A motivational perspective of psychopathic traits

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An Investigation of Motivated Emotion Regulation and Motive Dispositions

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General Introduction
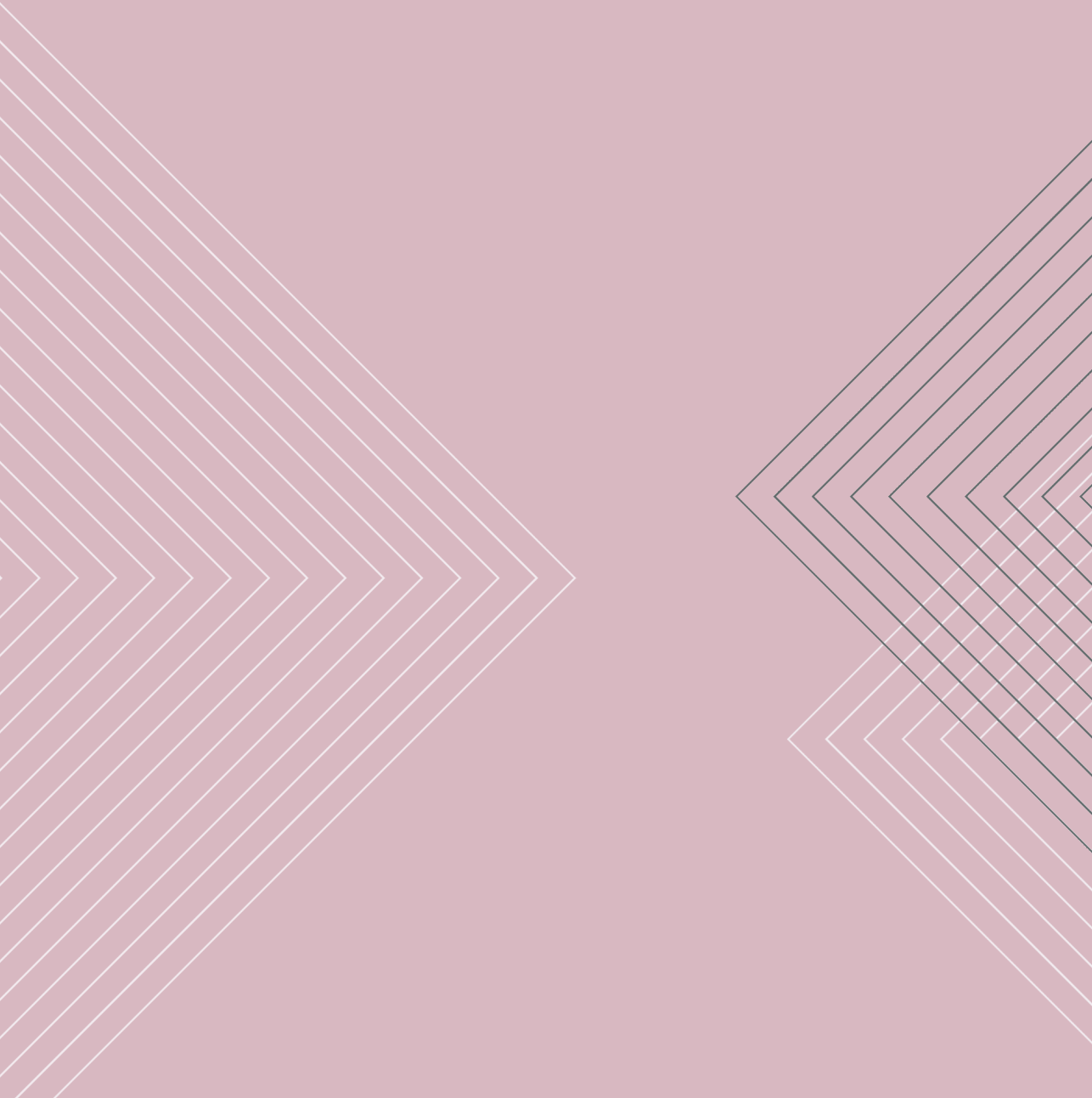
Humans are wired to be social. The tendency to seek the company of others and maintain interpersonal ties is assumed to be inherent to our very nature (e.g., Baumeister & Leary, 1995; Bloom, 2011). This perspective treats humans as intrinsically oriented towards each other, in forming relationships, social groups, learning, developing, surviving. Perhaps it is this assumption of social connection that underlies our confidence that most humans are "fundamentally good", wired to maintain harmonious coexistence (e.g., Baumeister & Leary, 1995; Bloom, 2011). Indeed, in our daily routines, we constantly come into contact with others in different situations, such as at work or while commuting. These situations are usually eventless and unfold in an almost automated way. For instance, we cross the road being confident that the drivers will avoid the pedestrians because they do not want to harm others.

However, there are situations in which harm is caused deliberately, which conflicts with the assumed universal good intentions. This raises the question of why some individuals would not be "fundamentally good" and act on it? The present dissertation investigates psychopathic personality traits, a constellation of traits that are not prosocial (rather, antisocial) and can have an adverse societal impact, yet do exist in the general population without necessarily jeopardizing the holding tissue of what keeps a society together (e.g., Hall & Benning, 2006). What could be motivating the deviance from general prosociality and the infliction of harm on others? Through the studies included in this dissertation, we aimed to address this question by adopting a motivational perspective to investigate emotion regulation and motive dispositions associated with psychopathic traits.

Psychopathic traits are considered relatively stable throughout the life course (e.g., Hare, 1996; Hare & Neumann, 2008). Meanness, manipulativeness, callousness, impulsivity, disinhibition, superficial charm, irresponsibility, and lack of empathy are part of the affective, interpersonal and behavioral core of the psychopathy personality construct (e.g., Hare & Neumann, 2008; Patrick et al., 2009). The listed characteristics of psychopathy are clearly different from the aforementioned prosocial human tendencies. In fact, psychopathy is a theoretically and empirically, widely explored topic that is also often tested for its associated negative social implications. These implications can occur in varying degrees, from serious criminal and antisocial conduct to deception, exploitation and poor, unstable interpersonal relationships. Psychopathic traits are present among incarcerated and clinical populations but also in general, non-clinical populations (Gordts et al., 2017). The base levels of psychopathy are higher in forensic settings. Psychopathy being a dimensional construct, however, there is sufficient evidence supporting the incremental value of testing psychopathy in non-clinical samples (Colins et al., 2017; Gordts et al., 2017).

Indeed, some individuals with higher levels of psychopathy may be more outwardly antisocial (Hare, 2003) and often have to face legal consequences. However, others, may be able to elude legal repercussions—or legal repercussions might not even be applicable to their actions

(Babiak & Hare, 2006; Patrick et al., 2009; Hall & Benning, 2006). For example, a person with higher levels of psychopathic traits could be a high positioned corporate executive (Babiak & Hare, 2006). Psychopathic traits are common among individuals that are often charming and bold, with many failed relationships, a history of deception and manipulation, emotional abuse and fraudulent behaviors. This creates an interesting field for psychopathy research in non-clinical samples, wherein psychopathic traits might exist in much lower levels.

The dimensional nature of "good" and "evil": psychopathic traits as a continuum

Human nature consists of "good and evil"; historically, and philosophically, there has been a longstanding effort to define the two "opposing" forces and often create a clear margin between them. A psychodynamic perspective (see Hopwood & Bornstein, 2019; McWilliams, 1994) suggests that the two tendencies, in the form of instinctive drive for creation (life) and destruction (death), albeit in conflict, coexist in the human psyche. Although beyond the scope of the current dissertation, the theoretical background and the research paradigm we build on is based on the premise that good and malicious qualities – and everything in between – can occur in varying degrees in every individual. The presence of good and evil can, thus, be seen as a continuum and may vary, and so is the case for traits towards the evil side of the continuum, the psychopathic personality traits (Gordts et al., 2017; Jeandarme et al., 2017). The relative proportion of each of these qualities, intra-individually, is often manifested as a general tendency to act in a predominantly good or predominantly malicious manner.

Consistent with the integrative perspective of the current dissertation, psychopathic individuals are not entirely deprived of tendencies, such as affiliation (Christian et al., 2019). They might seek out the company of others, but their relationships will lack bonding and intimacy and likely have poor progress for all parties involved. In this dissertation, we target individual differences in psychopathic traits in non-clinical populations (hereafter often referred to as psychopathic individuals for simplicity, by no means suggesting a diagnostic label), to generate the first empirical indications of their explicit and implicit motives. These findings may provide insights into clinical expressions of psychopathy and inform research in forensic populations.

Towards a motivational conceptualization of psychopathic traits

There is well documented coverage of the cognitive, emotional, processing and neurological deficits associated with psychopathic traits (e.g., Blair, 2003; Hare & Neuman, 2008). The deficit perspective, thus, proposes a fundamental inability for adaptive affect or cognition in viewing psychopathic individuals as deprived of core normative abilities (see Shane & Groat, 2018). More recently, there has been a shift of research's focus from what is lacking in psychopathic individuals to what is wanted by psychopathic individuals. That is a shift from a deficit to a motivation perspective (Garofalo et al., 2019; Glenn et al., 2017; Groat & Shane,

2019; Vitale et al., 2018). The present dissertation is along the lines of the latter perspective, in proposing that it is the motivational value allocated to non-prosocial experiences that is also central in individuals with psychopathic traits.

In the judicial system, the assessment of motives and intentions is crucial and decisive in terms of penalty (e.g., Walker et al., 2020). For example, murder vs. manslaughter are degrees of homicide that may vary legally based on the intention to kill (negligence vs. deliberation), as well as attacks and intention to harm. The severity of a crime can, thus, vary in terms of the necessity to take actions to protect society from the threat that a certain individual might possess, on the grounds of underlying motives (Walker et al., 2020). In addition to actions with legal repercussion, in daily life we assess interpersonal transactions based on intentions and underlying motives, such as little, trivial vs. deceiving lies, or socially awkward vs. rude and aggressive behaviors.

Research on underlying motives in psychopathic individuals has not often been conducted before. Relevant knowledge is rather scarce (Glenn, et al, 2017; Groat & Shane, 2019), mainly relying on self-questionnaires and practitioner questionnaires. The latter do not necessarily tackle underlying motives or do so, only partly, with a degree of bias (Groat & Shane, 2019). This calls for adapted research to measure motives that reveal antisocial tendencies, though, due to the methodological complexity of research into underlying motives, this research field is almost non-existing (Dufner et al., 2015). We currently advocate that this line of research would be crucial in advancing psychopathy literature.

In this dissertation, we focus on two different levels of motivation; one being expressed explicitly as a wanted affective state when engaging in emotion regulation (i.e., emotion goals; Tamir & Millgram, 2017) and the other being implicitly expressed when physiologically, affectively reacting to motive-relevant contexts (i.e., motive dispositions; Denissen & Penke, 2008; Dufner et al., 2015). This dissertation provides a first empirical testing of a motivated emotion regulation framework and a motive disposition framework in relation to psychopathic traits. In the following, we address both levels (explicit and implicit) of motivational underpinnings. In doing so, we try to answer what individuals with higher psychopathy levels want to feel and what they intrinsically experience as satisfying interactions. These findings would advance psychopathy knowledge towards a motivational conceptualization by showing that individuals with higher levels of psychopathic traits–apart from being (un) able to successfully regulate anger- are unwilling to do so. At the other level of motivational manifestation, these findings would indicate that individuals with higher levels of psychopathic traits are dispositionally attracted to harmful, antisocial interactions and this could be a dispositional underpinning of antisocial motive-relevant behaviors.

A common denominator of both levels of motivational expression is the negative other-directed orientation, which is a fundamental feature of psychopathic traits. Recently, this negative other-directed orientation was indirectly captured, by observing patterns and preferences through video gaming behaviors (Visser et al., 2020). Individuals with higher psychopathy levels were more inclined to engage through their videogame characters, into aggressive or mean interactions, as in fighting behaviors. In other studies (Sherman & Lynam, 2017), a negative interpersonal orientation was operationalized as low communion, manifested as the tendency of more psychopathic individuals to be less altruistic and share less in behavioral laboratory tasks including hypothetical monetary amounts and taking under consideration the relational closeness with real-life (but not present in the laboratory) people, that the participants had selected.

A negative interpersonal orientation is already very central in psychopathy conceptualizations in terms of antagonism (low agreeableness, see Vachon, 2019) and low communion (Sherman & Lynam, 2017). Albeit hinting a motivational foundation, these perspectives touch upon the concept in a more descriptive manner (e.g., in Big Five operationalization). Similar accounts, stress the centrality of meanness in psychopathy (Sellbom & Drislane, 2020), which conceptually shares many features with antagonism (Hopwood & Bornstein, 2019). The perspective we tested is also putting forward a motivational underpinnings scope of psychopathic traits, adding the scope of looking into what is wanted by- and thus motivates psychopathic individuals.

Introducing a Motivated Emotion Regulation Framework in Psychopathy

Abnormalities in emotional functioning are central in most psychopathy theories (Blair, 2003; Cleckley, 1976; Meloy, 1988). Despite this common denominator, the ambit of these abnormalities continues to be rather or equivocal. Specifically, emotional experiences related to psychopathic traits have been widely covered (for an overview, see Kosson et al., 2016). Emotion regulation has also been investigated in relation to psychopathy, revealing compelling differences among psychopathic features (Garofalo & Neumann, 2018; Garofalo et al., 2018; see also Chapter 1 of the dissertation). With regard to emotional experience in psychopathy, some studies showing positive associations with negative emotions and negative associations with positive emotions (Hoppenbrouwers et al., 2016; Kosson et al., 2016; Lishner et al., 2012), whereas other studies showed null or negative associations with negative emotionality (Neumann et al., 2013; Schmitt & Newman, 1999). The emotional experience of fear has also been found to be rather positively interpreted by individuals with higher psychopathy levels (Book et al., 2020). With regard to emotion regulation, modest-moderate positive associations have been found with problems in emotion regulation (e.g., Garofalo, Neumann, & Mark, 2020).

In the current dissertation, we implemented and tested a recently introduced, motivational framework of emotion regulation (see Tamir, 2016), and the idea that it might be the direction of regulatory efforts and not only their efficacy that could characterize – at least in part – the notoriously observed psychopathic emotional disturbances. In doing so, we aimed to provide the first empirical evidence of what individuals higher in psychopathy want to feel, that is what are their emotion goals.

