.g., Karpman, 1941, 1948). Therefore, it appears that anxiety, or—to be more precise—the ability of experiencing this state, might be a useful marker to classify distinct variants of psychopathy. Indeed, several researchers followed Karpman's description and distinguished primary and secondary psychopathy in terms of anxiety (e.g., Blackburn, 1975; Brinkley et al., 2004; Fagan & Lira, 1980; Levenson et al., 1995; Newman & Brinkley, 1997; Newman et al., 2005).

A number of influential theoretical accounts of psychopathy suggest, however, not only the role of anxiety but also the role of fear as being of central importance (e.g., Blair, 2006; Fowles & Dindo, 2009; Lykken, 1957; Patrick, 2007). Both terms are often used interchangeably in the literature, but from a conceptual perspective it has been argued that anxiety rather relates to a diffuse, ongoing affective state, whereas fear arises more context-specific as a response to cues of threat (e.g., Gray, 1982; Tellegen, 1982).

1.1.2 | Fear in primary and secondary psychopathy

Lykken (1995), for example, suggested an innate fearless temperament as characterizing primary psychopathy, which would result in poor passive avoidance learning (i.e., weak association between a particular context and the occurrence of an aversive event) and decreased sensitivity and responsiveness toward parental punishments or threats, with the aim of shaping behavior for socialization. Individuals with increased expressions of secondary psychopathy, in contrast, were assumed to show high levels of impulsiveness and sensation seeking but normal levels of fear and passive avoidance.

Lykken's (1957) suggestions were based on investigations of fear conditioning in psychopathic individuals through skin conductance measurements and passive avoidance learning (e.g., using go/no-go discrimination tasks in which electric shocks resulted in passive avoidance errors), some 15 years after Cleckley (1941) first published his seminal work on traits that characterize psychopathic personalities. Assessing anticipatory electrodermal activity in the presence of conditioned fear stimuli, Lykken identified a prominent emotional deficit in psychopathic individuals, who seemed to be deficient in this type of electrodermal activity, which led him to propose a low fear character (*low-fear hypothesis*).

In addition to electrodermal activity, cardio-vascular responses are a prominent physiological marker of fear. Several studies reported intact heart-rate responses to aversive events in psychopathic individuals (e.g., Fowles, 1980; Hare et al., 1978), contradicting predictions of Lykken's *low-fear hypothesis*. To integrate these seemingly conflicting physiological findings, Fowles adapted Gray's *Reinforcement Sensitivity Theory* (RST; Gray, 1970), suggesting that poor electrodermal fear conditioning would reflect a weak *Behavioral Inhibition System* (BIS; activated by cues for punishment and non-reward, promoting passive avoidance and extinction, inversely related to fearlessness; Fowles, 1988). Heart-rate, in turn, was thought to be regulated by the *Behavioral Activation System* (BAS; activated by cues for reward and non-punishment, promoting approach behavior or active avoidance, related to emotionality and impulsivity) which was concluded to be intact, perhaps even hyperactive, in psychopathy (e.g., Fowles, 1980). In addition, Hare and colleagues showed a response pattern of large increases of heart rate and small increases of electrodermal activity in anticipation of an aversive stimulus in psychopathic inmates (Hare et al., 1978). Hare et al. argued that this pattern might show a competent coping process at work and the inhibition of fear arousal. Moreover, this response pattern was only seen in inmates with high psychopathy scores and low socialization scores, depicting the primary psychopathy subtype.

Lykken (1995) embedded the discrete subtypes of psychopathy within the RST framework (Gray, 1987) and predicted an attenuated BIS activity along with normal BAS activity for primary psychopathy. For secondary psychopaths, he proposed increased BAS activity and regular BIS reactivity. On the one hand, Newman and colleagues found

empirical support for the predicted BIS/BAS pattern with respect to primary psychopathy (Newman et al., 2005). Moreover, the findings by Newman et al. were partially in line with Lykken's (1995) assumptions for secondary psychopathy, as BIS results were mixed (Newman et al., 2005). On the other hand, several studies also reported on a strong BAS activity in *both* types of psychopathy (e.g., Hundt et al., 2008; Ross et al., 2007, 2009; Uzieblo et al., 2007). As both subtypes are prone to antisocial behavior, feelings of physiological arousal may activate approach behavior, possibly providing an explanation for strong BAS activity in both types; for primary psychopathy, perhaps due to a missing or a reduced internal affective signal of punishment (e.g., Hosker-Field et al., 2016), and in secondary psychopathy as a consequence of underlying internal conflicts leading to high arousal (e.g., Fagan & Lira, 1980). Nevertheless, based on the more consistent findings on BIS activity, there is considerable empirical evidence that the experienced level of fear could also be a useful parameter to distinguish secondary from primary psychopathy (e.g., Lykken, 1995).

1.1.3 | Assessments of psychopathic subtypes

To account for the prominent role that fear and/or anxiety levels seem to play with regard to psychopathy, more recent conceptualizations of psychopathy include adaptive personality traits in the psychopathy construct. These traits comprise stress immunity, fearlessness, and social potency, which can be captured, for example, by the Fearless-Dominance subscale of the Psychopathic Personality Inventory (PPI/PPI-R; Lilienfeld & Widows, 2005). It is a matter of an ongoing debate, however, whether or not these adaptive traits represent inherent diagnostic features of psychopathy (e.g., Lynam & Miller, 2012).

With regard to the assessment and the intention to capture both primary and secondary psychopathy the Levenson Self-Report Psychopathy Scale (LSRP; Levenson et al., 1995), a 26-item self-report questionnaire, was developed for noninstitutionalized samples. The LSRP originally included a primary psychopathy subscale, assessing callous or manipulative interpersonal traits, and a secondary subscale, assessing weak behavioral control (Levenson et al., 1995).

Notably, it has been argued that Hare's (2003) PCL model of psychopathy (also see Hare & Neumann, 2005) may also incorporate a primary/secondary distinction of psychopathic traits (Blackburn et al., 2008; Levenson et al., 1995; Skeem et al., 2007; Swogger & Kosson, 2007; Vassileva et al., 2005). Features of primary psychopathy mostly correspond with F1 whereas features of secondary psychopathy roughly correspond with F2 (Levenson et al., 1995). In line with this view, Patrick demonstrated that F1 appears to be inversely related with aspects of anxiety linked to both dangerous and thrilling behavior (Patrick, 2007). According to this both low fear/anxiety and high reward responsivity (i.e., BAS) were associated with F1 psychopathic traits (e.g., Patrick, 2007). In addition, F2 traits were positively associated with impulsive, disinhibited, and antisocial behavior as well as aspects of anxiety (e.g., Patrick, 2007).

1.2 | Interim summary

As highlighted above, measures of fear (e.g., Lykken, 1957) or measures of anxiety (e.g., Levenson et al., 1995) are considered useful parameters to distinguish between subtypes of psychopathy. Such a distinction is relevant for both theoretical and practical reasons. Skeem and colleagues, for example, suggested that individuals high in secondary psychopathy may be more responsive to conventional psychotherapeutic treatments due to their ability of experiencing anxiety (and guilt; Skeem et al., 2007). Treatment responsivity, in turn, is a significant factor for reducing recidivism and, thus, relevant for protecting potential victims.

A clear-cut distinction of psychopathic subtypes based on fear and/or anxiety levels, however, relies on a number of prerequisites, including a precise, reliable and replicable assessment of the classifier. In other words, the utility of fear/anxiety levels to distinguish different psychopathic phenotypes will depend on clear definitions and operationalizations.

1.3 | Conceptual concerns

1.3.1 | Fear versus anxiety?