Desired affect can differ interindividually. Contrary to previous assumptions, the goal of emotion regulation is not necessarily always to experience an emotion of positive valence like joy (Tamir, 2009; 2016; Tice et al., 2004), but also negatively valenced emotions such as sadness or anger (Kalokerinos et al., 2017; Tamir & Ford, 2012). Why would someone want to feel "bad"? The counterintuitive aspect of wanting to experience negative emotions can be explained by underlying motives. Individuals may want to experience an emotion because they are hedonically motivated to do so, in that they derive pleasure from experiencing it (Menninghaus et al., 2017; Tamir & Millgram, 2017). Individuals appear to also be motivated to want an emotion that has turned out to be instrumentally beneficial for them, in that they believe that said emotion could facilitate goal pursuit (e.g., Kalokerinos et al., 2017). For instance, people may be motivated to upregulate (or to not downregulate) anger and sadness as both bear reinforcing qualities in being enjoyable and useful affective experiences. Experiencing some level of sadness may be wanted because it might offer an opportunity to release accumulated tension–same as anger, which could be wanted as an opportunity to vent and let off steam. It might also be the case that someone has formed the impression that some levels of sadness contributed to seeking reconciliation after a fight with a significant other or that some levels of anger contributed to winning an argument. Importantly, according to motivated emotion regulation framework (for an overview see Tamir, 2016), individual differences in desired affect do not represent preferences in absolute but rather in relative terms. An emotion may thus be wanted or be more enjoyable or less aversive to some individuals than to other individuals.

Therefore, it is important to address the research gap in motivated emotion regulation in psychopathy, given the considerable relevance of emotion goals to personality traits (Augustine et al., 2010) and psychopathology (Millgram et al., 2015). For example, there is evidence of individual differences in emotion goals associated with Big Five traits (Augustine et al., 2010): higher levels of agreeableness, for example, have been associated with wanting to experience more positive, high-arousal affect. This literature describes how individuals with higher level of psychopathic traits feel anger, and they face difficulties regulating anger. The fact that they may also *want* to feel anger could put things into a completely different perspective; that is, it is not that they feel it merely triggered by external or genetic influences, and are unable to regulate it, maybe they do not really care about downregulating it.

Given the central role of agreeableness and antagonistic motivation in psychopathy (Sherman & Lynam, 2017), it would be plausible to expect that for individuals with higher psychopathy levels, an antagonistic orientation towards others would be reflected in their desire to experience negative-other directed emotions, like anger. Simultaneously, this would reflect a tendency of more psychopathic individuals, in being drawn (or less averse) to negative and potentially aggressive emotions, in contrast to a general human tendency to prefer positive emotions and pro-social interactions (Augustine et al., 2010; Baumeister & Leary, 1995; Bloom, 2011; Ford & Tamir, 2014).

Testing a Motive Dispositions Framework in Psychopathy

Facial expressions can be good indicators of emotional states. The characteristic evil smirk is very prominent in the portrayals of infamous villains, from Disney villains, to Marvel villains, and to our next-door "villains". This smile is a sign of pleasure that speaks for the hedonic investment often assumed in malicious intents. Joker tells Batman "I won't kill you, because you're just too much fun". The hedonic reward of messing with Batman and being antisocial is so firing that it keeps motivating him to continue acting the way he does. The latter reflects the overriding hedonic investment that nourishes and maintains the motivation for an action or a tendency (Denissen & Penke, 2008), which more often than not is prosocially directed (Baumeister & Leary, 1995; Bloom, 2011; Dufner et al., 2015). This underlying hedonic investment is more often than not non-tangible and usually leaks through implicit expressions.

It is plausible that people would not readily reveal or would even be aware of an enjoyment for non-adaptive and painful tendencies and even more so for aggressive, selfish and antisocial tendencies. The latter creates a necessity to access implicit and non-deliberate expressions of motivation, which are automatic and thus not influenced by social desirability or other self-biases (Dufner et al., 2015). This would be valuable in understanding the motivational core of antagonistic traits (Moshagen et al., 2019) and specifically in accessing the "most antisocial of them all", the motive dispositions associated with psychopathic traits.

A Methodology to Assess Motives on a Dispositional Level

Recently, there was a breakthrough in personality and motives research, in assessing motives on a dispositional level (Dufner et al., 2015). Based on the premise that motives have an affective core expressed via preferences for certain contexts (Schönbrodt & Gerstenberg, 2012), and that the immediate affective reaction to a motive-relevant clue is (theoretically) considered an indicator of motive disposition (Denissen & Penke, 2008), a study (Dufner et al., 2015) aimed at capturing affectively expressed tendencies indicative of motive dispositions and predictive of motivated behavior. That study revealed individual differences in affiliative dispositions via facial electromyography [fEMG]. Recording spontaneous facial muscular reactions within three milliseconds of viewing a motive-relevant stimulus (picture), fEMG assesses spontaneous smiling (via zygomaticus activation) and spontaneous frowning (via

corrugator supercilii) activation (Cacioppo et al., 1986). These physiological reactions are representative of positive and negative affect, respectively, and bring to a (measurable) surface hedonic investment in motivational tendencies (Dufner et al., 2015).

Motive dispositions are, thus, operationalized as affective contingencies of motivation, which are established through lifetime, as some tendencies are positively reinforced and repeatedly experienced as enjoyable (Dufner et al., 2015). While there is an overarching, universal human tendency to be attracted to affiliation, some individuals are more attracted to it than others and those are the ones who seek it out (Dufner et al., 2015). Viewing personality traits as "if-then contingencies[1]" (Mischel & Soda, 1995) can offer a better understanding of stable tendencies towards environmental stimuli, i.e., motive dispositions, and thus predict behavioral patterns (Denissen & Penke, 2008). Based on the above theoretical and empirical background, we sought to test the hypothesis that if more psychopathic individuals tend to be less prosocial, altruistic and, in general negatively oriented towards others, this should be evident on a dispositional level. That means they may be drawn to antisocial motive-relevant contexts like antagonism and sadism, and act accordingly.

Having the apparatus to test implicit aspects of motives, such as dispositional tendencies, can be invaluable in advancing psychopathy research, theory and intervention planning. Theoretically and methodologically, antagonistic and antisocial tendencies expressed as dispositional enjoyment can be revealed. This spontaneous expression, being physiologically indexed, cannot be faked for social desirability and self-presentation's sake since the automatic reactions are beyond the influence of effortful control. Additionally, this line of research contributes to the motivational perspective in psychopathy research, by aiming to understand what is valued and wanted, rather than what is lacking (Glenn et al., 2017).

The present dissertation: aims and outline

The present dissertation aimed to capture motivational features that may characterize the affective landscape of psychopathic individuals by investigating desired and spontaneous affective reactions in novel, multimethod designs.

Chapter 2 tested, through two studies the notion that motivational processes guide emotion regulation and, specifically, the idea that hedonic and instrumental motives may play a role in the emotions that psychopathic individuals *want* to feel (i.e., their emotion goals; Tamir & Millgram, 2017). In a sample of university students, we first investigated whether individuals scoring higher in psychopathy would have specific preferences/aversions to emotions, namely anger, fear, happiness and sadness (study 1). Then, in a community sample, we investigated

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1   "If" representing an environmental stimulus or situation and "then" representing a stable reaction to it (Denissen & Penke, 2008).

whether the same patterns of emotion goals would be replicated, and extended the investigation to the processes that could mediate these goals. We thus focused on hedonic, contra-hedonic considerations, and also instrumental considerations. The former refers to the affective reactions and attitudes towards the aforementioned emotions (Harmon-Jones et al., 2011; Netzer et al., 2018). The latter refer to the beliefs of an individual regarding the potential value and gain associated with an emotion (e.g., Tamir et al., 2008). The assumption tested was that individuals higher in psychopathy would want to channel their emotion regulatory efforts towards emotions through the aforementioned hedonic and instrumental considerations, that is, how much they enjoy each of the emotions in question and how much value they attribute to them in terms of expected gain (see Tamir, 2016). We argued that this strand of research represented a missing piece in the literature of emotion regulation in psychopathy and introduces the idea of motivated emotion regulation in this personality construct and in the field of personality disorders in general.

After having identified individual differences in what psychopathic participants report to be drawn to (i.e., prefer/want) in terms of affective reactions (chapter 2), we extended the investigation on another level of motivation, the dispositional level (chapters 3 and 4). That is the spontaneous affect, experienced when viewing motive relevant stimuli.

In **Chapter 3**, a novel, in the psychopathy field, methodology was implemented to investigate motive dispositions associated with psychopathy. Through a pre-registered, multimethod design including self-reports and laboratory experiments (behavioral task and fEMG), we sought to test previous empirical evidence on antagonistic and affiliative motivation and to extend this line of research to testing motive dispositions. Data collection took place over two academic years, testing university students, online and in the laboratory. Motivational correlates were first tested as associations with self-reported affiliation and intimacy, behavioral tendencies to antagonistic or affiliative motives of sharing and physiologically assessed affective reactions to antagonistic and affiliative stimuli, followed by self-assessed affective reactions. Affective contingencies towards antagonism and affiliation were measured by recording spontaneous affective reactions during three milliseconds of viewing a motive-relevant picture (affiliative, prosocial, warm interactions vs. antagonistic, disruptive, aggressive interactions).

In a follow-up step, multilevel analyses were performed to investigate differences between persons and to investigate the multilevel nature of our data. This way, we sought to provide empirical evidence that psychopathic individuals can be attracted to antagonism, in a way that differs from the universal human tendency to be attracted to affiliation (Baumeister & Leary, 1995; Dufner et al., 2015). This tendency to be drawn to and derive pleasure from antagonistic experiences could add to explaining why individuals higher in psychopathy engage in non-prosocial or even antisocial acts and are less altruistic and invested in intimate bonds.

In **Chapter 4**, we tested the hypothesis that motive dispositions associated with psychopathic traits might be extended to sadism. In the previous chapters of the dissertation, we attempted to delineate a motivational underpinning of psychopathy in antagonism, at the levels of motivation to upregulate other-directed negative emotions and attraction to negative other-directed experiences. In both projects, central was the hypothesis that the psychopathic tendency to be drawn to antisociality (antagonistic motivation) would emerge as in comparison to the universal tendency of humans to be drawn to happiness and prosociality (affiliative motivation). Also, in this chapter this was a common denominator. This study, thus, built on the previous ones by investigating the possibility that what hedonically draws psychopathic individuals to negative other-directed interactions, is not only the potential to cause harm to others (as in antagonistic interactions), but also the unequivocal harm being caused to others in sadistic interactions.

We employed a multimethod design, involving psychopathy self-portrayals and physiologically indexed motive dispositions to sadism (fEMG), in comparison to antagonism and affiliation. As in the previous study, we do not target to capture only a subjective positive experience associated with motive-relevant interactions, but an intrinsic, automatic tendency to be drawn to them, recorded in the three milliseconds of stimulus presentation and revealing of a motive disposition (Dufner et al., 2015).

Finally, in **Chapter 5**, we discussed theoretical, methodological and clinical implications of the current dissertation, as well as directions for future research. Theoretically, the current dissertation adds to the motivational perspective in psychopathy literature (Groat & Shane, 2019). That is, we suggest that apart from what is missing in psychopathic individuals, it is important to understand what is actually wanted and endorsed. What is wanted can provide a window in what contributes to the emotional experience and behavioral tendencies of individuals with higher psychopathic traits. Future research can shed more light on the areas that psychopathic individuals attach motivational value to, inquiring what these individuals want. In addition, and with respect to underlying motive dispositions, we propose that methodological limitations may be largely circumvented by targeting physiologically assessed, affective reactivity to motive-relevant cues. Intervention and policy planning may also benefit from focusing on explicitly endorsed emotions and dispositional endorsements, by channeling hedonic investments towards positive other-oriented tendencies, which will ideally translate into changed behavioral endorsements.

References

Augustine, A. A., Hemenover, S. H., Larsen, R. J., & Shulman, T. E. (2010). Composition and consistency of the desired affective state: The role of personality and motivation. *Motivation and Emotion*, *34*(2), 133–143. https://doi.org/10.1007/s11031-010-9162-0

Babiak, P., & Hare, R. D. (2006). *Snakes in suits: When psychopaths go to work*. Harper.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529. doi:10.1037/0033-2909.117.3.497

Blair, R. J. R. (2003). Neurobiological basis of psychopathy. *The British Journal of Psychiatry: The Journal of Mental Science*, *182*, 5–7.

Bloom, P. (2011). *How pleasure works: The new science of why we like what we like*. W.W. Norton & Company.

Book, A., Stark, S., MacEachern, J., Forth, A., Visser, B., Wattam, T., ... & Roters, J. (2020). In the eye of the beholder: Psychopathy and fear enjoyment. *Journal of Personality*, *88*(6), 1286-1301.

Cacioppo, J. T., Petty, R. E., Losch, M. E., & Kim, H. S. (1986). Electromyographic activity over facial muscle regions can differentiate the valence and intensity of affective reactions. *Journal of Personality and Social Psychology*, *50*, 260-268.

Christian, E., Sellbom, M., & Wilkinson, R. B. (2019). Is psychopathy associated with deficits in bonding in an adult noninstitutionalized sample? The association between intimate social network size, attachment behavior, and psychopathy. *Journal of Social and Personal Relationships*, *36*(7), 1996-2014.

Cleckley H. (1976). *The Mask of Sanity.* (5th ed.). Mosby.

Colins, O. F., Fanti, K., Larsson, H., & Andershed, H. (2017). Psychopathic Traits in Early Childhood: Further Validation of the Child Problematic Traits Inventory. *Assessment*, *24*(5), 602–614. https://doi.org/10.1177/1073191115624544

Denissen, J. J., & Penke, L. (2008). Motivational individual reaction norms underlying the Five-Factor model of personality: First steps towards a theory-based conceptual framework. *Journal of research in personality*, *42*(5), 1285-1302.

Dufner, M., Arslan, R. C., Hagemeyer, B., Schönbrodt, F. D., & Denissen, J. J. (2015). Affective contingencies in the affiliative domain: Physiological assessment, associations with the affiliation motive, and prediction of behavior. *Journal of Personality and Social Psychology*, *109*(4), 662.

Ford, B.Q., & Tamir, T. (2014). Preferring familiar emotions: As you want (and like) it? *Cognition & Emotion, 28*(2): 311–324.

Garofalo, C., & Neumann, C.S. (2018). Psychopathy and Emotion Regulation: Taking Stock and Moving Forward. In: M. DeLisi (Ed.), *Routledge International Handbook of Psychopathy and Crime.* Routledge

Garofalo, C., Neumann, C. S., Zeigler-Hill, V., & Meloy, J. R. (2019). Spiteful and contemptuous: A new look at the emotional experiences related to psychopathy. *Personality Disorders: Theory, Research, and Treatment, 10*(2), 173–184. https://doi.org/10.1037/per0000310

Garofalo, C., Neumann, C.S., & Mark, D. (2020). Associations between Psychopathy and the Trait Meta-Mood Scale in Incarcerated Males: A Combined Latent Variable- and Person-centered Approach. *Criminal Justice and Behavior, 47*(3), 331–351. https://doi.org/10.1177/0093854819891460

Garofalo, C., Neumann, C.S., & Velotti, P. (2018). Difficulties in emotion regulation and psychopathic traits in violent offenders. *Journal of Criminal Justice, 57*, 116–125.

Glenn, A. L., Efferson, L. M., Iyer, R., & Graham, J. (2017). Values, goals, and motivations associated with psychopathy. *Journal of social and clinical psychology*, *36*(2), 108-125.

Gordts, S., Uzieblo, K., Neumann, C., Van den Bussche, E., & Rossi, G. (2017). Validity of the Self-Report Psychopathy Scales (SRP-III Full and Short Versions) in a Community Sample. *Assessment*, *24*(3), 308–325. https://doi.org/10.1177/1073191115606205

Groat, L. L., & Shane, M. S. (2019, April 17). A Motivational Framework for Psychopathy: Toward a Reconceptualization of the Disorder. https://doi.org/10.31234/osf.io/ay7np

Hall, J. R., & Benning, S. D. (2006). The "successful" psychopath. *Handbook of psychopathy*, 459-478.

Hare, R. D. (1996). Psychopathy: A clinical construct whose time has come. Criminal Justice and Behavior, 23(1), 25-54. https://https://doi.org/10.1177/0093854896023001004

Hare, R. D. (2003). *Hare Psychopathy Checklist–Revised* (PCL–R, 2nd ed.). Toronto, ON, Canada: Multi-Health Systems.

Hare, R. D., & Neumann, C. S. (2008). Psychopathy as a Clinical and Empirical Construct. *Annual Review of Clinical Psychology*, *4*(1), 217–246.

Hare, R. D., & Neumann, C. S. (2008). Psychopathy as a Clinical and Empirical Construct. *Annual Review of Clinical Psychology*, *4*(1), 217–246.

Harmon-Jones, E., Harmon-Jones, C., Amodio, D. M., & Gable, P. A. (2011). Attitudes toward emotions. *Journal of Personality and Social Psychology*, *101*(6), 1332–1350.

Hoppenbrouwers, S. S., Bulten, B. H., & Brazil, I. A. (2016). Parsing fear: A reassessment of the evidence for fear deficits in psychopathy. *Psychological bulletin*, *142*(6), 573.

Hopwood, C. J., & Bornstein, R. F. (2019). Psychodynamic approaches to treating antagonism. In J.A. Miller & D.R. Lynam (Eds.) *The Handbook of Antagonism: Conceptualizations, Assessment, Consequences, and Treatment of the Low End of Agreeableness* (pp. 337-350). Academic Press.

Jeandarme, I., Edens, J., Habets, P., Bruckers, L., Oei, T.I., & Bogaerts, S. (2017). PCL-R field validity in prison and hospital settings. *Law & Human Behavior*, *41*(1), 29-43.

Kalokerinos, E. K., Tamir, M., & Kuppens, P. (2017). Instrumental motives in negative emotion regulation in daily life: Frequency, consistency, and predictors. *Emotion*, *17*(4), 648–657.

Kosson, D. S., Vitacco, M. J., Swogger, M. T., & Steuerwald, B. L. (2016). Emotional Experiences of the Psychopath. In C. B. Gacono (Ed.), *The Clinical and Forensic Assessment of Psychopathy: A Practitioner's Guide* (2nd ed., pp. 73–96). Routledge.

McWilliams, N. (1994). Psychoanalytic diagnosis. NY: Guilford.

Meloy, J. R. (1988). *The psychopathic mind: origins, dynamics, and treatment*. J. Aronson. Retrieved from https://books.google.nl/books?id=W8BrAAAAMAAJ&hl=el&source=gbs_book_other_versions

Menninghaus, W., Wagner, V., Hanich, J., Wassiliwizky, E., Jacobsen, T., & Koelsch, S. (2017). The distancing-embracing model of the enjoyment of negative emotions in art reception. *Behavioral and Brain Sciences*, *40,* e347. Online publication. doi: 10.1017/S0140525X17000309

Millgram, Y., Joormann, J., Huppert, J. D., & Tamir, M. (2015). Sad as a Matter of Choice? Emotion-Regulation Goals in Depression. *Psychological Science*, *26*(8), 1216–1228.

Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review,* *102*(2), 246–268. https://doi.org/10.1037/0033-295X.102.2.246

Moshagen, M., Hilbig, B. E., & Zettler, I. (2018). The dark core of personality. *Psychological Review*, *125*(5), 656-688.

Netzer, L., Gutentag, T., Kim, M. Y., Solak, N., & Tamir, M. (2018). Evaluations of emotions: Distinguishing between affective, behavioral and cognitive components. *Personality and Individual Differences,* *135,* 13-24.

Neumann, C. S., Johansson, P. T., & Hare, R. D. (2013). The Psychopathy Checklist-Revised (PCL-R), low anxiety, and fearlessness: A structural equation modeling analysis. *Personality Disorders: Theory, Research, and Treatment*, *4*(2), 129–137. https://doi.org/10.1037/a0027886

Patrick, C. J., Fowles, D. C., & Krueger, R. F. (2009). Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology*, *21*(3), 913. https://doi.org/10.1017/S0954579409000492

Schmitt, W. A., & Newman, J. P. (1999). Are all psychopathic individuals low-anxious? *Journal of Abnormal Psychology*, *108*(2), 353–358.

Schönbrodt, F. D., & Gerstenberg, F. X. R. (2012). An IRT analysis of motive questionnaires: The Unified Motive Scales. *Journal of Research in Personality*, *6*, 725–742.

Sellbom, M., & Drislane, L. E. (2020). The classification of psychopathy. Aggression and Violent Behavior, 101473.

Shane, M. S., & Groat, L. L. (2018). Capacity for upregulation of emotional processing in psychopathy: all you have to do is ask. *Social cognitive and affective neuroscience*, *13*(11), 1163-1176.

Sherman, E. D., & Lynam, D. R. (2017). Psychopathy and low communion: An overlooked and underappreciated core feature. *Personality Disorders: Theory, Research, and Treatment*, *8*(4), 309-318.

Tamir, M. (2009). Differential Preferences for Happiness: Extraversion and Trait-Consistent Emotion Regulation. *Journal of Personality*, *77*, 447-470.

Tamir, M. (2016). Why Do People Regulate Their Emotions? A Taxonomy of Motives in Emotion Regulation. *Personality and Social Psychology Review*, *20*(3), 199–222.

Tamir, M., & Millgram, Y. (2017). Principles, Lessons, and Implications of a Motivational Analysis of Emotion Regulation. In A. J. Elliot (Ed.), *Advances in Motivation Science* (pp. 207-247).

Tamir, M., Mitchell, C., & Gross, J. J. (2008). Hedonic and Instrumental Motives in Anger Regulation. *Psychological Science*, *19*(4), 324–328.

1

Tice, D. M., Baumeister, R. F., & Zhang, L. (2004). The role of emotion in self-regulation: Differing role of positive and negative emotions. In P. Philippot & R. S. Feldman (Eds.), *The regulation of emotion* (pp. 213-226). Mahwah, NJ, US: Lawrence

Vachon, D. D. (2019). Antagonism in psychopathy. In J.A. Miller & D.R. Lynam (Eds.) *The Handbook of Antagonism: Conceptualizations, Assessment, Consequences, and Treatment of the Low End of Agreeableness* (pp. 199-220). Academic Press.

Visser, B. A., Batinic, M., Worth, N., Book, A., & Toll, E. (2020). Psychopathic Sims: Testing the Cheater-Hawk Hypothesis in a Video Game. *Evolutionary Psychological Science*, *6*(3), 229-240.

Vitale, J., Kosson, D. S., Resch, Z., & Newman, J. P. (2018). Speed-accuracy tradeoffs on an affective lexical decision task: Implications for the affect regulation theory of psychopathy. *Journal of Psychopathology and Behavioral Assessment, 40*(3), 412–418. https://doi.org/10.1007/s10862-018-9652-z

Walker, L. E., Shapiro, D., & Akl, S. (2020). *Introduction to forensic psychology: Clinical and social psychological perspectives*. Springer Nature.

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Chapter 2

Emotion goals: A Missing Piece in Research on Psychopathy and Emotion Regulation

Abstract

Psychopathy is associated with profound emotional disturbances. Yet, little is known about associations between psychopathic traits and what individuals *want* to feel (i.e., emotion goals). We investigated associations between psychopathy and emotion goals in two studies with non-clinical samples (*N*=148 undergraduate students; *N*=520 community sample). We targeted four emotions often studied in psychopathy research: anger, fear, sadness, and joy. Furthermore, we assessed perceived utility and perceived pleasantness of emotions to investigate whether potential associations between psychopathy and emotion goals could be partly explained by instrumental or hedonic considerations, respectively. Psychopathic traits were positively related to negative emotion goals (primarily anger). Although joy was the most wanted emotion on average, psychopathy was negatively but less robustly related to the emotion goal of joy. Mediation analyses suggested differential motivational (hedonic and/ or instrumental) mechanisms for different emotion goals. These findings provide preliminary evidence for motivated emotion regulation in psychopathy.

Keywords: Psychopathy, Emotion Regulation, Motivation, Desired Affect

Emotion Goals: A missing piece in research on psychopathy and emotion regulation

Psychopathic personality is defined as a constellation of interpersonal (e.g., manipulation, superficial charm), affective (e.g., callousness, lack of empathy, meanness), and behavioral (e.g., impulsivity, irresponsibility, disinhibition) features (Hare et al., 2008; Patrick et al., 2009). Contemporary conceptualizations of psychopathy vary in that some add more emphasis on antisocial tendencies (Hare, 2003), whereas others add more emphasis on potentially adaptive interpersonal features, like boldness or fearless dominance (Patrick et al., 2009; Hall & Benning, 2006). In the current study, we focus on individual differences in psychopathic traits, which at their extreme characterize the psychopathic personality syndrome, but that exist to varying degrees in non-clinical populations as well (Gordts et al., 2017; Jeandarme et al., 2017). Many theories have in common that abnormalities in emotional functioning are a core feature of psychopathy (Blair, 2003; Cleckley, 1976; Lykken, 1995; Meloy, 1988). However, the scope of such abnormalities remains unclear and likely involves several components. Previous research has provided insights into the emotional experiences related to psychopathic traits (for a review, see Kosson et al., 2016), and more recently, into links between psychopathic traits and emotion regulation (Garofalo & Neumann, 2018; Garofalo et al., 2018). Building on recent advances in emotion research, the present study adopted a motivational framework of emotion regulation to investigate associations between psychopathic traits and emotion goals (i.e., what people *want* to feel).

Conceptual and Empirical Background

Given the absence of prior research on emotion goals and psychopathy, we first provide a theoretical context for the current investigation with a brief summary of studies on psychopathy and both emotional *experience* and *regulation*. The most often studied emotions in relation to psychopathy are anger/hostility, fear/anxiety, sadness/depression, and to a lesser extent, happiness/joy (Kosson et al., 2016). Conceptually, emotion deficit perspectives of psychopathy have largely focused on impaired processing and responding to emotional information, as well as on the capacity for and threshold of experiencing fear in particular (Blair, 2003; Cleckley, 1976; Lykken, 1995; Meloy, 1988). Regarding the subjective emotional experience of individuals with high levels of psychopathic traits, findings are mixed. In some studies, anger, fear and sadness yielded positive associations with psychopathy, whereas negative associations were revealed with regard to happiness (e.g., Lishner et al., 2012). Other studies reported negative (e.g., Neumann et al., 2013) or null (e.g., Schmitt & Newman, 1999) associations between psychopathy and both fear and anxiety. However, recent reviews and meta-analyses suggest that overall levels of psychopathy are positively associated with anger and negatively with happiness, whereas near-zero associations are reported with fear and anxiety (Derefinko, 2015; Hoppenbrouwers et al., 2016; Kosson et al., 2016;). In addition, taking a different perspective, a recent study reported associations

between psychopathic traits and reduced aversion for feeling fear (Hosker et al., 2016). At the facet-level, interpersonal features of psychopathy, and boldness in particular, have been related to lower levels of negative emotions (Patrick et al., 2009), whereas the affective (e.g., callousness, lack of empathy) and behavioral (e.g., impulsivity, disinhibition) features of psychopathy have been related to higher levels of negative emotions, especially other-directed ones, such as anger, hostility, and contempt (Garofalo et al., 2019; Jackson et al., 2007; Neumann & Pardini, 2014). These studies speak to the emotions that people report to experience. To the best of our knowledge, though, there are no studies documenting the association between psychopathic traits and the emotions that people want to experience (i.e., emotion goals). These emotion goals or the emotions that people want to experience, set the direction of emotion regulatory efforts, as we describe more in detail below.

When it comes to associations with emotion regulation, overall levels of psychopathy tend to be positively related with problems in emotion regulation, even after controlling for negative emotionality, though effect sizes are often small-to-moderate (e.g., Garofalo et al., 2020). At a facet-level, recent studies have been consistent in reporting positive associations between the affective (e.g., callousness, lack of empathy) and behavioral (e.g., disinhibition) features of psychopathy and problems in emotion regulation. In contrast, the interpersonal (e.g., manipulation) features of psychopathy have typically been found to be unrelated or positively related to emotion regulation, paralleling findings on negative emotional experiences (Garofalo & Neumann, 2018; Garofalo et al., 2018).

In summary, the above studies provide valuable insights into the emotional experiences as well as the emotion regulation skills related to psychopathic traits. Overall, it appears that psychopathic traits are related to abnormalities in emotional experience and regulation, with intriguing differences among psychopathy dimensions. However, no prior studies have investigated the possibility that another aspect, which may be dysfunctional in psychopathy is the *direction* of the regulatory efforts towards a desired affective state, i.e., the emotion *goals*.