Anxiety and fear have been described as related, yet distinct emotions (e.g., Hoppenbrouwers et al., 2016; Le-Doux, 2014; Perusini & Fanselow, 2015). At a conceptual level, fear arises context-specific as a response to cues of threat (e.g., Gray, 1982; Tellegen, 1982), is accompanied by transient physiological arousal, and is typically related to a fight, flight, or freeze response. Anxiety, in contrast, relates to a more diffuse, ongoing affective state, accompanied by persistent vigilance or hyperarousal caused by the perception that threat and negative consequences are unavoidable (e.g., Tellegen, 1982), and might arise in situations without an environmental trigger (Hoppenbrouwers et al., 2016). Despite this seemingly clear conceptual distinction, confusion seems to prevail in the literature, as the concepts of anxiety and fear tend to be used synonymously (e.g., Hoppenbrouwers et al., 2016). This raises the question of how we can properly discriminate psychopathic subtypes based on their levels of anxiety and/or fear when there is no clear distinction made between those concepts to begin with. Moreover, a lack of unequivocal definitions of fear and anxiety breeds concerns about potential measurement difficulties. To address these concerns, it is essential to elucidate how fear and anxiety have been conceptualized and assessed in psychopathy research so far.

1.3.2 | Operationalization and assessment of anxiety in psychopathy

In psychopathy research, several conceptualizations and, as a consequence, various measures of anxiety have been used, with assessments predominantly based on self-reports. Hare (1970) suggested interpreting anxiety as a neurotic trait or response, measured by traditional instruments like the Neuroticism Scale from the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975) or the Minnesota Multiphasic Personality Inventory (MMPI)-derived Welsh Anxiety Scale (WAS; Welsh, 1956) to assess general negative affectivity (Watson & Clark, 1984). According to Spielberger and colleagues, for instance, anxiety could be separated into an emotional reaction, oscillating and varying in intensity over time, and involving intrapsychic or situational stress (A-State) on the one hand (Spielberger et al., 1970, 1983). On the other hand, the term could refer to individual differences in anxiety-predisposition in terms of a personality trait (A-Trait). To assess both, Spielberger et al. (1970) developed the State-Trait Anxiety Inventory (STAI). In summary, it seems that there is no gold standard conceptualization (or measurement) of anxiety in the context of psychopathy.

In order to assess the components of Gray's RST (Gray, 1970), the BIS/BAS Scales (Carver & White, 1994) have been developed, and have since then frequently been applied in a wide range of scientific studies to capture BIS and BAS activity. In this regard, different measurement models have been suggested for the BIS/BAS scales (e.g., Heym et al., 2008). A common approach is to assess BIS activity based on a unidimensional scale and BAS in terms of a multi-dimensional construct; for example, by distinguishing the three BAS-scales: BAS Reward Responsiveness, BAS Drive, and BAS Fun Seeking (Carver & White, 1994). In order to accommodate theoretical criticism and empirical findings that were inconsistent with theory, the RST was revised (Gray & McNaughton, 2003), which resulted in a more evident distinction between the BIS, becoming more exclusively linked with *anxiety*, and a system that regulates *fear* responses, the Fight/Flight/Freeze-System (FFFS). In line with this revision, several researchers have argued that the BIS subscale of Carver and White's (1994) questionnaire should be divided into items that assess fear and anxiety, respectively (Corr & McNaughton, 2008; Heym et al., 2008).

1.3.3 | Operationalization and assessment of fear in psychopathy

In addition to self-reports, the majority of studies incorporate psychophysiological or experimental fear assessments, such as fear conditioning paradigms, fear recognition paradigms, and autonomous responses (i.e., skin conductance, heart rate, and startle reflex) to fear-eliciting stimuli in order to assess fear levels in psychopathy (see Hoppenbrouwers et al., 2016, for an overview). Again, in this respect, a gold standard for the measurement or conceptualization of fear cannot be identified.

Impairments in the aforementioned somatic or behavioral markers are frequently interpreted in terms of evidence for a decreased conscious experience of fear in psychopathy (Hoppenbrouwers et al., 2016). Only few studies took the subjective fear experience, in addition to psychophysiological or experimental fear assessments, as a key element of a *conscious* affective reaction, or even the entire emotional process (from the automatic physiological threat response to the elaborate subjective fear experience) into account (see Hoppenbrouwers et al., 2016, for a detailed review).

1.3.4 | From the perception of threat to the subjective experience of fear

Lazarus and colleagues emphasized the complexity of emotions, for which they described three separable components. First, the physiological component, which involves autonomous activation and arousal, that can be assessed through internal and external physiological measures. Second, the behavioral component that consists of motor aspects including facial expression, body posture, and locomotion which could be either observed, measured physiologically (e.g., contractions of certain facial muscles), or assessed through response latencies in affective reaction-time paradigms. The third element, the subjective component, involves cognitive appraisal and the state of subjective feelings (Lazarus et al., 1970). Emotional responses of the subjective component are predominantly assessed through self-report measures. Notably, this multidimensionality of emotions is linked to their temporal complexity. With respect to fear, in particular, LeDoux pointed out that the perception of a fear-eliciting event itself cannot be equated with the actual feeling of fear. The detection of a threat stimulus is rather a crucial antecedent of conscious fear, as it initiates a set of complex brain responses “that indirectly contribute to conscious fear” (LeDoux, 2014, p. 2871). The above-mentioned components of emotions vary with respect to their expression in the process from the occurrence/detection of an affective event to the final subjective experience of an emotional state. For example, while certain responses of the autonomous nervous system (e.g., change in heart rate, electrodermal activity, or pupil dilation) occur early in the context of threat detection, subjective emotional responses and body movements occur at a later stage of elaborate stimulus processing. Hence, given the complexity and temporal dynamics of conscious emotional experiences, convincing evidence on fear deficits in psychopaths requires research that is multi-methodological (i.e., incorporates behavioral, physiological, and subjective measures), and targets different phases in the process of eliciting emotions, that is, not just early stimulus perception. It remains questionable if the current state of research meets these requirements and enables us to draw conclusions about a decreased conscious fear experience in psychopathy.

1.3.5 | From the subjective experience of fear to fear enjoyment

The question of fear deficits in psychopathy is intertwined with the quality of an emotional experience. Most emotion-focused approaches (Cleckley, 1941, 1976; Fowles & Dindo, 2006; Lykken, 1957; Patrick, 2007; Patrick et al., 2009) suggest a reduction or even lack of fear and/or anxiety in psychopathy. Often, however, the subjective quality of the emotion experienced is not considered explicitly. Emotions have a specific phenomenal quality, and their experiential quality differs between different emotions (e.g., James, 1994). Hereby, one's cognitive appraisal (e.g., positive or negative) of physiological arousal or the sensation induced by a situation or a stimulus is of central impor-

tance for the resulting subjective experience (Lindquist & Barrett, 2008; Schachter & Singer, 1962). In this context, Hosker-Field and colleagues proposed a new perspective, taking the quality of an emotional experience into account. Based on the question *what* psychopathic individuals *do* experience, if they possibly do not (or to a limited degree only) experience fear, Hosker-Field et al. suggested that psychopathic individuals, scoring high on F1 traits, might have a lessened negative response to fear on the one hand. On the other hand, they might even have a more positive appraisal of their subjective fear experience, which may be implicated in the tendency to engage in risk-taking behavior/sensation seeking (*Fear Enjoyment Hypothesis*; e.g., Book et al., 2020; Hosker-Field et al., 2016).