A Motivational Approach to Emotion Regulation: The Focus on Emotion Goals

Emotion regulation involves using strategies to attain a desired emotional state (i.e., reducing unwanted emotions and increasing desired ones; e.g., Gross & Thompson, 2007). Therefore, desired emotional states[1] (i.e., *emotion goals*; Tamir & Millgram, 2017) are a defining feature of emotion regulation (Gross et al., 2011). Emotion goals capture what specific emotion people

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1   Although there is a difference between wanting something and pursuing it, in this study, we consider a goal as equivalent to something that is wanted. Thus, we operationalized emotion goals in the sense of desired affective end states, regardless of whether individuals also pursue that affective end state. We chose to use this terminology (i.e., 'emotion goals') to establish links between the literature on emotion regulation, motivation, and psychopathology with the literature on psychopathy.

want to achieve when they engage in emotion regulation, and to what extent. For instance, some people may want to feel intense pride, whereas others may want only moderate pride (e.g., Tamir et al., 2015). By capturing the desired end-state in emotion regulation, emotion goals set the direction and possible outcomes of the emotion regulatory process (for a review, see Tamir, 2016). An emotion goal captures a desired level of an emotion, and so it can reflect either greater desire for an emotion or lower aversion of an emotion. In the current study, we consider an emotion goal as an emotion that is "wanted", in relative rather than in absolute terms. That is, we sought to tap individual differences in the relative desirability of an emotion (e.g., Matt wants to feel more anger than Jade), without claiming that an emotion is preferred in an absolute sense over another (e.g., Matt wants to feel more anger than joy).

For many years, it has been assumed that people regulate their emotions to increase pleasure and decrease pain, leading researchers to focus almost exclusively on how people regulate emotions rather than on what they wanted to feel (Larsen, 2000; Schacter et al., 2011; Tamir, 2009; 2016; Tice et al., 2004). Accordingly, emotion regulation was considered as the ability to reduce negative emotions and maintain or increase positive ones (e.g., Tice et al., 2004). Although, in general, people typically want to experience positive emotions more than negative emotions, people vary in the extent to which they want to feel different emotions (e.g., Augustine et al., 2010; Kämpfe & Mitte, 2009; Tamir, 2009, 2016; Tsai et al, 2006).

Notably, valence-based distinctions are only one way to categorize emotions. Different emotions may have different reinforcing properties and thus be more or less wanted, regardless of their valence (e.g., anger and sadness are both negative emotions, but anger may have more reinforcing properties than sadness; Tamir & Bigman, 2014; Tamir & Gutentag, 2017). From an attribution perspective, the same emotion can be positively or negatively appraised by an individual, based on perceptions and expectancies of outcomes related to an emotion (Conway et al., 1999; Rudolph & Tscharaktschiew, 2014; Wiener, 2014). Similarly, individuals may differ in how much they want to feel different emotions (e.g., Harmon-Jones et al., 2011; Tamir et al.,, 2015) and this can be related with reasons which we will discuss below. In this study, we used the terms negative and positive emotions for the sake of simplicity because the emotions that are the focus of the present investigation have clear connotations in terms of valence. However, we do not dispute the adaptive (Hess, 2014) as well as the potentially reinforcing subjective experience associated with emotions like anger (Tamir et al., 2008).

Individual differences in emotion goals have also been associated with personality traits and psychopathology, with relevance for psychopathy. Agreeableness and extraversion, for instance, have been related to differential emotion goals (Augustine et al., 2010). Individuals with higher levels of agreeableness, which is a robust negative correlate of psychopathy (Sherman & Lynam, 2016), tend to want more positive emotions (Augustine et al., 2010).

Extraversion, which is related to boldness, tends to be associated with wanting to experience positive emotions (especially those associated with high arousal; Augustine et al., 2010). There is also empirical evidence that depressed individuals tend to want to experience at least some level of sadness (Millgram et al., 2015). This is not to say that depressed individuals want to feel sadness in absolute terms (e.g., more so than they want to feel joy), but that they want to feel sadness more than non-depressed individuals do. Importantly, although the absolute preference for positive emotions was greater than the preference for sadness, the relative differences in preferences for happiness between depressed and non-depressed individuals prospectively predicted clinical symptoms in response to stress (Millgram et al., 2015). In all the above studies, the findings could not be accounted for by current emotional states (state emotions) or trait emotions. These findings rule out the possibility that people may simply want to continue feeling what they already feel. No studies to date, however, have directly examined emotion goals in relation to dark personality traits or psychopathic traits, in particular.

Research has expanded to study potential factors that may explain individual differences in emotion goals. Such factors are important in the context of the present study, to the extent that they could function as mediators of potential associations between psychopathic traits and emotion goals. Specifically, it has been shown that people may differ in the enjoyment they derive from experiencing a specific emotion, that is, in their perceived pleasantness of an emotion. In turn, they may want to experience those emotions that they perceive as more pleasant (short-term hedonic benefits), regardless of their valence (i.e., positive or negative) (Harmon-Jones et al., 2011; Tamir & Gutentag, 2017). In that sense, negative emotions like anger or fear might be wanted because of their hedonic properties (e.g., enjoyment of a given emotion, see Tamir et al., 2008; Menninghaus et al., 2017). The perceived pleasantness of emotions has also been related to objective indicators of emotion goals, such as the use of emotion regulation strategies (e.g., situation selection) in order to attain those emotions. For example, in an experimental study, participants who reported more positive attitudes toward (i.e., higher perceived pleasantness of) anger were more likely to select anger-inducing stimuli (Harmon-Jones et al., 2011). To our knowledge, only one study to date has addressed the possibility that psychopathy may be associated with increased enjoyment of the experience of fear (as opposed to an absence of fear; Hosker-Field et al., 2016), but this possibility has yet to receive further empirical scrutiny.

This hedonic conceptualization of emotion regulation assumes that people want to experience emotions that *feel good*. Alternatively, an instrumental conceptualization of emotion regulation argues that people may also want to experience emotions that *do good* irrespective of their valence (Kalokerinos et al., 2017; Tamir & Ford, 2012). That is, individuals may want to feel "bad" (i.e., negative emotions) if they believe that it can help them perform better in a given situation. While people wanting to experience negative emotions might strike

as paradoxical from a hedonic perspective, there is considerable evidence for variance in instrumental emotion goals (for an overview, see Tamir, 2016). For instance, individuals may want to feel angry if they believe that anger will be helpful to confront others (e.g., winning in a competition or negotiate a pay raise; Levenson, 1999; Tamir & Ford, 2012). This approach is consistent with the emotion attribution perspective mentioned above, wherein perceived causes and outcomes connected with specific emotions contribute to emotional experience and motivated (pro- or antisocial) behaviors (Rudolph & Tscharaktschiew, 2014; Wiener, 2014). Indeed, individuals who implicitly associated worry with utility in avoidance situations sought to increase their worry before an anticipated threat (Tamir et al., 2007). Furthermore, increasing participants' association of anger with utility, even outside of conscious awareness, led them to try to up-regulate their anger (Tamir et al., 2015). Such evidence demonstrates that emotion goals, depend, in part, on the individual's perceived utility of emotions (i.e., their instrumental value in goal pursuit).

Embedding the study of emotion regulation in a motivational framework with a focus on emotion goals may be particularly useful in relation to psychopathic traits. This motivational framework can potentially offer a novel angle in the understanding of the emotion regulation processes related to psychopathic traits (Shane & Groat, 2018). Indeed, historical (Cleckley, 1976; Meloy,1988) and contemporary conceptualizations (e.g., Neumann et al., 2007) agree that psychopathy is characterized by antagonistic motivation. If individuals with psychopathic traits are more likely driven by antagonistic motives (Glenn et al., 2017; Sherman & Lynam, 2016) in relation to emotion regulation, this may also explain why they try to attain seemingly maladaptive emotion goals (Tamir & Millgram, 2017). This could occur both because certain negative emotions (e.g., anger) could be perceived as more pleasant for individuals with antagonistic tendencies (e.g., positive attitudes toward other-directed negative emotions, such as anger), and because these negative emotions may be perceived as more useful to attain antagonistic goals.

The Present Studies

In two studies with two independent non-clinical samples, we examined associations between psychopathic traits and emotion goals, focusing on anger, fear, sadness, and joy. In light of the paucity of prior relevant research, our hypotheses were tentative. First, we expected that average levels of emotion goals in the overall samples would indicate that, in general, people report that they want to feel joy more than anger, fear, and sadness (i.e., in terms of mean levels of each emotion goal). Second, based on previous studies on emotion goals in relation to personality (e.g., Augustine et al., 2010) and psychopathology (e.g., Millgram et al., 2015), we expected to find significant associations between psychopathic traits and emotion goals (Study 1). Specifically, we assumed that overall scores of psychopathy would be positively linked to some levels of negative emotion goals, in particular other-directed negative emotions like anger. Further, we also examined whether state (i.e., current) or trait

(i.e., typical) emotional experiences could account for any associations. At the facet level, we expected that the affective and behavioral features of psychopathy would be related to these negative emotion goals (e.g., anger), whereas the interpersonal features of psychopathy (and in particular boldness traits) would be related to positive emotion goals (e.g., joy). In the second study, we also explored mechanisms that may explain these associations, focusing on the two potential mediators described above: perceived pleasantness of emotions and perceived utility of emotions. To avoid mono-operationalization bias and broaden the bandwidth of our assessment, psychopathic traits were assessed using two different questionnaires, based on two different conceptualizations of psychopathy: Hare's four-facet model (Hare, 2003) and Patrick's triarchic model (Patrick et al., 2009).

Study 1

Method
Participants and Procedures
The sample of the first study consisted of Dutch undergraduate psychology students (N = 148, M_{age} = 20, SD = 2.81, ~80% females). Course credit was offered for participation. Students who self-identified as ethnic Dutch represented the vast majority of the sample (89%). The rest of the students self-identified as having Moroccan, Turkish, Surinamese or Antillean background (1.3% did not declare). Almost half (54%) of the participants were single, 40% were in a relationship and 3% were in a marital relationship and/or living together (1.3% reported "other" and 1.3% was missing).

Measures
Psychopathic Traits. One measure of psychopathic traits used in the present study was the *Self Report Psychopathy-Short Form* (SRP-SF; Paulhus et al., 2016). The scale measures overall levels of psychopathy and provides scores on four facets, in line with Hare's (2003) PCL-R model: interpersonal, affective, lifestyle and antisocial. The SRP-SF contains 29 self-report items, scored on a 5-point Likert scale (ranging from 1 = strongly disagree to 5 = strongly agree). For the current study, the Dutch version of the SRP-SF was administered (Gordts et al., 2017). Overall, the SRP-SF has proven to be a valid measure of psychopathic traits in non-clinical samples, demonstrating good reliability and test-retest reliability coefficients for the total scores, satisfactory reliability at the facet level (Gordts et al., 2017), and good construct validity (Foulkes et al., 2014; Gordts et al., 2017). In this study, internal consistency coefficients for SRP-SF scales ranged from .68 (Affective) to .89 (Total) (see Table 1). Thus, reliability coefficients were good, with the exception of SRP-SF Affective facet which was modest.

The second measure used for the assessment of psychopathic traits was the *Triarchic Psychopathy Measure* (TriPM; Patrick, 2010). The TriPM is also a self-report measure,

Table 1

Means, Standard Deviations (SD), and Internal Consistency Coefficients (α)[1] for all variables in Study 1 (S1; N = 148) and Study 2 (S2; N = 520) samples.

		S1		S2		S1	S2	S1 Males		S1 Females		S2 Males		S2 Females	
		M	SD	M	SD	α	α	M	SD	M	SD	M	SD	M	SD
SRP-SF	Interpersonal	1.86	0.67	1.81	0.66	.77	.80	2.10	0.64	1.80	0.67ᵇ	2.05	0.70	1.63	0.55ᵇ
	Affective	1.87	0.6	1.76	0.57	.68	.67	2.20	0.55	1.79	0.59ᵇ	2.01	0.58	1.58	0.49ᵇ
	Lifestyle	2.15	0.68	1.95	0.67	.74	.76	2.44	0.62	2.08	0.67ᵇ	2.15	0.70	1.81	0.60ᵇ
	Antisocial	1.12	0.33	1.13	0.37	.75	.81	1.20	0.40	1.10	0.30	1.20	0.45	1.07	0.29ᵇ
	Total	1.75	0.47	1.66	0.48	.89	.89	1.99	0.45	1.69	0.46ᵇ	1.85	0.51	1.52	0.39ᵇ
TriPM	Boldness	27.13	8.84	30.42	8.4	.83	.83	31.71	7.62	25.96	8.77ᵇ	33.65	7.76	28.22	8.13ᵇ
	Meanness	12	8.06	10.4	7.91	.85	.86	15.81	7.54	11.03	7.92ᵇ	13.70	8.95	7.99	5.87ᵇ
	Disinhibition	13.74	8.07	12.16	7.23	.86	.83	16.28	8.21	13.09	7.94	13.30	8.32	11.30	6.13ᵇ
	Total	52.86	18.27	52.97	16.53	.88	.87	63.80	14.82	50.08	18.07ᵇ	60.64	17.35	47.52	13.31ᵇ
Emotion goals	Anger	0.49	0.69	0.55	0.83	.57	.72	0.60	0.69	0.46	0.69	0.68	0.84	0.46	0.82ᵇ
	Sadness	0.46	0.80	0.55	0.81	.57	.58	0.55	0.74	0.44	0.82	0.59	0.83	0.49	0.79
	Fear	0.51	0.81	0.49	0.82	.84	.85	0.43	0.60	0.53	0.86	0.51	0.79	0.46	0.83
	Joy	4.37	0.97	4.31	1.08	.42	.61	4.57	0.88	4.32	0.99	4.28	1.05	4.34	1.09
ATE	Anger			1.81	0.63		.65					1.93	0.68	1.72	0.56ᵇ
	Sadness			2.43	0.65		.68					2.37	0.66	2.47	0.63
	Fear			1.77	0.65		.68					1.95	0.67	1.64	0.60ᵇ
	Joy			4.35	0.53		.57					4.30	0.55	4.39	0.51ᵇ
Utility beliefs	Anger			1.25	0.85		.59					1.44	0.92	1.11	0.77ᵇ
	Fear			0.71	0.76		.72					0.90	0.87	0.56	0.63ᵇ
	Sadness			0.42	0.64		.82					0.49	0.74	0.36	0.54ᵇ
	Joy			3.47	0.96		.65					3.50	0.98	3.46	0.93

Note. Emotion goals = Preferences for emotions. ATE = Attitudes toward Emotions scale. Utility beliefs = Beliefs about the utility of emotions. SRP-SF = Self-Report Psychopathy Scale–Short Form. TriPM = Triarchic Psychopathy Measure. [1]Because Emotion goals & Utility beliefs are assessed via two items only, we report in text Spearman-Brown coefficients. ᵇMeans that differ significantly between genders.

consisting of 58 items. Along with a psychopathy total score, it includes scores on three distinct scales that correspond to the three constructs depicted in the Triarchic Model of Psychopathy (Patrick et al., 2009): Boldness, Meanness and Disinhibition. Each item is scored on a 4-point Likert-scale, ranging from 0 (false) to 3 (true), with reverse scoring for items reflecting a lower degree of psychopathic traits. The Boldness scale measures interpersonal dominance and grandiosity, endurance in the face of risk or uncertainty, and a high threshold for fear. The Meanness scale reflects individual differences in empathy, callousness, and interpersonal aggression. The Disinhibition scale assesses impulsivity, lack of goal-directed behavior, and reckless acts. For the current study, the Dutch version of the TriPM was administered (van Dongen et al., 2017). This measure has shown good internal consistency and construct validity, suggesting that it may be efficiently used to measure psychopathic traits (van Dongen et al., 2017). In this study, internal consistency coefficients ranged from .83 (Boldness) to .88 (Total) (see Table 1).

Emotion goals. Emotion goals were assessed using a questionnaire widely used in emotion research (e.g., Tamir & Millgram, 2017). Specifically, participants were presented with the following question: *Indicate the extent to which you generally WANT to experience these emotions in your daily life. That is, if you could control your feelings, to what extent would you want to experience each of the feelings below, in general?* Participants responded to this question with reference to eight distinct emotions, on a 7-point Likert scale (0 = not at all, 6 = extremely). Scores on the four target emotions were obtained by averaging scores on two items for each emotion (anger: anger and hostility; fear: anxiety and fear; sadness: sadness and depression; joy: excitement and enthusiasm). Emotion terms were presented in Dutch. Because emotion goals were assessed based on two-item measures, Cronbach's alpha coefficients may not be robust or even appropriate estimates of internal consistency. Thus, we also computed Spearman-Brown coefficients (e.g., Eisinga et al., 2013), which equaled .84 for fear, .59 for sadness, .58 for anger and .45 for joy.

State and trait emotions. State and trait emotions were investigated as possible confounds, again listing the same emotion terms in Dutch. Following the paradigm used in prior research (e.g., Tamir & Millgram, 2017) to assess current emotional experiences (state emotions), we asked participants to rate the extent to which they are experiencing each emotion "right now". To measure trait emotions, participants reported on the extent to which they generally experience each emotion in their daily lives. Responses were provided with respect to each of the same eight emotions assessed for emotion goals, and ratings were provided on the same 7-point Likert scale (0 = not at all, 6 = extremely). Previous studies have shown adequate psychometric properties for these scales (e.g., Tamir et al., 2013). In this study, internal consistency coefficients for state emotions ranged from .75 (joy) to .87 (fear) and for trait emotions, from .74 (joy) to .91 (fear). Spearman-Brown coefficients of these two-item scales

ranged from .75 (joy) to .88 (fear) for state emotions, and from .74 (joy) to .91 (fear) for trait emotions.

Data Analytic Plan

Descriptive statistics and zero-order correlations were calculated for all study variables. Zero-order correlations addressed the main hypotheses about the associations between psychopathic traits and emotion goals. We also conducted robustness checks: We checked which significant associations would survive Bonferroni correction for multiple testing and we repeated the correlations controlling for state, trait emotions and sex. All analyses were conducted using SPSS version 25 (IBM Corp., 2017).

Results

Descriptive statistics, including means, sex differences, standard deviations and scale reliabilities for all study variables are reported in Table 1. A full correlation matrix is displayed in Table 2. Not surprisingly, observing the mean levels of the emotion goals, on average, participants wanted to feel joy more than anger, fear, and sadness [2]. However, these emotion goals were associated with psychopathic traits (Table 2, above the diagonal). Specifically, we found significant positive associations between the emotion goal of anger and total scores of both psychopathy measures, and also with all subscales of the SRP-SF and TriPM, except for Boldness. Regarding fear, only the SRP-SF total, interpersonal, and antisocial scores manifested significant positive associations with the emotion goal of fear. For sadness, significant positive associations emerged with the SRP-SF total, interpersonal, lifestyle and antisocial facets, as well as for TriPM total and Disinhibition scales. Finally, regarding joy, only the SRP-SF antisocial facet revealed significant negative associations. We also report in Table 2 the significant associations that would survive Bonferroni correction. The most robust associations were between psychopathic traits and the emotion goal of anger, so that as levels of psychopathic traits increased, so did the level of anger that one wants to feel. All analyses were repeated controlling for state and trait levels of the corresponding emotions, and results remained virtually unchanged. We also repeated analyses controlling for sex, and results revealed the same patterns as the reported correlation analyses. Only two exceptions occurred: the SRP-SF affective facet correlated significantly with the emotion goal of joy and the TriPM disinhibition correlated significantly with the emotion goal of fear[3].

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2   The percentage of participants scoring over the midpoint (i.e., the neutral option) in the emotion goals of anger, fear and sadness in Study 1 ranged from 0% to 2%. In the case of the emotion goal of joy, 84.5% scored over the midpoint.

3   A final robustness check concerned the examination of possible response biases for the TriPM measure. On average, scores (M = 7.08, *SD* = 2.76) of the Triarchic Assessment Procedure for Inconsistent Responding (TAPIR; Mowle et al., 2017) did not indicate inattentive responding (i.e., they were below the cut off-of 13 recommended for Dutch community samples (Kelley et al., 2017). Only .7*%* of participants scored above the cut-off of 13 and results were unaltered removing these participants from the main analyses.

Table 2

Zero-order correlations between psychopathic traits, emotion goals, attitudes toward emotions and beliefs about the utility of emotions in Study 1 (S1; N = 148) and Study 2 (S2; N = 520) samples.

	SRP-SF					TriPM				Emotion Goals				Utility of Emotions				Attitude to Emotions		
	Total	Interpersonal	Affective	Lifestyle	Antisocial	Total	Boldness	Meanness	Disinhibition	Anger	Fear	Sadness	Joy	Anger	Fear	Sadness	Joy	Anger	Fear	Sadness
SRP-SF																				
Total		.87***	.87***	.85***	.65***	.69***	.26**	.66***	.63***	.39***	.18*a	.28**	-.12							
Interpersonal	.88***		.68***	.63***	.50***	.62***	.23**	.61***	.53***	.37***	.17*a	.22**a	-.11							
Affective	.86***	.66***		.64***	.49***	.60***	.21**	.62***	.50***	.28**	.11	.15	-.15							
Lifestyle	.87***	.66***	.64***		.39***	.61***	.25**	.51***	.61***	.25**a	.09	.15	.00							
Antisocial	.69***	.51***	.66***	.51***		.39***	.12	.39***	.37***	.44***	.30***	.45***	-.20*a							
TriPM																				
Total	.72***	.62***	.60***	.70***	.41***		.56***	.84***	.76***	.34***	.14	.20*a	-.06							
Boldness	.20***	.19***	.12**	.24***	0.040	.56***		.23**	.08	.110	.07	.09	.01							
Meanness	.72***	.63***	.69***	.63***	.40***	.84***	.18***		.63***	.28***	.07	.11	-.08							
Disinhibition	.63***	.51***	.47***	.63***	.45***	.70***	-.04	.60***		.36***	.16	.25**a	-.07							
Emotion Goals																				
Anger	.25***	.15**	.25***	.21***	.24***	.18***	.03	.17***	.19***		.67***	.59***	-.09							
Fear	.14**a	.06	.15**	.11*a	.19***	.07	-.06	.09*a	.13**a	.65***		.71***	-.08							
Sadness	.14**	.07	.16***	.09*a	.19***	.08	-.05	.09*a	.15**	.59***	.64***		-.12							
Joy	-0.020	.00	-.11*a	.05	-.04	-.04	.04	-.12*a	-0.010	-.15**	-.10*	-.11*								
Utility of Emotions																				
Anger	.21***	.19***	.16***	.20***	.13**	.15**	.01	.17***	.14**	.28***	.23***	.15***	.08							
Fear	.23***	.19***	.21***	.20***	.15**	.17***	-.01	.17***	.19***	.25***	.35***	.33***	.01	.57***						
Sadness.	.08	.05	.09*	.03	.14**	.07	-.04	.07	.12**	.26***	.30***	.42***	-.07	.45***	.62***					
Joy	-.02	.01	-.07	-.01	-.02	-.04	.05	-.11*	-.02	-.01	-.01	.02	.36***	.10*	.04	.17***				
Attitude to Emotions																				
Anger	.42***	.35***	.40***	.37***	.29***	.41***	.06	.47***	.35***	.26***	.15**	.14**	-.14**	.23***	.17***	.17***	-.05			
Fear	.35***	.27***	.32***	.33***	.23***	.38***	.20***	.39***	.20***	.20***	.14**	.21***	-.16***	.16***	.26***	.14**	-.09*	.35***		
Sadness	.09*	.08	.01	.13**	.07	.03	-.00	-.03	.11*	0.050	.12**	.11*	-.01	.09*	.19***	.13**	.06	.11*	.16***	
Joy	-.17***	-.10*	-.22***	-.06	-.24***	-.12*	.13**	-.23***	-.18***	-.18***	-.17***	-.26***	.28***	-.05	-.16***	-.24***	.16***	-.25***	-.19***	-.05

Note. Coefficients of Study 1 are displayed above the diagonal and coefficients of Study 2 are displayed below the diagonal. SRP-SF = Self-Report Psychopathy Scale–Short Form. TriPM = Triarchic Psychopathy Measure. Attitude to emotions = Attitudes toward Emotions scale. Utility of emotions = Beliefs about the utility of emotions. [a] Correlation Coefficients that are not significant at the Bonferroni-corrected significance level (i.e., $p < .0014$)

$* p < .05; ** p < .01; *** p < .001.$

Discussion of Study 1

Results of the first study revealed associations between psychopathic traits and emotion goals, which seemed most consistent for anger. These positive associations could be interpreted as indicating that participants scoring higher in psychopathy want to experience a relatively higher level of negative emotions (and especially anger) compared to individuals with lower psychopathic tendencies. This is particularly important because although the mean levels of the emotion goals in our sample were higher for joy than for the other three emotions, the relative degree to which each emotion was wanted was actually linked to psychopathy levels. In other words, individuals with psychopathic traits seemed to tolerate more, or be less averse to, negative emotions and thus wanted to experience them at least to a small degree. Notably, the limited percentage of participants scoring above the midpoint in negative emotion goals bolsters this interpretation (see Footnote 2). Findings of Study 1 suggest that the behavioral traits of psychopathy (i.e., disinhibition, antisocial tendencies) were more strongly associated with emotion goals. Some associations between interpersonal or affective traits and negative emotion goals emerged as well, warranting further investigation. In particular, the emotion goal of anger seemed consistently related to psychopathic traits across domains, excluding Boldness. Notably, these associations could not be accounted for by sex and levels of state or trait emotions, suggesting that the association between psychopathic traits and emotion goals was not merely due to current or typical emotional experience or sex differences in these constructs. To expand on these findings, Study 2 explored potential motivational mechanisms that could underlie these associations, focusing on perceived pleasantness and perceived utility of emotions.

Study 2

In Study 2, we sought to replicate and extend the findings obtained in Study 1 in a larger and more diverse sample of community participants. After testing the replicability of the findings obtained in Study 1, we sought to further explore mediating mechanisms that possibly explain associations between psychopathic traits and emotion goals. Specifically, we tested whether associations between psychopathy and emotion goals were mediated by hedonic (i.e., perceived pleasantness of emotions) or instrumental (i.e., perceived utility of emotions) considerations.

Method

Participants and Procedures

For the second study, a larger community sample was recruited, consisting of 520 Dutch adults (M_{age} = 35.27, SD =16, 56.6% females). The educational background of the participants varied from higher education (60.7%) to vocational training (16.1%), higher secondary education (11.3%), lower secondary education (5.6%) and primary school (1.5%). Information on

ethnicity, civil and employment status were disclosed by approximately 53% of the sample (the large degree of missingness may be attributed to the pen and paper completion of the questionnaires). However, participants with and without missing information on these three variables (i.e., ethnicity, civil and employment status) did not differ significantly on any of the main study variables, with the exception of the SRP Lifestyle facet, but this difference had a small effect size (ethnicity: $t(518) = 2.74$, $d = 0.32$, civil status: $t(518) = 2.79$, $d = 0.24$). Missing data for the variables used in the main analyses ranged from 0.0% to 1.9% and psychopathy total scores did not differ systematically as a function of missing demographics. With regard to these demographic characteristics (ethnicity, civil and employment status), participants who self-identified as ethnic Dutch represented 49.7% of the sample, while 1% self-identified as of Moroccan, Surinamese, Dutch Antillean or other origin. The relationship and civil status were diverse: 23% of the participants were married or cohabiting, 11.9% were in a relationship, 14.4% were single, 1.5% were divorced and 1% widowed (the remaining 48.2% did not report data). With regard to the employment status: More than 30% were working full-time or part-time (32.4%), 9.4% were living on a scholarship or student loan, 3.1% reported parental financial support and 23% were receiving some kind of allowance or pension (the remaining 32.1% did not report data).

Participation was voluntary and based on self-report questionnaires, which were filled out either on paper or online (using the Qualtrics platform) as per participants' preference. An introductory letter on behalf of the researchers was included in the questionnaire package, as well as an informed consent form. In both conditions (pen/paper and online), responses were kept pseudo-anonymous by replacing participants' names with an identification code. We relied on a convenience sample, recruited by psychology Master's students. Each student recruited around 30 participants and a total of 18 students were involved in the data collection, approaching potential participants from their social environment (including friends, acquaintances, and people from their neighborhood) in order to reach a wide sample of adults of different ages, social status and education. All procedures were approved by the local university Ethics Review Board.