1.4 | Hypotheses and aims of the present review

Taken together, there is evidence for psychopathy reflecting at least two separable temperament contributions. It has been argued that specific variants of psychopathy could be distinguished based on the level of fear- and/or anxiety experience. Unfortunately, the nomological and methodological conception of anxiety and fear seems to be inconsistent in the research literature on psychopathy. Moreover, most studies do not seem to address the whole process underlying the emergence of conscious fear. This raises the question of whether the present state of research allows us to draw reliable conclusions about psychopathic individuals experiencing fear or anxiety.

Based on our introductory remarks we hypothesized that there is no uniform operationalization of fear and anxiety in literature (H1a) and, that previous research on fear in psychopathy does not cover the entire emotional process (H1b).

In addition, we hypothesized that there might be a link between primary psychopathy and fearlessness, as well as between secondary psychopathy and anxiety experience (H2a) in the literature reviewed. Moreover, we assumed a lessened negative response to fear as well as a more positive appraisal in psychopathic individuals who score higher on F1 traits with respect to their experience of fear (H2b).

With this systematic qualitative review, we intended to identify and describe the phenotype of the fearless and/or anxious psychopath—if it does exist. To this end, we analyzed studies that specifically addressed the *subjective experience* of fear or anxiety in psychopathy or variants of psychopathy including mixed samples (i.e., males/females, adults/adolescents, imprisoned/community), and mixed research methods (i.e., self-report, external-report, motor-/autonomic response).

2 | METHOD

This review applied a systematic qualitative approach with a selection process following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009).

The following EBSCOhost sources were simultaneously searched between December 2020 and January 2021: APA PsycArticles, APA PsycInfo, PSYNDEX Literature with PSYNDEX Tests, Psychology and Behavioral Sciences Collection and Sociology Source Ultimate. The search was repeated in the Web of Science (Social Science Citation Index [SSCI]) database. The following search terms with the Boolean Operator “AND” were applied across the databases: Psychopathy AND Fear* AND Anxiety (i.e., using the asterisk as truncation in order to obtain hits for flexions of the word like Fearlessness or Fearful). The term “AND English” was added to the exploration in the Web of Science database. A total of 171 articles were obtained from the EBSCOhost sources and 56 articles from the Web of Science database. Only peer-reviewed, empirical studies with a full text available in the form of a scientific article were included. Manuscripts had to be written in English. Duplicates were removed. Those criteria led to 57 articles from the EBSCOhost sources and 40 articles from the Web of Science database. Furthermore, we identified six articles from additional sources: Five articles were detected from the lists of references of articles included (Hosker-Field et al., 2016; Jones

et al., 2010; Patrick et al., 1994; Pham et al., 2000; Thomson et al., 2018). One article (Cardinale et al., 2020) was provided by the authors via email.

Upon abstract inspection, we excluded several articles from further analyses. Eighteen abstracts among the EBSCOhost sources were clearly off-topic (e.g., dealing with psychopathology instead of psychopathy). Moreover, 47 studies (EBSCOhost sources and Web of Science database) did not match our inclusion criteria regarding content: 17 studies focused on the recognition of fear *in others* exclusively, 15 studies did not investigate fear or anxiety *in psychopaths*, and 14 studies did not assess the *subjective experience* of fear or anxiety. There were two meta-analytic and two purely theoretical studies. Seven studies were excluded from the Web of Science database search because they had already been identified through the EBSCOhost search. Twenty-eight full-text articles were assessed for eligibility. Again, five articles did not assess the subjective experience of fear or anxiety and six articles included no predictions concerning the subjective experience of fear or anxiety *in psychopathy*. Finally, 17 original research articles were included in the qualitative synthesis.

Figure 1 shows a PRISMA diagram (Moher et al., 2009) of the sequence of steps involved in the literature search and review. All 17 articles that were reviewed in detail are highlighted in the “Reference” section.

3 | RESULTS

The main findings of our qualitative review, with relevance for hypotheses testing, are presented in Table 1. Results are grouped into studies concerning subjective ratings of anxiety or fear experiences—as well as anxiety *and* fear experience. Study goals, sample characteristics, methods, and measurements are provided.

3.1 | Hypothesis H1a: There is no uniform operationalization of fear and anxiety in literature

3.1.1 | Anxiety

One of the most commonly used instruments for assessing (trait and/or state) anxiety experience is Spielberger's STAI (Spielberger et al., 1970), in adult or pediatric version, implemented in six out of 11 studies dealing with anxiety. Some studies further administered instruments that measure anxiety sensitivity (e.g., Anxiety Sensitivity Index [ASI]; Reiss et al., 1986), general negative affectivity (e.g., WAS; Welsh, 1956; EPQ; Eysenck & Eysenck, 1975; Multidimensional Personality Questionnaire [MPQ]; Tellegen, 1982), anxiety in the context of the BIS (BIS/BAS scales; Carver & White, 1994) or phobias.

3.1.2 | Fear

A typical assessment of fear experience includes the presentation of commonly fear-evoking situations. Individuals are then asked to report their own (subjective or physiological) experience. Four out of 12 studies that dealt with fear used fear-inducing video-clips, presented from a first- or third-person perspective, either on screen or within a virtual-reality environment. In two studies, fear was provoked by asking participants to recall life events or frightening statements. Individuals were asked to rate their experience usually afterwards by using positive/negative adjectives, the Self-Assessment Manikin (SAM; Lang, 1980), open-ended questions, or questionnaires. Only three studies included physiological measures. In five studies, fear experience was assessed through self-report instruments, measuring harm avoidance (e.g., Harm Avoidance Subscale of the Temperament and Character Inventory [TCI HA]; Cloninger, 1987; MPQ; Tellegen, 1982) or fear of pain (e.g., Fear of Pain Questionnaire-III [FPQ-III]; Mcneil &