Measures

The same measures as in Study 1 were used to assess psychopathic traits, emotion goals, and state and trait emotionality. Internal consistency (Cronbach's α) coefficients are reported in Table 1. For the SRP-SF, they ranged from .67 to .89; for the TriPM, they ranged from .83 to .87. Thus, as in Study 1, reliability coefficients were good, with the exception of SRP-SF Affective facet, which was modest. Because two items were used to assess emotion goals, Spearman-Brown coefficients were also computed (Eisinga et al., 2013). Spearman-Brown coefficients were equal to .85 for fear, .72 for anger, .63 for sadness and .61 for joy. Cronbach's *α* coefficients for state emotions ranged from .69 to .90 and for trait emotions from .71 to .93.

Spearman-Brown coefficients were, in these cases, identical to α coefficients. Correlations among all study variables can be found in Table 2.

Two additional measures were added in order to extend the findings of the first study and investigate possible mediators of the relations between psychopathy and emotion goals. These measures are described below.

Perceived utility of emotions. Participants rated the extent to which they felt that each of the eight emotions might be useful for them to experience (i.e., "*To what extent might it be useful for you to feel the following emotions?")* on a 7-point Likert scale (0= not at all, 6= extremely). Because beliefs about the utility of emotions can be context-dependent (e.g., Tamir et al., 2008), we included four hypothetical contextual domains (exploration, collaboration, conflict and protection) and then averaged across them.[4] Previous studies demonstrated adequate reliability coefficients for this scale (e.g., Tamir & Ford, 2009). As for the emotion goals, state, and trait emotions, emotion terms were presented in Dutch language. In this study, internal consistency coefficients ranged from .59 to .82 (see Table 1).

Perceived pleasantness of emotions. We used the Attitudes Toward Emotions Scales (ATE; Harmon-Jones et al., 2011) to assess individual differences in the perceived pleasantness of specific emotional experiences. This measure captures the affective (hedonic) component of attitudes toward emotions (Netzer et al., 2018). For each of the target emotions (anger, joy, sadness, disgust and fear), items were scored on a 5- point Likert scale, ranging from 1 (rarely/never) to 5 (always/almost always). Disgust items were not included as they were not within the scope of the current study. Participants were asked to rate the extent to which they enjoy the target emotion. For example, *"I like it when movies make me feel sad, the sadder the better"* or "*I really like feeling happy*" were used to indicate attitude towards sadness and joy, respectively. The scale has generally demonstrated satisfactory internal reliability and adequate validity (Harmon-Jones et al., 2011). For the purpose of the present study, the ATE items (internal consistency coefficients ranged from .57 to .68 (see Table 1)) were translated into Dutch using a standard translation/back-translation procedure that involved several iterations between native English and native Dutch speakers, until any disagreement was resolved.

Data analytic plan

Descriptive statistics and zero-order correlations were calculated for all study variables. As in Study 1, zero-order correlations addressed the hypotheses about the associations between psychopathic traits and emotion goals. We conducted the following robustness

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4   Across the two studies, the same emotion terms were used enquiring about emotion goals, state and trait emotions, and perceived pleasantness and utility of emotions. However, the order in which the emotion terms were presented was randomized.

checks: we checked which significant associations would survive Bonferroni correction and we repeated the correlations controlling for state, trait emotions and sex. The aforementioned analyses were conducted using SPSS version 25 (IBM Corp., 2017). The main hypotheses were tested using the SPSS PROCESS Macro (Hayes, 2013). Specifically, we examined the proposed mediation models testing the significance of indirect effects of the SRP-SF and TriPM total scores on emotion goals, via the perceived utility and pleasantness of emotions. We implemented a bootstrapping approach (Hayes, 2009; MacKinnon et al., 2007), which involved 5,000 resampling with replacement of the original dataset. The 5,000 bootstrapping samples were used to compute 95% bias-corrected confidence intervals (CIs) for the examined indirect effects. Evidence of a significant indirect effect is provided by 95% CIs that do not include zero. The completely standardized indirect effect (Preacher & Kelley, 2011) was employed as an index of effect size for the indirect effect (.01 = small effect, .09 = medium effect, .25 = large effect).

Results

Descriptive statistics, including means, sex differences, standard deviations and scale reliabilities for all study variables are reported in Table 1. As in Study 1, on average, individuals wanted to feel joy more, compared to negative emotions[5]. However, psychopathy scores were again positively associated with negative emotion goals. Correlation coefficients between psychopathic traits and emotion goals are displayed in Table 2 (below the diagonal). Replicating findings from Study 1, we found significant positive zero-order associations between the emotion goal of anger and total scores of both psychopathy measures, as well as all subscales of SRP-SF and TriPM, except for Boldness. Regarding fear, a similar but less consistent profile was observed. As in Study 1, SRP-SF total, antisocial, and lifestyle facet scores were positively related to the emotion goal of fear, but in this sample, also the affective facet (but not the interpersonal facet) demonstrated a significant positive association. Furthermore, the emotion goal of fear was weakly, yet significantly, positively associated with the TriPM meanness and disinhibition subscales in this sample (as opposed to Study 1). The emotion goal of sadness showed positive associations with SRP-SF total, affective (which were non-significant in Study 1), lifestyle, and antisocial facets (but not the interpersonal facet, as in Study 1). Significant positive associations were also found for the TriPM meanness (non-significant in Study 1) and disinhibition scales, both positively associated with the emotion goal of sadness (but not the total scores, as was found in Study 1). Finally, only the SRP-SF affective facet and the TriPM meanness scale were significantly and negatively related to the emotion goal of joy (whereas only the SRP antisocial facet yielded significant associations in Study 1). As for Study 1, we also report in Table 2 the significant associations that survived Bonferroni correction. Again, the most robust results appeared to be those linking psychopathic traits and the emotion goal

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5   The percentage of participants scoring over the midpoint in Study 2 ranged from 1.2% to 1.7% for the emotion goals of anger, fear and sadness. In the case of the emotion goal of joy, 82.7% scored over the midpoint.

of anger, with positive sign, although in this sample also the associations with the emotion goals of fear and sadness were relatively robust. We repeated analyses controlling for state and trait emotions and results remained unaltered. In addition, after controlling for sex, results revealed the same patterns as the main correlation analyses. Only two exceptions occurred: with regard to the associations with the emotion goal of sadness, SRP-SF lifestyle facet and TriPM meanness were insignificant and TriPM meanness correlated insignificantly with the emotion goal of fear.[6]

Findings of the mediation analyses to test the indirect effect of psychopathic traits on emotion goals through perceived utility of emotions and perceived pleasantness of emotions are displayed in Table 3. These analyses involved only psychopathy total scores to limit the number of tests and for ease of interpretation, because a clear pattern of differential associations with emotion goals at the facet-level did not emerge for psychopathy measures. Results revealed that both perceived utility of anger and perceived pleasantness of anger mediated the association between psychopathy scores (measured by both SRP-SF and TriPM total scores) and the emotion goal of anger. For the SRP-SF, the overall model explained approximately 13% of variance in the emotion goal of anger, R^2 = .13, $F(3, 512)$ = 26.19, p < .001. For the TriPM, the overall model explained 12% of the variance in the emotion goal of anger, R^2 = .12, $F(3, 504)$ = 23.12, p < .001. Next, only the perceived utility of fear mediated the association between psychopathy scores (measured by both SRP-SF and TriPM total scores) and the emotion goal of fear. For the SRP-SF, the overall model explained approximately 13% of variance in the emotion goal of fear, R^2 = .13, $F(3, 515)$ = 26.26, p < .001. For the TriPM, the overall model explained approximately 12% of variance in the emotion goal of fear, R^2 = .12, $F(3, 507)$ = 22.76, p < .001. Further, no mediation effects were found when examining the indirect effects of both psychopathy scales on the emotion goal of sadness through perceived utility of sadness and perceived pleasantness of sadness. Finally, only reduced perceived pleasantness of joy mediated the association between psychopathy scores (measured by both SRP-SF and TriPM total scores) and the emotion goal of joy. The overall model explained approximately 18% of variance in the emotion goal of joy R^2 = .18, $F(3, 511)$ = 38.12, p < .001, when using the SRP-SF. In the case of the TriPM, the overall model explained approximately 18% of variance in the emotion goal of joy R^2 = .18, $F(3, 503)$ = 37.26, p < .001. Results remained unaltered after repeating the mediation analyses with sex as a covariate, with two exceptions for TriPM: after controlling for sex, there was no longer a mediation effect through perceived utility of anger nor a mediation effect through perceived pleasantness of joy.

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6 A final robustness check concerned the examination of possible response biases for the TriPM measure. On average, TAPIR (Mowle et al., 2017) scores M = 7.23, SD = 3.06 did not indicate inattentive responding (i.e., they were below the cut-off of 13 recommended for Dutch community samples (Kelley et al., 2017)). Only 1.8% of participants scored above the cut-off of 13 and results were unaltered removing these participants from the main analyses.

Table 3

Summary of multiple mediation analyses for the indirect role of psychopathic traits on emotion goals through the beliefs about the utility of emotions and attitudes towards emotions (Study 2, N = 520; 5,000 bootstraps).

Independent Variables	Mediating Variables	Dependent Variable	Effect of IV on M	Effect of M on DV	Total effect	Direct effect	Indirect effect (bias corrected intervals)	Effect size
(IV)	(M)	(DV)	(a)	(b)	(c)	(c′)	(a)(b) [95% CI]	ab_{cs}
	Utility Anger		.370***	.207***			**.077 [.032, .145]**	.044
SRP-SF		Goal Anger			.433***	.244**		
	Attitudes Anger		.559***	.201**			**.112 [.039, .211]**	.064
	Utility Anger		.008**	.210***			**.002 [.001, .003]**	.031
TriPM		Goal Anger			.009***	.003		
	Attitudes-Anger		.016***	.258***			**.004 [.002, .007]**	.080
	Utility Fear		.360***	.366***			**.131 [.071, .227]**	.076
SRP-SF		Goal Fear			.240**	.083		
	Attitudes Fear		.473***	.056			.026 [-.031, .089]	.015
	Utility Fear		.007***	.357***			**.003 [.001, .005]**	.054
TriPM		Goal Fear			.003	-.001		
	Attitudes Fear		.015***	.079			.001 [-.001, .003]	.023
	Utility Sadness		.103	.513***			.053 [-.012, .137]	.031
SRP-SF		Goal Sadness			.236**	.176*		
	Attitudes Sadness		.119*	.057			.007 [-.003, .030]	.004
	Utility Sadness		.003	.511***			.001 [-.0004, .003]	.026
TriPM		Goal Sadness			.004	.003		
	Attitudes Sadness		.001	.064			.0001 [-.0001, 0.00]	.001
	Utility Joy		-.050	.365***			-.018 [-.088, .048]	-.008
SRP-SF		Goal Joy			-.045	.061		
	Attitudes Joy		-.182***	.477***			**-.087 [-.175, -.029]**	-.039
	Utility Joy		-.002	.368***			-.001 [-.003, .001]	-.012
TriPM		Goal Joy			-.002	0.001		
	Attitudes Joy		-.004**	.469***			**-.002 [-.004, -.0002]**	-.028

Note. SRP-SF = Self-Report Psychopathy Scale–Short Form total score. TriPM = Triarchic Psychopathy Measure total score. Utility = Beliefs about the utility of emotions. Attitudes = attitudes towards emotions. ab_{cs} = completely standardized indirect effect, measure of the effect size of the indirect effect (.01 = small effect size; .09 = medium effect size; .25 = large effect size; Preacher and Kelley, 2011). Significant indirect effects are reported in boldface.
* $p < .05$; ** $p < .01$; *** $p < .001$.

Discussion of Study 2

Overall, correlation patterns in Study 2 were partly consistent with the results of Study 1, indicating that individuals higher in psychopathic traits reported that they want to experience some level of negative emotions, and especially anger. A few differences in the significance (but not the direction) of the associations occurred on the facet level of both psychopathy measures. As noted above, the mean scores for the different emotion goals may also indicate that, rather than having an active preference for negative emotions, individuals higher in psychopathic traits may be less motivated to avoid negative emotions, and less motivated to experience joy. As in Study 1, this interpretation is in line with the percentage of participants scoring above the midpoint in negative emotion goals. Correlational analyses revealed that the behavioral features of psychopathy had the most consistent pattern of associations with negative emotion goals. In addition, the affective features of psychopathy had positive associations with the emotion goal of anger, and negative associations with the emotion goal of joy.

Findings regarding the emotion goal of anger were more consistent across psychopathy measures and stronger in effect sizes, compared to the other negative emotions, suggesting that individuals higher in psychopathic traits may be particularly less motivated to down-regulate anger. Also, the pattern of associations with joy was largely consistent with the first study, with psychopathic traits being negatively related to the emotion goal of joy. These findings are consistent with previous findings that psychopathy is negatively associated with the experience of happiness and positively with the experience of anger (Hoppenbrouwers et al., 2016). Importantly, sex, state and trait emotions could not explain the associations between psychopathy and emotion goals, suggesting that individuals with higher psychopathy scores do not simply want to feel (or not to feel) emotions in line with their current or typical emotional experiences and these associations could not be attributed to mean differences across sex.

Finally, results of the mediation analyses to test potential mediators of the associations between psychopathic traits and emotion goals revealed intriguing differential mechanisms for different emotion goals. The link between psychopathy and the emotion goal of anger was mediated by both perceived utility and perceived pleasantness of anger, capturing both instrumental and hedonic considerations, respectively. This was not the case with the emotion goals of fear and joy. Indeed, we found that the association between psychopathy and the emotion goal of fear was uniquely mediated by perceived utility of fear (i.e., instrumental considerations). In contrast, the association between psychopathy and the emotion goal of joy was uniquely mediated by reduced perceived pleasantness of joy (i.e., hedonic considerations). Therefore, individuals higher in psychopathy may want to feel anger (or are less motivated to avoid it) both because they enjoy feeling it (or do not dislike feeling it) and because they are more likely to believe that anger can be useful to them. In contrast, it

appears that individuals higher in psychopathy are less motivated to avoid fear because they consider it more useful, and they are less motivated to feel joy because they experience it as less pleasurable.

General Discussion

The current studies tested whether individual differences in emotion goals (i.e., what people *want* to feel) were related to psychopathy in two non-clinical samples, adopting a novel motivational perspective to the study of emotion regulation in psychopathy. We also explored concurrent mechanisms (mediators) that may explain the associations between psychopathic traits and emotion goals, focusing on both instrumental (i.e., perceived utility of emotions) and hedonic (i.e., perceived pleasantness of emotions) considerations. Not surprisingly (Augustine et al., 2010; Ford & Tamir, 2014; Millgram et al., 2015), on average, participants in both studies wanted to feel joy more than anger, fear and sadness. However, significant positive associations were revealed between psychopathic traits and negative emotion goals, with the most consistent pattern for the emotion goal of anger in both studies. An inverse pattern was observed in the case of the emotion goal of joy, which was negatively associated with psychopathic traits.

These association indicated that individuals who scored higher on psychopathy wanted to experience anger (and, to a lesser extent, fear and sadness) at least to a certain extent. Considering the low mean levels of these emotion goals, this pattern can be more cautiously interpreted as being indicative of a lower aversion or greater tolerance towards, these negative emotions among individuals with higher levels of psychopathic traits. This interpretation is also in line with the percentage of participants scoring over the midpoint (i.e., neutral option) in negative emotion goals. Importantly, these findings are suggestive of a relatively higher reference value for the extent to which each of these negative emotions might be wanted by individuals with higher levels of psychopathic traits, compared to individuals with relatively lower levels, and should not be viewed as comparison of which emotion is wanted over the other (i.e., in absolute terms). Overall, these findings provide initial evidence that the emotional functioning related to high levels of psychopathic traits may involve differences in the direction of emotion regulatory efforts (i.e., emotion goals), such that individuals with higher levels psychopathic traits may be less motivated to down-regulate anger (and, to a lesser extent, fear and sadness), and less motivated to up-regulate joy.

We also tested whether focusing on the different components of the psychopathic personality construct (i.e., affective, interpersonal, and behavioral) could be differentially associated with emotion goals, as it is the case for emotional experience and emotion regulation (Hare & Neumann, 2008; Hicks & Patrick, 2006). Some evidence was found that associations with

emotion goals were especially robust for the behavioral traits of psychopathy, and to a lesser extent for the affective features of psychopathy. Nonetheless, overall, results at the facet level were not very consistent when comparing the two samples (Studies 1 and 2), and the different psychopathy measures (SRP-SF and TriPM). As in Study 1, at the zero-order level, the most consistent finding appeared to link the emotion goal of anger with psychopathic traits across domains (i.e., affective, interpersonal, and behavioral).

Notably, both affective and behavioral traits of psychopathy have previously been related to antagonism (Lynam & Widiger, 2007; Miller & Lynam, 2015), negative emotions, and emotion dysregulation (Garofalo et al., 2018). In our findings, these traits were also related to negative emotion goals, and especially to the emotion goal of anger. A notable exception in our findings concerned boldness. Indeed, across both independent samples, boldness was not associated with emotion goals which is in line with previously reported null associations between boldness and other correlates of psychopathic personality (Miller & Lynam, 2012; Vize et al., 2016). This finding could indicate that boldness has a different set of correlates compared to other psychopathy features.

The links between psychopathic traits and emotion goals were further explored through the examination of the potential mediating role of perceived utility and perceived pleasantness of emotions, capturing instrumental and hedonic considerations, respectively. Specifically, the association between psychopathy and the emotion goal of anger was mediated by both instrumental and hedonic considerations. Individuals scoring higher on both psychopathy measures reported that they wanted to feel more anger (or that they were less motivated to avoid anger), and the mediation effects suggest that this can be both because they found anger to be more pleasant (or less unpleasant) and/or because they found it to be more useful (or less harmful). This suggests that individuals higher in psychopathy may have a relatively weaker motivation to down-regulate anger, as hedonic and instrumental considerations are aligned.

Psychopathic traits were also positively and indirectly related to the emotion goal of fear, but in this case the association was uniquely explained by the belief that fear can be useful. This may indicate that individuals scoring higher in psychopathy tend to be less motivated to avoid fear because they attach an instrumental value to the emotion, such that this experience may help them to achieve their goals or thrive in difficult situations. In contrast, the negative association between psychopathic traits and the emotion goal of joy was exclusively accounted for by a reduced perceived pleasantness of joy. That is, the extent to which joy is endorsed by individuals who score higher on psychopathy might be influenced by contra-hedonic considerations. It appears, therefore, that feeling joyful might be endorsed to a lesser extent among individuals with higher levels of psychopathic traits, because they do not derive as much pleasure from this experience. Finally, results involving sadness were

less robust across samples, and did not yield significant mediation effects. Therefore, emotion processes involving the experience and regulation of sadness in psychopathy may be subject to different motivational processes.

Overall, our findings provide preliminary support for the application of a motivated emotion regulation framework (Tamir et al., 2015) to psychopathy. Taken together, our results suggest that one of the reasons why individuals scoring higher in psychopathy may not be successful in reducing negative emotions (especially anger) and increasing or maintaining positive emotions (here, joy) may be related with the fact that they are less motivated to do so. In turn, this can be related to abnormalities in the perceived utility and perceived pleasantness of certain emotions, with differential mechanisms for anger, fear, and joy. This knowledge can have important implications, because understanding *why* individuals with higher levels of psychopathic traits are less motivated to downregulate anger and fear, or to upregulate joy, could add to our understanding of the abnormalities in emotional experience and emotion regulation related to psychopathy (see Shane & Groat, 2018; Groat & Shane, 2019). That is, to the extent that individuals with higher psychopathy scores suffer less from anger, derive less pleasure from joy and more from anger, and believe that anger and fear are useful emotions, it stands to reason that they may be less likely to engage in emotion regulation strategies that would decrease their anger (and fear) or increase their joy. In other words, it may be that some of the emotional deficits typically ascribed to psychopathy may not only be related with deficits in the *ability* to experience and regulate emotions, but also with deficits in the *motivation* to do so.

Limitations

The present findings should be considered in light of the study limitations. One limitation of our studies is that all variables were measured via self-report questionnaires, which may be subject to socially desirable answers and response distortion. Another limitation related to the use of self-report measures is that associations might have been inflated due to shared method variance. However, anonymity was ensured, and a meta-analysis showed that social desirability generally does not bias results on associations between self-report measures of psychopathy and external correlates (Ray et al., 2013). Prior research has demonstrated that self-reported emotion goals tend to converge with behavioral and indirect indices of emotion goals (e.g., Tamir et al., 2013). Future studies that employ a multi-method assessment of psychopathy and emotion goals are warranted to replicate the present findings. In addition to that, in our study, we controlled for state and trait emotions, so the possibility that psychopathic individuals might seek negative emotions as a means to secure a baseline emotional equilibrium was partly ruled out. We do believe, however, that this possibility merits further rigorous testing using experimental designs. Future experimental research could additionally employ an emotion induction paradigm in assessing desired emotions of psychopathic individuals.

Another issue, particularly in Study 1, concerns some of the internal consistency coefficients for the emotion goals measures and particularly, joy. Computing reliabilities for two items often produces very conservative estimates, especially if the items are designed to reflect different aspects of the construct (e.g., Eisinga et al., 2013; Rammstedt & Beirlein, 2014). However, various studies using the same emotion goals measures have found comparable reliability estimates (e.g., Kim et al., 2015; Tamir, 2005; Tamir & Ford 2012), which makes it unlikely that a sample-specific reduction in internal consistency occurred. Importantly, Spearman-Brown coefficients were relatively higher, and all internal consistency coefficients were higher (acceptable to good) in Study 2, which provides greater confidence for the correlation and mediation analyses. That said, ideally future studies should use measures with additional items to increase reliability.

Another limitation concerns the cross-sectional design of our study. The mediation analyses therefore refer to concurrent associations (i.e., all variables were assessed at the same time point; Winer et al., 2016). Future research using longitudinal designs is warranted to examine whether these mediation effects also occur over time, or on a moment to moment basis (e.g., ESM design). In addition, our convenience sampling procedure produced variation in age, educational background, relationship and socioeconomic status, as well as a balanced gender representation. However, due to the fact that the vast majority of the participants self-identified as ethnically Dutch and were relatively well-educated, the generalizability of our findings may be limited until future replications in more diverse samples are conducted. Additionally, with regard to the missing demographic information of the second sample, and specifically information on ethnicity, civil and employment status, this may be attributed to the pen and paper completion of the questionnaires. Apart from demographic description, this data was not used in the analyses.

A replication of our findings in clinical and/or inmate population is necessary to examine whether a similar pattern of results would emerge in severe manifestations of psychopathic personality. Nonetheless, although clinical levels of psychopathy are more prevalent in forensic settings, a growing body of literature supports the dimensional nature of psychopathy and suggests that studying psychopathic traits in the general populations could provide valuable insight also into the disorder (Colins et al., 2017; Hare & Neumann, 2008; Salekin & Lynam, 2010; Vitacco et al., 2005). Furthermore, our focus on four fundamental emotions (anger, fear, sadness and joy; e.g., Ekman, 1992), does not dispute the importance of including other emotions (e.g., social or moral emotions such as guilt, shame or remorse). Future research including other emotional states may provide notable input to the emotional functioning and regulatory processes in psychopathy. Finally, the small effect sizes and the differences on the facet-level associations of psychopathy measures across samples, suggest that the complexity of the emotional functioning related to psychopathy cannot be fully understood

from a motivational perspective with a focus on emotion goals, but nevertheless indicate that such motivational perspective should be taken into account.

Conclusions

The current research provides preliminary empirical evidence for individual differences in emotion goals related to psychopathy. Our findings suggest that individuals with higher levels of psychopathic traits are less likely to be motivated to avoid negative emotions, primarily anger. Further, this differential goal endorsement could be driven by the pleasure they derive from the emotional experience (hedonic motives) as well as the belief about its beneficial value (instrumental motives). In addition, individuals with higher levels of psychopathic traits may be less motivated to down-regulate fear, and less motivated to up-regulate joy, though for different reasons. Specifically, these individuals may consider fear to be more useful, and joy to be less pleasant, than individuals with lower levels of psychopathic traits.

Overall, the present findings may have important conceptual and practical implications. Conceptually, our findings provide tentative support for the role of motivation in emotion regulation processes related to psychopathic traits. Practically, given that the perceived utility of emotions may be malleable (Tamir et al., 2015), and that experiential techniques may increase the capacity to enjoy the experience of positive emotions (Fredrickson et al., 2008), future research may attempt to examine whether altering perceived utility and pleasantness of emotions can change the emotion goals related to psychopathic traits, and in turn the direction and outcome of emotion regulation efforts. As the first empirical investigation on motivated emotion regulation in psychopathy, the current findings suggest that this may be an informative path to pursue to better understand the emotional functioning that characterizes psychopathy, and perhaps personality pathology more broadly.

References

Augustine, A. A., Hemenover, S. H., Larsen, R. J., & Shulman, T. E. (2010). Composition and consistency of the desired affective state: The role of personality and motivation. *Motivation and Emotion*, *34*(2), 133–143. https://doi.org/10.1007/s11031-010-9162-0

Blair, R. J. R. (2003). Neurobiological basis of psychopathy. *The British Journal of Psychiatry: The Journal of Mental Science*, *182*, 5–7.

Cleckley H. (1976). *The Mask of Sanity.* (5th ed.). MO: Mosby.

Colins, O. F., Fanti, K., Larsson, H., & Andershed, H. (2017). Psychopathic Traits in Early Childhood: Further Validation of the Child Problematic Traits Inventory. *Assessment*, *24*(5), 602–614. https://doi.org/10.1177/1073191115624544

Conway, M., Di Fazio, R., & Mayman, S. (1999). Judging others' emotions as a function of the others' status. *Social Psychology Quarterly*, 291-305.

Derefinko, K. J. (2015). Psychopathy and Low Anxiety: Meta-Analytic Evidence for the Absence of Inhibition, Not Affect. *Journal of Personality*, *83*(6), 693–709.

Eisinga, R., Te Grotenhuis, M., & Pelzer, B. (2013). The reliability of a two-item scale: Pearson, Cronbach, or Spearman-Brown? *International journal of public health*, *58*(4), 637-642.

Ekman, P. (1992). Are there Basic Emotions? *Psychological Review*, *99*(3), 550–553.

Ford, B.Q., & Tamir, T. (2014). Preferring familiar emotions: As you want (and like) it? *Cognition & Emotion, 28*(2): 311 – 324.

Foulkes, L., McCrory, E. J., Neumann, C. S., & Viding, E. (2014). Inverted Social Reward: Associations between Psychopathic Traits and Self-Report and Experimental Measures of Social Reward. *PLoS ONE*, *9*(8), e106000. https://doi.org/10.1371/journal.pone.0106000

Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology, 95*(5), 1045-1062.

Garofalo, C., Neumann, C.S., & Velotti, P. (2018). Difficulties in emotion regulation and psychopathic traits in violent offenders. *Journal of Criminal Justice, 57*, 116–125.

Garofalo, C., & Neumann, C.S. (2018). Psychopathy and Emotion Regulation: Taking Stock and Moving Forward. In: M. DeLisi (Ed.), *Routledge International Handbook of Psychopathy and Crime.* London, UK: Routledge

Garofalo, C., Neumann, C.S., & Mark, D. (2020). Associations between Psychopathy and the Trait Meta-Mood Scale in Incarcerated Males: A Combined Latent Variable- and Person-centered Approach. *Criminal Justice and Behavior, 47*(3), 331–351. https://doi.org/10.1177/0093854819891460

Garofalo, C., Neumann, C. S., Zeigler-Hill, V., & Meloy, J. R. (2019). Spiteful and contemptuous: A new look at the emotional experiences related to psychopathy. *Personality Disorders: Theory, Research, and Treatment*, *10*(2), 173.

Glenn, A. L., Efferson, L. M., Iyer, R., & Graham, J. (2017). Values, Goals, and Motivations Associated with Psychopathy. *Journal of Social and Clinical Psychology, 36*(2), 108–125.

Gordts, S., Uzieblo, K., Neumann, C., Van den Bussche, E., & Rossi, G. (2017). Validity of the Self-Report Psychopathy Scales (SRP-III Full and Short Versions) in a Community Sample. *Assessment*, *24*(3), 308–325. https://doi.org/10.1177/1073191115606205

Groat, L. L., & Shane, M. S. (2019, April 17). A Motivational Framework for Psychopathy: Toward a Reconceptualization of the Disorder. https://doi.org/10.31234/osf.io/ay7np

Gross, J.J., Sheppes, G., & Urry, H.L. (2011). Emotion Generation and Emotion Regulation: A Distinction we should make (carefully). *Cognition and Emotion, 25*, 765-781

Gross, J. J., & Thompson, R. A. (2007). Emotion regulation: Conceptual foundations. Retrieved from https://philpapers.org/rec/GROERC

Hall, J. R., & Benning, S. D. (2006). The "successful" psychopath. *Handbook of psychopathy*, 459-478.