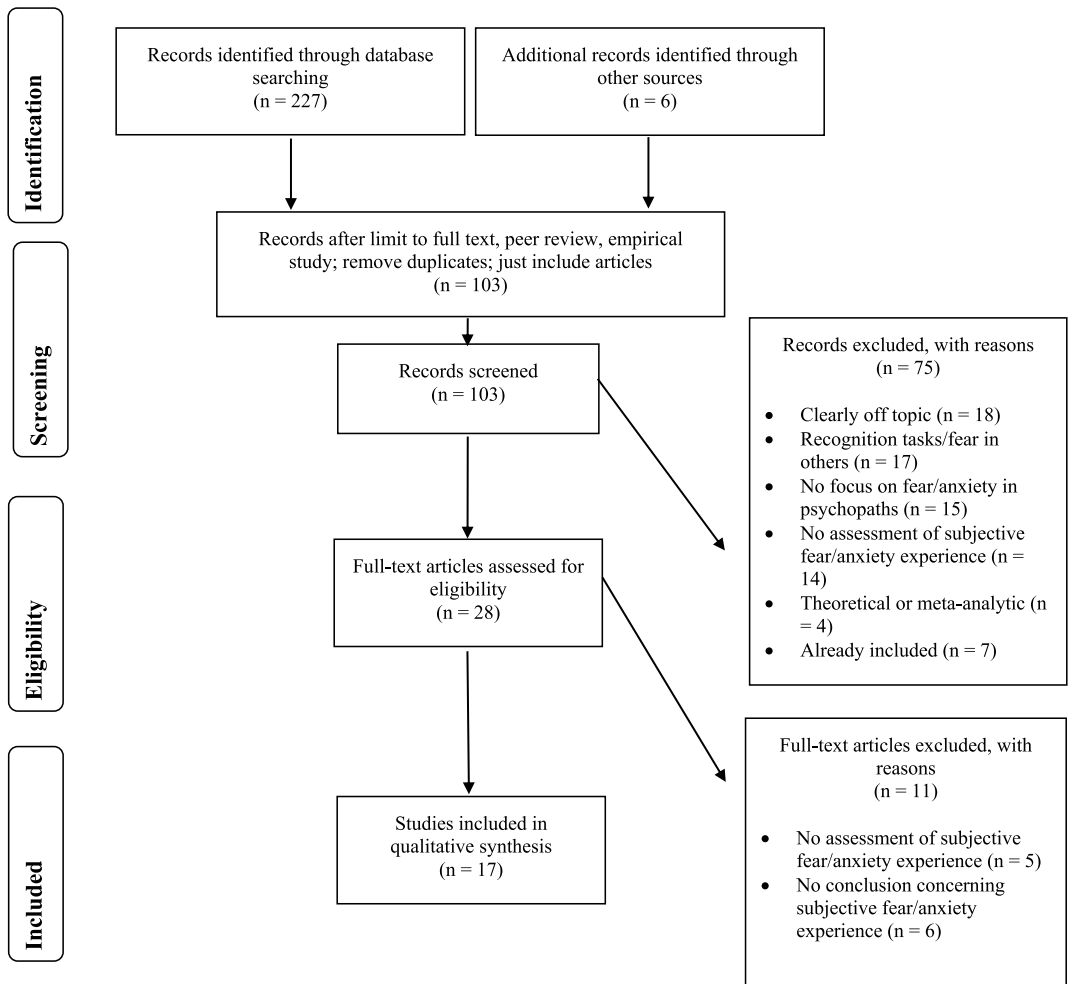


FIGURE 1 Flowchart (PRISMA diagram; adapted from Moher et al. [2009]) of systematic literature review on Psychopaths and their feelings of fear and anxiety. Databases screened were EBSCOhost (PsycArticles, PsycINFO, PSYNDEX literature with PSYNDEX Tests, Behavioral Sciences Collection, Sociology Source Ultimate) and Web of Science (SSCI)

Rainwater, 1998), fun- (e.g., BIS/BAS scales: BAS Fun Seeking; Carver & White, 1994) or sensation seeking (e.g., Personality Assessment Inventory [PAI]; Morey, 2007).

3.2 | Hypothesis H1b: Previous research on fear in psychopathy does not cover the entire emotional process

With regard to the literature reviewed herein, only three studies measured both components to detect early stimulus-driven responses and self-reports to capture conscious subjective experiences. Two of these studies included aspects of behavioral components. Patrick et al. assessed heart-rate, skin conductance, and Corrugator Electromyography (EMG) activity in male psychopathic offenders (Patrick et al., 1994). Pham et al. measured cardiovascular changes, skin temperature, muscle tension, and electrodermal activity (Pham et al., 2000). Finally, Thomson et al. assessed arousal through measurements of skin conductance and respiratory sinus arrhythmia (Thomson et al., 2018).

TABLE 1 Main findings of studies included, grouped into studies concerning subjective ratings of anxiety and/or fear experiences

Study	Hypotheses	Goal	Samples	Methods and measurements			Main findings
				Anxiety	Fear	PP	
Burns et al. (2015)	H1a, b H2a	Examine the relationship between primary and secondary psychopathy traits with trait anxiety, emotion regulation deficits, and emotion manipulation as predictors.	Community N = 470 (349 females, 121 males; $M_{age} = 25.38$, $SD = 9.50$)	STAI-T		LSRP (revised by Burns, 2014)	STAI-T scores and primary psychopathy: $r = 0.17$, $p < 0.001$ Secondary psychopathy: $r = 0.69$, $p < 0.001$
Hale et al. (2004)	H1a, b H2a	Assess, whether dimensions of psychopathy are associated with measures of anxiety, being more contemporary as the measures used in prior studies.	Inmates N = 156 male, European and African Americans ($M_{age} = 26.79$, $SD = 6.35$)	ASI STAI-T WAS		PCL-R	F1 and WAS scores: $r = -0.17$, $p < 0.05$ F2 and WAS scores: $r = 0.25$, $p < 0.01$

(Continues)

TABLE 1 (Continued)

Study	Hypotheses	Goal	Samples	Methods and measurements			Main findings
				Anxiety	Fear	PP	
Lander et al. (2012)	H1a, b H2a	Assess the relation between alexithymia and primary versus secondary psychopathy.	Undergraduate students N = 104 (45 males, 59 females; $M_{age} = 20$, $SD = 1.51$)	STAI-T		LSRP PPI-R	Secondary psychopathy: Significant predictor of alexithymia ($\beta = 0.56$, $p < 0.05$) Primary psychopathy: no significant association with "difficulty identifying feelings" ($r = 0.11$, $p = ns$) or "difficulty describing feelings" ($r = 0.07$, $p = ns$)
Pennington et al. (2015)	H1a, b H2a	Examine the role of anxiety in the context of psychopathy and suicidal ideation.	Offenders N = 132 males ($M_{age} = 35$)			LSRP	Simple slope analyses for secondary psychopathy and physiological anxiety In moderate anxiety levels: $t(128) = 2.18$, $p = 0.03$ In high anxiety levels: $t(128) = 3.43$, $p = 0.001$

TABLE 1 (Continued)

Study	Hypotheses	Goal	Samples	Methods and measurements			Main findings
				Anxiety	Fear	PP	
Sandvik et al. (2015)	H1a, b H2a	Examine, whether psychological hardness is a mediator between psychopathic traits and experienced anxiety.	Inmates N = 74 males ($M_{age} = 33.41$; range: 19 to 71 years; 89.2% Norwegian citizens)	HADS-A		PCL-R	Anxiety scores and F1: $r = -0.23, p = 0.05$ Anxiety scores and F2: $r = 0.21, p = 0.08$
Marsh et al. (2011)	H1a, b H2a	Assess the subjective experience of a range of emotions (i.e., anger, disgust, fear, happiness, sadness) in adolescents with psychopathic traits.	Adolescents from community and females (age range: 10–17 years; $n = 18$ with psychopathic traits, $n = 24$ as controls)		Recall emotionally evocative life events; answer questions about experience in special (physiological [sympathetic and parasympathetic] sensations, expressive behaviors and ratings of the emotional states) and in general afterwards (adapted from Scherer & Wallbott, 1994)	APSD-SR PCL:YYPI	Adolescents with psychopathic traits compared to controls: Significant less increases in sympathetic activation ($t[36] = 2.49, p < 0.05$) Significant more sympathetic activation for fear than for happiness ($t[14] = 3.84, p < 0.005$) Significant feeling fear less often and less strongly ($t[38] = 2.29, p < 0.05$)

(Continues)

TABLE 1 (Continued)

Study	Hypotheses	Goal	Samples	Methods and measurements			Main findings
				Anxiety	Fear	PP	
Patrick et al. (1994)	H1a, b H2a	Assess physiological response and the subjective experience to fearful imaginary scenes in psychopathy.	Inmates N = 54 males ($M_{age} = 28.2 - 32.8$)		FSS; fearful sentences developed by Virana et al. (1989); rate imagery experience of each sentence on SAM; heart rate, skin conductance and EMG activity recorded	PCL DSM-III-R	No group differences in self-ratings of experienced fearfulness Decreased physiological response changes during fearful imagery in both antisocial subgroups (largest and significant for heart rate $F[2, 50] = 5.62$)
Pham et al. (2000)	H1a, b H2a	Assess subjective and autonomic responses after inducing several emotions (i.e., anger, disgust, sadness, fear, joy, neutral).	Inmates N = 30 males; psychopathy (n = 14; $M_{age} = 31.7$), controls (n = 16; $M_{age} = 30.8$)		Emotion inducing video-clips; modified version of DES after each clip; subjectively experienced concerning physiological peripheral responses and the strength of feelings; cardiovascular changes, skin temperature, muscle tension and EDA measured	PCL-R	Psychopaths: Equal subjective responses to video-clips than controls Mean blood pressure decreased among the psychopathic group before and during the emotional inducing film-clips

TABLE 1 (Continued)

Study	Hypotheses	Goal	Samples	Methods and measurements			Main findings
				Anxiety	Fear	PP	
Dolan and Rennie (2007)	H1a, b H2a	Investigate the association of anxiety and fear with juvenile psychopathy.	Adolescent incarcerated offenders N = 110 male ($M_{age} = 16.27$, $SD = 0.83$)	STAI	TCI HA	PCL:YV	STAI trait anxiety score and F1 affective: $r = -0.10$, $p < 0.05$ TCI HA and total psychopathy score: $r = -0.22$, $p < 0.05$, solely attributable to the significant negative correlation between TCI HA and F2 antisocial: $r = -0.26$, $p < 0.01$
Durand and Plata (2017)	H1a, b H2a	Explore the relationship between psychopathic traits, tolerance levels to pain, anxiety and stress.	Community N = 529 (308 males, 221 females; $M_{age} = 23.95$, $SD = 4.83$)	STAI PSS-10	FPQ-III PCS	PPI-SF	PPI-I and measurements of anxiety and fear: weak to moderate significant negative associations PPI-II and measurements of anxiety and fear: weak to moderate significant positive associations

(Continues)

TABLE 1 (Continued)

Study	Hypotheses	Goal	Samples	Methods and measurements			Main findings
				Anxiety	Fear	PP	
Gillespie et al. (2015)	H1a, b H2a	Assess relations of distinct psychopathic personality traits with anxiety and fear in two studies.	Non-offenders and offenders N = 285 non-offenders (87% female; $M_{age} = 19.1$, $SD = 1.7$) N = 29 violent male offenders ($M_{age} = 44.15$, $SD = 8.2$)	Study 1 and 2: STAI LSAS	Study 2: Emotional expression recognition in others (included because of subjective experience assessment)	LSRP	Egocentric psychopathic traits were negative predictors of anxiety. Antisocial psychopathic traits were positive predictors of anxiety.
Hughes et al. (2012)	H1a, b H2a	Assess, amongst others, the role of fear (in the context of fight-flight-freeze system [FFFS]) and anxiety (in the context of BIS) in relation to primary and secondary subtypes of psychopathy.	Students N = 192 (84 males, 108 females; $M_{age} = 22$, $SD = 4.7$)	BIS/BAS scales: BIS-anxiety	BIS/BAS scales: FFFS-fear BAS fun-seeking	LSRP	BIS-anxiety scores and primary psychopathy: $r = -0.43$, $p < 0.01$ Secondary psychopathy: $r = -0.28$, $p < 0.01$ FFFS-fear scores and primary psychopathy: $r = -0.59$, $p < 0.01$ BAS fun-seeking scores and primary psychopathy: $r = -0.52$, $p < 0.01$ Secondary psychopathy: $r = 0.55$, $p < 0.01$

TABLE 1 (Continued)

Study	Hypotheses	Goal	Samples	Methods and measurements			Main findings
				Anxiety	Fear	PP	
Kubak and Salekin (2009)	H1a, b	Examine the relationship between trait anxiety, fearlessness and trauma in the context of psychopathy and recidivism.	Minor offenders N = 130 (n = 103 for anxiety measurements because of exclusions; 79.8% males, 29.2% females; $M_{age} = 14.86$, $SD = 1.64$)	APS: General anxiety disorder, separation anxiety disorder, social phobia, simple phobia	PAI: Parts of the sensation-seeking scale	PCL:YV SRP-II APSD-SR	Positive associations between assessments of fearlessness and nearly all implemented measures of psychopathy, as well as nearly all factors
	H2a						
Schmitt and Newman (1999)	H1a, b H2a	Assess the relationship between psychopathy and anxiety.	Inmates N = 217 male (104 Caucasian, 113 African American; under 40 years)	BAI EPQ: N GANX MPQ: NE, SR SCL: Anxiety subscale WAS	MPQ: CON, HA	PCL-R	PCL-R total score and the WAS score in African Americans: $r(112) = 0.20$, $p < 0.05$

(Continues)

TABLE 1 (Continued)

Study	Hypotheses	Goal	Samples	Methods and measurements			Main findings
				Anxiety	Fear	PP	
Book et al. (2020)	H1a, b H2a, b	Study 1: Investigate the relationship between psychopathic traits and fear enjoyment in two studies. Study 2: Focused on rating fearful facial expressions in others, thus it was excluded.	Undergraduates N = 140 (62 males, 78 females, $M_{age} = 20.59$ [$SD = 5.86$])		Excitement and fear inducing first-person video game scenarios, using virtual reality goggles; subjective (positive/negative) adjective-rating; indicating the intensity of the enjoyment concerning a variety of videogame genres	SRP 4 HEXACO-60 (as a proxy measure of TriPM; Marcus et al., 2019)	All SRP 4 facets, Boldness- and Meanness-scale from the TriPM: Significantly related to decreased negative ratings for the fear-inducing stimulus. Subscales interpersonal manipulation, erratic lifestyle, and antisocial behavior were significantly correlated with heightened positive ratings.
Hosker-Field et al. (2016)	H1a, b H2a, b	Testing the Fear Enjoyment Hypothesis.	Undergraduates N = 114 (79 females, 35 males, age range not reported)		Excitement and fear inducing video-clips; subjective (positive/negative) adjective-rating; open-ended questions concerning the subjective experiences of fear	SRP-III	People scoring higher on psychopathy experienced more positive and (especially for F1) less negative emotion in the context of the fear-inducing stimulus (fear video: $r_{positive} = 0.24$, $p = 0.01$; $r_{negative} = -0.27$, $p = 0.005$)

TABLE 1 (Continued)

Study	Hypotheses	Goal	Samples	Methods and measurements			Main findings
				Anxiety	Fear	PP	
Thomson et al. (2018)	H1a, b H2a, b	Relate fear reactivity to a fear-induced virtual reality experience in F1 and F2 psychopathy.	Undergraduates N = 103 (69% female; M _{age} = 19.65, SD = 1.22)	FSS-III	Presenting a short interactive horror video on Oculus Rift VR headset; after each condition: SAM; skin conductance level; respiratory sinus arrhythmia measured	SRP 4	Hyporeactivity for both branches of the autonomic nervous system predicting F1 in the context of fear-inducing stimuli. Subjective assessments of fear: Participants high in F1 felt happier and less sad after confronted with the fear inducing stimulus

Note: PP (Psychopathy); STAI-T/STAI (State-Trait Anxiety Inventory; Spielberger et al., 1983); LSRP (Levenson Self-Report Psychopathy Scales; Levenson et al., 1995); ASI (Anxiety Sensitivity Index; Reiss et al., 1986); WAS (Welsh Anxiety Scale; Welsh, 1956); PCL/PCL-R (Psychopathy Checklist - revised form; Hare, 1991, 2003); PPI-R/PPI-SF (Psychopathic Personality Inventory revised form/short form; Lilienfeld & Widows, 2005); PAI (Personality Assessment Inventory; Morey, 2007); HADS-A (Hospital Anxiety and Depression Scale; Mykletun et al., 2001; Zigmond & Snaith, 1983); F1, F2 (Factor 1, F actor 2; Hare, 1991, 2003); APSD-SR (Antisocial Process Screening Device Self-Report Version; Frick & Hare, 2001); PCL:YV (Psychopathy Checklist: Youth Version; Forth et al., 1996/2003); YPI (Youth Psychopathy Inventory; Poythress et al., 2006); FSS/FSS-III (Fear Survey Schedule; Wolpe & Lang, 1974); SAM (Self-Assessment Manikin; Lang, 1980); EMG (Corrugator Electromyography); DES (Differential Emotions Scale; Izard et al., 1974); DSM-III-R (3rd ed., rev.; Diagnostic and Statistical Manual of Mental Disorders; American Psychiatric Association, 1987); STAIC (State Trait Anxiety Inventory for Children; C. D. Spielberger, 1973); TCI HA (Harm Avoidance Subscale of the Temperament and Character Inventory; Cloninger, 1987); PSS-10 (Perceived Stress Scale, 10-item version; Cohen & Williamson, 1988); FPQ-III (Fear of Pain Questionnaire-III; Mcneil & Rainwater, 1998); PCS (Pain Catastrophizing Scale; Sullivan et al., 1995); LSAS (Liebowitz Social Anxiety Scale; Liebowitz, 1983); BIS/BAS Scales (Carver & White, 1994); APS (Adolescent Psychopathology Scale; Reynolds, 1998); SRP-II (Self-Report Psychopathy scale-II; Hare, 1991); BAI (Beck Anxiety Inventory; Beck et al., 1988); EPQ: N (Neuroticism scale from the Eysenck Personality Questionnaire; Eysenck & Eysenck, 1975); GANX (Gray's anxiety dimension; Gray, 1982, 1991; cited after Schmitt & Newman, 1999); NE (Negative Emotionality Scale), SR (Stress Reaction Scale), CON (Constraint Scale), HA (Harm Avoidance Scale) as dimensions of the Multidimensional Personality Questionnaire (MPQ, Tellegen, 1982); SCL: anxiety subscale (Symptom Checklist-90 - Revised; Derogatis, 1992); SRP 4 (Self-report psychopathy scale 4; Paulhus et al., 2016); TriPM (Triarchic Model of Psychopathy; Patrick, 2018); SRP-III (Self-report psychopathy scale III; Paulhus et al., 2015).

3.3 | Hypothesis H2a: There might be a link between primary psychopathy and fearlessness, as well as between secondary psychopathy and anxiety experience

3.3.1 | Anxiety

There were five studies exclusively dealing with psychopathy and subjective ratings of experienced anxiety. Three of them (Burns et al., 2015; Lander et al., 2012; Pennington et al., 2015) assessed primary and secondary psychopathy based on LSRP scores (Levenson et al., 1995). Two of the studies (Hale et al., 2004; Sandvik et al., 2015) evaluated psychopathic traits based on the PCL-R. Three studies examined male offender samples (Hale et al., 2004; Pennington et al., 2015; Sandvik et al., 2015), and two studies included male and female community samples/undergraduate students (Burns et al., 2015; Lander et al., 2012).

Taken together, Burns et al. (2015) and Pennington et al. (2015) found evidence for individuals with secondary psychopathy experiencing elevated levels of anxiety. Hale et al. (2004) as well as Sandvik et al. (2015) found evidence for a reduced experience of anxiety in F1 psychopathy and an elevated experience in F2 psychopathy. Lander et al. (2012) reported secondary psychopathy being a significant predictor of alexithymia (i.e., the inability to identify and describe emotions experienced).

3.3.2 | Fear

There were three studies investigating subjective fear experience in psychopathy (Marsh et al., 2011; Patrick et al., 1994; Pham et al., 2000). Psychopathy was examined through the PCL-R. Patrick et al. (1994) and Pham et al. (2000) included physiological measures of fear. In two studies the sample was comprised of male inmates (Patrick et al., 1994; Pham et al., 2000) and in one study of male adolescents from the community (Marsh et al., 2011).

Taken together, Pham et al. (2000) found evidence for individuals with psychopathy regularly experiencing fear. Patrick et al. (1994) provided partial evidence for individuals high on F2 psychopathy experiencing fear regularly. Marsh et al. (2011) reported that adolescents with psychopathic traits experienced reduced levels of fear.

3.3.3 | Anxiety and fear

We reviewed six studies that analyzed the association between psychopathy and subjective ratings of both experienced fear and anxiety (Dolan & Rennie, 2007; Durand & Plata, 2017; Gillespie et al., 2015; Hughes et al., 2012; Kubak & Salekin, 2009; Schmitt & Newman, 1999). Two studies (Gillespie et al., 2015; Hughes et al., 2012) distinguished primary and secondary psychopathy. The other four captured psychopathic traits based on the PLC-R model (Dolan & Rennie, 2007; Kubak & Salekin, 2009; Schmitt & Newman, 1999) or the PPI model of psychopathy (Durand & Plata, 2017). Two studies assessed male and female community samples/students (Durand & Plata, 2017; Hughes et al., 2012), one study an adult male inmate sample (Schmitt & Newman, 1999). One study included both (Gillespie et al., 2015), one study examined male and female juvenile offenders (Kubak & Salekin, 2009), and one study included male incarcerated adolescent offenders (Dolan & Rennie, 2007).

The results of these studies were mixed. Hughes et al. (2012) reported a blunted fear and anxiety experience in both primary and secondary psychopathy, with secondary psychopathy showing elevated levels in BAS fun-seeking. Gillespie et al. (2015) found evidence for stronger feelings of anxiety in secondary psychopathy. Durand and Plata (2017) demonstrated both fear and anxiety experiences in individuals with high PPI-II scores. Dolan and Rennie (2007) found reduced anxiety and fear experiences in psychopathic individuals. Kubak and Salekin (2009) reported on intact anxiety—but not fear—experiences in psychopaths. Schmitt and Newman (1999) also demonstrated overall elevated anxiety experiences in psychopathy.

3.4 | Hypothesis 2b: There could be a lessened negative response to fear and a heightened positive appraisal of fear experience in psychopathic individuals scoring higher on F1 traits

Three studies assessed the appraisal of the subjective feeling of fear (i.e., *fear enjoyment*) in psychopathy (Book et al., 2020; Hosker-Field et al., 2016; Thomson et al., 2018). All three studies captured psychopathic traits based on the PCL-R model of psychopathy, and the study samples were comprised of male and female undergraduates. One study included physiological measurements (Thomson et al., 2018).

Taken together, Book and colleagues found evidence for heightened positive and lessened negative fear experiences related to psychopathic traits (Book et al., 2020). Hosker-Field et al. (2016) and Thomson et al. (2018) reported on a more positive and less negative appraisal of fear, especially related to F1 psychopathy traits.

4 | DISCUSSION

4.1 | Interpretations with regard to Hypothesis H1a

It has been hypothesized that there is no uniform operationalization of fear and anxiety in the literature surveyed. Indeed, the methods used to examine anxiety or fear experience and fear enjoyment differed considerably between studies, also implying conceptual differences between studies.

4.1.1 | Anxiety

A clear-cut conceptualization underlying the assessment of anxiety experience in psychopathy could not be identified, forming doubts in regard to the external validity of available empirical evidence. Most studies assessed anxiety levels using Spielberger's STAI (Spielberger et al., 1970, 1983). Indeed, the STAI is the most widely used instrument for the assessment of anxiety in general (e.g., Littleton et al., 2007; Panteleeva et al., 2018). Despite its reasonable reliability (e.g., Barnes et al., 2002) and validity (e.g., Kabacoff et al., 1997), the measure's advantage lies in measuring both dispositional anxiety *and* the transient experience of the emotion in healthy and clinical populations (e.g., Oei et al., 1990). For some critical concerns in terms of construct validity of the STAI, please see Balsamo et al. (2013).

4.1.2 | Fear

With respect to the assessment of fear experience in psychopathy, we identified a trend for the presentation of threat cues like video clips and a subsequent evaluation of one's experience. This approach seems plausible, as fear arises context-specific as a response to cues of threat (e.g., Gray, 1982; Tellegen, 1982). In addition, one could argue that it is not sufficient to assess fear experience solely through self-report without an evocation. The methods used differed across studies, however, again raising doubts on to the validity of general evidence reported in the literature results.

4.2 | Interpretation with regard to Hypothesis H1b

It has been hypothesized that previous research on fear in psychopathy did not cover the entire emotional process. In order to do so, different phases of emotion processing evolution would need to be targeted (i.e., studies incorporating behavioral, physiological, and subjective measures), which would provide broad and valid insights into de facto affec-

tive experiences in psychopathy. Thus, most of the literature reviewed focused on self-report measures and did, therefore, not elucidate the entire emotional process. Interestingly, all studies that combined self-reports with behavioral and/or physiological measures found at least partial evidence for an intact fear experience in psychopathy.

4.3 | Interpretation with regard to Hypothesis H2a

A number of influential theoretical accounts of psychopathy suggest fearlessness as an integral part of psychopathy (e.g., Blair, 2006; Fowles & Dindo, 2009; Lykken, 1957; Patrick, 2007; Patrick et al., 2009), and proposed a link between primary psychopathy and fear deficits (e.g., Lykken, 1995), whereas secondary psychopathy is usually related to normal or even elevated anxiety experiences (e.g., Karpman, 1941, 1948). Accordingly, it has been hypothesized that there might be a link between primary psychopathy and fearlessness, as well as between secondary psychopathy and anxiety experience. Indeed, the reviewed literature provides evidence for an association between secondary psychopathy and at least regular levels of anxiety experience, while doubts arise in regard to an assumed link between primary psychopathy and fear deficits.

4.3.1 | Anxiety

Despite varying sample characteristics and assessments in terms of anxiety and psychopathic traits, the results reported by Burns et al. (2015), Hale et al. (2004), Pennington et al. (2015) as well as Sandvik et al. (2015) appear to be in line with Karpman's description, all ascribing the ability of experiencing anxiety to secondary psychopathy or F2 traits, whilst opposing Cleckley's assumed general lack of anxiety in psychopathy. Because there would be an association between alexithymia and primary (but not secondary) psychopathy expected, the results found in Lander et al. (2012) seem to be counterintuitive. They are in line, however, with the authors' assumptions as well as with prior findings, linking alexithymia and secondary psychopathy to emotional dysregulation, a feature ascribed to both (e.g., Kroner & Forth, 1995).

4.3.2 | Fear

The results reported by Marsh et al. (2011) appear to match Lykken's (1957) *low-fear hypothesis*, suggesting a fear deficit in psychopathy in general, thus supporting the notion, that the experiences of fear are reduced in individuals with any combination of psychopathic traits. The authors did not draw any conclusions about psychopathic subtypes, though.

Patrick and colleagues reported no group differences between self-report ratings of experienced fearfulness (Patrick et al., 1994). Moreover, the decreased physiological responses (heart rate and electrodermal activity) during the fearful imagery in both antisocial groups, compared to the socialized offender group, should be discussed in more detail. Fowles suggested an intact BAS (i.e., increases of heart rate in response to anticipated threat or punishment stimuli) and a weak BIS (i.e., no increases of electrodermal activity in response to anticipated threat or punishment stimuli) for psychopathy (Fowles, 1980). Hare et al. (1978) and Lykken (1995) particularized this response pattern for primary psychopathy. Lykken assumed, in addition, a regular BIS and an increased BAS reactivity for secondary psychopathy (Lykken, 1995). Results found by Patrick et al. seem to reflect a weak BIS as well as a weak BAS reactivity. The authors suggested that their results are in line with a hypothesis of an affective imagery deficit, especially for psychopaths high on F2/secondary-psychopathy traits, and reasoned "that, in psychopathy, conceptual and linguistic events are less effective cues for physiological response" (Patrick et al., 1994, p. 529).

The results reported by Pham et al. (2000) suggest that psychopathic individuals do not seem to have a deficit in terms of the emotional appraisal in the context of daily emotions, implying that there might be an ability to experience fear in psychopathy, by contrasting Lykken's low-fear assumptions (1957). Moreover, despite a possible hyporeactive autonomic baseline (perhaps due to the experimental situation), no emotion-specific physiological deficit appeared in the context of daily emotions as well. Conclusions about psychopathic subtypes were not reported. Notably, in their study, the fear (and anger) videos did not seem to induce the respective emotions as intended, but rather more complex mood patterns, thus calling into question the interpretation of the results.

4.3.3 | Anxiety and fear

The results reported in Gillespie et al. (2015) corroborate Karpman's assumption that the ability of experiencing anxiety is preserved in secondary but not primary psychopathy. The results reported by Durand and Plata (2017) might provide evidence for the fearless and low anxious nature associated with PPI-I and the more fearful and anxious nature related to PPI-II (e.g., Benning et al., 2003; Derefinko, 2015; Patrick & Bernat, 2009), indicating that there could be an ability of experiencing anxiety and fear in a variant of psychopathy. It has to be mentioned, however, that the correlations found were small to moderate in size, thus the results should be considered in light of those limitations.

The results reported by Dolan and Rennie (2007) seem to be in line with Karpman's subtype model, ascribing low anxiety experiences to primary psychopathy (F1 dimension). The results concerning the F2 dimension accord well with Dolan and Rennie's assumption, who argued that antisocial components of the construct might also be negatively correlated with fearfulness (Dolan & Rennie, 2007). In their study, fear experience was *not* related to primary psychopathy (F1), whereas anxiety experience was *not* related to secondary psychopathy (F2). In addition, the correlations observed were generally weak and referred to factorial facets. Consequently, the results should be considered in light of those limitations.

Hughes et al. (2012) reported results that did not confirm Lykken's (1995) assumption, suggesting that primary psychopathy is related to weak BIS and regular BAS activity, and secondary psychopathy, in turn, to normal BIS and strong BAS activity. Hughes et al. (2012) assessed BIS/BAS activity using the two factor model of the BIS scale (BIS- anxiety; FFFS-fear; Heym et al., 2008), and found attenuated BIS activity related to both subtypes of psychopathy. Based on their results, they distinguished a fearless-constrained form in primary type, and an impulsive-unconstrained form in secondary type. In addition, they argued that confusion may remain over the roles played by anxiety and fear in psychopathic subtypes due to various measurements of BIS, providing an explanation for mixed results in research. Especially in the context of revised RST, relating BIS to anxiety and fear components, interpretational limitations for RST-psychopathy literature may be evoked.

Kubak and Salekin (2009) found evidence for positive associations between their measure of fearlessness (i.e., sensation seeking) and nearly all implemented measures of psychopathy, providing broad support for Lykken's *low-fear hypothesis*, indicating at least a reduced ability for experiencing fear in psychopathy in general. There was, however, evidence for psychopaths experiencing anxiety at low levels, opposing Cleckley's assumed lack of anxiety in psychopathy. Furthermore, there were positive associations between measurements of anxiety and facets linked to secondary psychopathy, which are congruent with Karpman's assumption. To conclude, Kubak's and Salekin's results suggest that there are likely different patterns of anxiety and fear experience in psychopathy. Although results were largely consistent with theory, it can be argued that sensation seeking may not be an appropriate and sufficiently sensitive measure of fearlessness.

Schmitt and Newman concluded that their results may not provide support for an inverse relation of psychopathy with anxiety, because they found a positive correlation between the PCL-R composite score and the WAS-score in an African-American sample. In addition, this result contrasts with Cleckley, who assumed a general lack of anxiety in psychopathy, by supporting the idea that the ability to experience anxiety might be preserved in some psychopathic individuals. With respect to fear, slightly different but not significant patterns were observed. The authors speculated

that anxiety and fear could be related to psychopathy in different ways. Notably, they did not draw any conclusions about subtypes (Schmitt & Newman, 1999).

4.4 | Interpretation with regard to Hypothesis H2b

A more positive appraisal in psychopathic individuals of their (possibly) experienced fear has been suggested and supported by the reviewed literature. These findings are complementing the low fear/anxiety assumption proposed by various psychopathy models (e.g., Fowles & Dindo, 2006; Lykken, 1957, 1995; Patrick, 2007; Patrick et al., 2009).

Results reported by Book and colleagues seem to confirm a more positive appraisal of feelings experienced in supposedly fear-inducing situations, and a lessened negative response to them (Book et al., 2020). It ought to be mentioned, though, that some of the associations found in their study were only small to moderate in size which warrants a cautious interpretation of the results. The authors did not draw conclusions about psychopathic subtypes.

Hosker-Field and colleagues found that participants scoring high on F1 rated fear and excitement stimuli as equally positive. In addition, there was a significant positive correlation between positive descriptors of bodily expressions of fear used and F1 traits as well as the composite psychopathy score (Hosker-Field et al., 2016). Since F1 traits are thought to be related to primary psychopathy, one can infer, in line with cognitive appraisal theory (e.g., Lazarus et al., 1970; Lindquist & Barrett, 2008), that a reduced bodily fear experience might lead to a positive appraisal of fear-inducing stimuli, followed by more positive fear descriptions. In addition, a less negative appraisal of fear could possibly lead to decreased flight reaction tendencies (i.e., decreased BIS activity), and evaluating fear as more positive, to increased approaching behavior tendencies to fearful stimuli (i.e., increased BAS activity), providing additional explanatory content for Lykken's (1995) assumption. For participants scoring high on F2 as well as on the psychopathy total score, there was a significant correlation between positive descriptors of experienced fear. In line with Lykken (1995), individuals high on secondary psychopathy should experience regular levels of fear. As they are prone to higher levels of sensation seeking however, there might still be a positive appraisal of fear inducing stimuli, leading to more positive descriptions concerning their experience. The report on strong BAS activity in both types of psychopathy is also in line with results reported in earlier studies (e.g., Hundt et al., 2008; Ross et al., 2007, 2009; Uzieblo et al., 2007). Taken together, the results indicate a preserved ability of experiencing fear in psychopathy by supporting the *Fear Enjoyment Hypothesis* (Hosker-Field et al., 2016). All effect sizes reported were small to moderate in size, thus limiting the impact of the findings somewhat.

Finally, Thomson and colleagues demonstrated low physiological reactions in psychopathic individuals due to low levels of fear experience (Thomson et al., 2018). Their results provide not only additional support for the *Fear Enjoyment Hypothesis* (Hosker-Field et al., 2016), leading to a more positive attribution of feelings of fear, especially in primary psychopathy (F1), but also for Lykken's (1957, 1995) assumed fear deficit. Again, the effect sizes reported in this study were small to moderate.

As an additional limitation it should be mentioned that there is no study providing evidence for the *Fear Enjoyment Hypothesis* in individuals scoring very high on psychopathic traits (e.g., samples of prison inmates).

5 | CONCLUSION

Different aspects about the literature we reviewed are worth mentioning. Previous research on the link between psychopathy, fear, and anxiety lacks a consistent operationalization of anxiety or fear experience. At a closer look, however, we recognized a tendency to capture anxiety experiences in terms of Spielberger's STAI (Spielberger et al., 1970, 1983). Indeed, the STAI is the most frequently used measure of non-disorder-specific anxiety (e.g., Littleton et al., 2007) and might be recommended for psychopathy research as well. In several studies, the feeling of fear was operationalized by means of responses to threat cues and a subsequent evaluation of one's experience. With the

definition of fear in mind, this operationalization seems well-suited. It seems to be of great importance, however, that the threatening stimulus material meets the requirements of the psychopathic target group. That means, for example, waiving conceptual and linguistic events as cues (Patrick et al., 1994), enabling emotional immersion at best, and assuring that the stimulus material induces the respective emotions as intended (Pham et al., 2000). As expected, most of the literature we reviewed did not properly consider the conceptual complexity and the temporal dynamics of emotional experiences in their study design. Therefore, conclusions about potential deficits in fear or anxiety experiences, that have been suggested in a number of influential theoretical accounts of psychopathy (e.g., Cleckley, 1941, 1976; Fowles & Dindo, 2006; Lykken, 1957; Patrick, 2007; Patrick et al., 2009), should be drawn with caution. Future studies, especially in the context of fear research, should implement the different phases of emotion processing (i.e., incorporating behavioral [e.g., go/no go tasks], physiological [e.g., heart rate and electrodermal activity], and subjective measures [e.g., experience ratings]), in order to provide broad and valid insights into de facto affective experiences in psychopathy.

The current review provides evidence that psychopaths likely possess a general ability to experience fear and anxiety, the latter being more pronounced in secondary psychopathy. Moreover, previous studies indicate that even if there is a reduced ability to experience (or at least report) fearful feelings, primary psychopaths still feel *something* when exposed to fear-eliciting stimuli. This sensation could, however, be labeled as positive or agreeable. In addition, considering that there might be *something* affect-related experienced, combined with a misattribution, leading to increased approaching behavior and decreased flight reaction tendencies to fearful stimuli, one could use cognitive restructuring techniques for primary psychopathic individuals as treatment, in application of an assumed underlying interaction of acting, thinking and feeling (e.g., Hautzinger, 2013).

Furthermore, some of the results reported herein point toward a different relation of fear and anxiety in psychopathy, supporting the assumption that different psychopathic phenotypes can not only be delineated based on their anxiety levels, as suggested by several researchers (e.g., Blackburn, 1975; Brinkley et al., 2004; Fagan & Lira, 1980; Levenson et al., 1995; Newman & Brinkley, 1997; Newman et al., 2005), but also based on their fear levels. With more research in search of a “low fear” or “low anxious” versus a “fear-sensitive” or “anxious” subtype among psychopathic individuals, theory-driven diagnostic instruments, that are able to differentiate between different phenotypes of psychopathy, could be developed. If different phenotypes could be distinguished, etiological research could be conducted in a more nuanced way. Ultimately, the potential gain in knowledge is expected to aid clinical treatment and victim protection, by establishing suitable individual treatment programs, and offering benefits in terms of assessing recidivism risk.

The studies reviewed herein provided broad insights into the relationship between psychopathy, anxiety, and fear, because they included different sample characteristics (i.e., age range, community, inmates) as well as different assessments of psychopathic traits (e.g., PCL-R, SRP, LSRP, PPI). Nevertheless, methodological and conceptual limitations (especially concerning the operationalization and measurement of subjective fear and anxiety *experience*) hamper the inference of reliable conclusions. Therefore, future studies should (1) be carried out in a manner that is consistent with distinct operationalizations of fear versus anxiety, and (2) focus more strongly on assessing the entire emotional process, for example, by combining the conscious experience and subjective quality of fear with the behavioral, and automatic (but not necessarily conscious) response to threat. In addition, future studies should (3) also apply conceptualizations of psychopathy that deal more directly with the central concept of fear(lessness) in psychopathy.

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