Hare, R. D. (1996). Psychopathy: A clinical construct whose time has come. Criminal Justice and Behavior, 23(1), 25-54. https://https://doi.org/10.1177/0093854896023001004

Hare, R. D., & Neumann, C. S. (2008). Psychopathy as a Clinical and Empirical Construct. *Annual Review of Clinical Psychology*, *4*(1), 217–246.

Hare, R. D. (2003). *Hare Psychopathy Checklist–Revised* (PCL–R, 2nd ed.). Toronto, ON, Canada: Multi-Health Systems.

Harmon-Jones, E., Harmon-Jones, C., Amodio, D. M., & Gable, P. A. (2011). Attitudes toward emotions. *Journal of Personality and Social Psychology*, *101*(6), 1332–1350.

Hayes, A. F. (2013). Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. Guilford Press.

Hess, U. (2014). Anger is a positive emotion (pp. 55-75). In W. G. Parrott (Ed.) The Positive Side of Negative Emotions. Guilford Press.

Hicks, B. M., & Patrick, C. J. (2006). Psychopathy and negative emotionality: analyses of suppressor effects reveal distinct relations with emotional distress, fearfulness, and anger-hostility. *Journal of Abnormal Psychology*, *115*(2), 276–287. https://doi.org/10.1037/0021-843X.115.2.276

Hoppenbrouwers, S. S., Bulten, B. H., & Brazil, I. A. (2016). Parsing fear: A reassessment of the evidence for fear deficits in psychopathy. *Psychological Bulletin*, *142*(6), 573–600. https://doi.org/10.1037/bul0000040

Hosker-Field, A. M., Gauthier, N. Y., & Book, A. S. (2016). If not fear, then what? A preliminary examination of psychopathic traits and the Fear Enjoyment Hypothesis. *Personality and Individual Differences*, *90*, 278–282. https://doi.org/10.1016/J.PAID.2015.11.016

IBM Corp. (2017). *IBM SPSS Statistics for Windows, Version 25.0*. Armonk, NY: IBM Corp.

Jackson, R. L., Neumann, C. S., & Vitacco, M. J. (2007). Impulsivity, Anger, and Psychopathy: The Moderating Effect of Ethnicity. *Journal of Personality Disorders*, *21*(3), 289–304.

Jeandarme, I., Edens, J., Habets, P., Bruckers, L., Oei, T.I., & Bogaerts, S. (2017). PCL-R field validity in prison and hospital settings. *Law & Human Behavior*, *41*(1), 29-43.

Kalokerinos, E. K., Tamir, M., & Kuppens, P. (2017). Instrumental motives in negative emotion regulation in daily life: Frequency, consistency, and predictors. *Emotion*, *17*(4), 648–657.

Kämpfe, N., & Mitte, K. (2009). What you wish is what you get? The meaning of individual variability in desired affect and affective discrepancy. *Journal of Research in Personality*, *43*(3), 409–418. https://doi.org/10.1016/j.jrp.2009.01.007

Kelley, S. E., van Dongen, J. D. M., Donnellan, M. B., Edens, J. F., Eisenbarth, H., Fossati, A., Howner, K., Somma, A., & Sörman, K. (2017). Examination of the Triarchic Assessment Procedure for Inconsistent Responding in Six Non-English Language Samples. Psychological Assessment. Advance online publication. http://dx.doi.org/10.1037/pas0000485

Kim, M. Y., Ford, B. Q., Mauss, I. B., Tamir, M. (2015). Knowing when to seek anger: Psychological health and context-sensitive emotional preferences. *Cognition and Emotion, 29*(6), 1126 – 1136.

Klimstra, T. A., & Denissen, J. J. A. (2017). A theoretical framework for the associations between identity and psychopathology. *Developmental Psychology*, *53*(11), 2052–2065.

Kosson, D. S., Vitacco, M. J., Swogger, M. T., & Steuerwald, B. L. (2016). Emotional Experiences of the Psychopath. In C. B. Gacono (Ed.), *The Clinical and Forensic Assessment of Psychopathy: A Practitioner's Guide* (2nd ed., pp. 73–96). Routledge.

Lane, A. M., Beedie, C. J., Devonport, T. J., Stanley, D. M., & Lane, A. (2011). Instrumental emotion regulation in sport: relationships between beliefs about emotion and emotion regulation strategies used by athletes. https://doi.org/10.1111/j.1600-0838.2011.01364.x

Larsen, R. J. (2000). Toward a science of mood regulation. Psychological Inquiry, 11, 129-141.

Levenson, R. W. (1999). The intrapersonal functions of emotion. *Cognition & Emotion*, *13*(5), 481-504.

Lishner, D. A., Vitacco, M. J., Hong, P. Y., Mosley, J., Miska, K., & Stocks, E. L. (2012). Evaluating the relation between psychopathy and affective empathy: Two preliminary studies. *International Journal of Offender Therapy and Comparative Criminology*, *56*(8), 1161-1181.

Lykken, D. T. (1995). *The Antisocial Personalities*. Hilslade, NJ: Lawrence Erlbaum Associates. Retrieved from https://www.questia.com/library/3390261/the-antisocial-personalities

Lynam, D. R., & Widiger, T. A. (2007). Using a General Model of Personality to Identify the Basic Elements of Psychopathy. *Journal of Personality Disorders*, *21*(2), 160–178.

MacKinnon, D. P., Fairchild, A. J., Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology, 58*, 593–614. https://doi.org/10.1146/annurev.psych.58.110405.085542

Marsh, A. A. (2013). What can we learn about emotion by studying psychopathy? *Frontiers in Human Neuroscience*, *7*, 181. https://doi.org/10.3389/fnhum.2013.00181

Meloy, J. R. (1988). *The psychopathic mind: origins, dynamics, and treatment*. J. Aronson. Retrieved from https://books.google.nl/books?id=W8BrAAAAMAAJ&hl=el&source=gbs_book_other_versions

Menninghaus, W., Wagner, V., Hanich, J., Wassiliwizky, E., Jacobsen, T., & Koelsch, S. (2017). The distancing-embracing model of the enjoyment of negative emotions in art reception. *Behavioral and Brain Sciences*, *40*, e347. Online publication. doi: 10.1017/S0140525X17000309

Miller, J. D., & Lynam, D. R. (2012). An examination of the Psychopathic Personality Inventory's nomological network: a meta-analytic review. *Personality Disorders: Theory, Research, and Treatment, 3*(3), 305-326. doi: 10.1037/a0024567

Miller, J. D., & Lynam, D. R. (2015). Psychopathy and Personality: Advances and Debates. Journal of Personality, 83(6), 585-592. doi: 10.1111/jopy.12145

2

Millgram, Y., Joormann, J., Huppert, J. D., & Tamir, M. (2015). Sad as a Matter of Choice? Emotion-Regulation Goals in Depression. *Psychological Science*, *26*(8), 1216–1228.

Mowle, E. N., Kelley, S. E., Edens, J. F., Donnellan, M. B., Smith, S. T., Wygant, D. B., & Sellbom, M. (2017). Development of an Inconsistent Responding Scale for the Triarchic Psychopathy Measure. Psychological Assessment, 29(8), 990–1000.

Netzer, L., Gutentag, T., Kim, M. Y., Solak, N., & Tamir, M. (2018). Evaluations of emotions: Distinguishing between affective, behavioral and cognitive components. *Personality and Individual Differences, 135,* 13-24.

Neumann, C. S., & Pardini, D. (2014). Factor Structure and Construct Validity of the Self-Report Psychopathy (SRP) Scale and the Youth Psychopathic Traits Inventory (YPI) in Young Men. *Journal of Personality Disorders*, *28*(3), 419–433. https://doi.org/10.1521/pedi_2012_26_063

Neumann, C. S., Hare, R. D., & Newman, J. P. (2007). The super-ordinate nature of the psychopathy checklist-revised. *Journal of Personality Disorders*, *21*(2), 102–117. https://doi.org/10.1521/pedi.2007.21.2.102

Neumann, C. S., Johansson, P. T., & Hare, R. D. (2013). The Psychopathy Checklist-Revised (PCL-R), low anxiety, and fearlessness: A structural equation modeling analysis. *Personality Disorders: Theory, Research, and Treatment*, *4*(2), 129–137. https://doi.org/10.1037/a0027886

Patrick, C. J. (2010). *Operationalizing the Triarchic Conceptualization of Psychopathy: Preliminary Description of Brief Scales for Assessment of Boldness, Meanness, and Disinhibition*. Unpublished Manual. Florida State: Florida State University.

Patrick, C. J., Fowles, D. C., & Krueger, R. F. (2009). Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology*, *21*(3), 913. https://doi.org/10.1017/S0954579409000492

Paulhus, D. L., Neumann, C. S., & Hare, R. D. (2016). *Manual for the Hare Self-Report Psychopathy scale.* Toronto, Ontario, Canada: Multi-Health Systems.

Rammstedt, B., & Beierlein, C. (2014). Can't we make it any shorter? The limits of personality assessment and ways to overcome them. Journal of Individual Differences, 35, 212–220.

Ray, J. V., Hall, J., Rivera-Hudson, N., Poythress, N. G., Lilienfeld, S. O., & Morano, M. (2013). The relation between self-reported psychopathic traits and distorted response styles: A meta-analytic review. *Personality Disorders: Theory, Research, and Treatment*, *4*(1), 1–14.

Rudolph, U., & Tscharaktschiew, N. (2014). An attributional analysis of moral emotions: Naïve scientists and everyday judges. *Emotion Review*, *6*(4), 344-352.

Salekin, R. T., & Lynam, D. R. (Eds.). (2010). *Handbook of child and adolescent psychopathy*. New York, NY, US: Guilford Press.

Schacter, D.L., Gilbert, D.T., & Wegner, D.M. (2011). *Psychology (2nd Ed.).* New York, NY, US: Worth Publishers.

Schmitt, W. A., & Newman, J. P. (1999). Are all psychopathic individuals low-anxious? *Journal of Abnormal Psychology*, *108*(2), 353–358.

Shane, M. S., & Groat, L. L. (2018). Capacity for upregulation of emotional processing in psychopathy: all you have to do is ask. *Social cognitive and affective neuroscience*, *13*(11), 1163-1176.

Sherman, E. D., & Lynam, D. R. (2016). Psychopathy and low communion: An overlooked and underappreciated core feature. *Personality Disorders: Theory, Research, and Treatment*, *8*(4), 309-318.

Swann, W. B., Wenzlaff, R. M., Krull, D. S., & Pelham, B. W. (1992). Allure of negative feedback: self-verification strivings among depressed persons. *Journal of Abnormal Psychology*, *101*(2), 293–306.

Tamir, M. (2005). Don't worry, be happy? Neuroticism, trait-consistent affect regulation, and performance. *Journal of Personality and Social Psychology*, *89*, 449-461.

Tamir, M. (2009). Differential Preferences for Happiness: Extraversion and Trait-Consistent Emotion Regulation. *Journal of Personality*, *77*, 447-470.

Tamir, M. (2016). Why Do People Regulate Their Emotions? A Taxonomy of Motives in Emotion Regulation. *Personality and Social Psychology Review*, *20*(3), 199–222.

Tamir, M., & Bigman, Y. (2014). Why might people want to feel bad? Motives in contrahedonic emotion regulation. In W. G. Parrott (Ed.), *The Positive Side of Negative Emotions* (pp. 201-223). Guilford Press.

Tamir, M., Bigman, Y. E., Rhodes, E., Salerno, J., & Schreier, J. (2015). An Expectancy-Value Model of Emotion Regulation: Implications for Motivation, Emotional Experience, and Decision Making. *Emotion,15*, 90-103. https://doi.org/10.1037/emo0000021

Tamir, M., Chiu, C. Y., & Gross, J. J. (2007). Business or pleasure? Utilitarian versus hedonic considerations in emotion regulation. *Emotion, 7*, 546-554.

Tamir, M., & Ford, B. Q. (2012). Should People Pursue Feelings That Feel Good or Feelings That Do Good? Emotional Preferences and Well-Being. *Emotion, 12*, 1061-1070.

Tamir, M., & Ford, B. Q. (2009). Choosing to be afraid: Preferences for fear as a function of goal pursuit. *Emotion*, *9*(4), 488–497. https://doi.org/10.1037/a0015882

Tamir, M., Ford, B. Q., & Ryan, E. (2013). Nonconscious goals can shape what people want to feel. *Journal of Experimental Social Psychology*, *49*(2), 292–297.

Tamir, M., & Gutentag, T. (2017). Desired emotional states: their nature, causes, and implications for emotion regulation. *Current Opinion in Psychology*, *17*, 84–88.

Tamir, M., & Millgram, Y. (2017). Principles, Lessons, and Implications of a Motivational Analysis of Emotion Regulation. In A. J. Elliot (Ed.), *Advances in Motivation Science* (pp. 207-247).

Tamir, M., Mitchell, C., & Gross, J. J. (2008). Hedonic and Instrumental Motives in Anger Regulation. *Psychological Science*, *19*(4), 324–328.

Tamir, M., Schwartz, S. H., Cieciuch, J., Riediger, M., Torres, C., Scollon, C., Dzokoto, V., Zhou, X., Vishkin, A. (2016). Desired emotions across cultures: A value-based account. Journal of Personality and Social Psychology, 111(1), 67-82.

Tice, D. M., Baumeister, R. F., & Zhang, L. (2004). The role of emotion in self-regulation: Differing role of positive and negative emotions. In P. Philippot & R. S. Feldman (Eds.), *The regulation of emotion* (pp. 213-226). Mahwah, NJ, US: Lawrence

Tsai, J. L., Knutson, B., & Fung, H. H. (2006). Cultural variation in affect valuation. *Journal of Personality and Social Psychology*, *90*(2), 288–307.

van Dongen, J. D. M., Drislane, L. E., Nijman, H., Soe-Agnie, S. E., & van Marle, H. J. C. (2017). Further Evidence for Reliability and Validity of the Triarchic Psychopathy Measure in a Forensic Sample and a Community Sample. *Journal of Psychopathology and Behavioral Assessment*, *39*(1), 58–66. https://doi.org/10.1007/s10862-016-9567-5

Vitacco, M. J., Neumann, C. S., & Jackson, R. L. (2005). Testing a Four-Factor Model of Psychopathy and Its Association with Ethnicity, Gender, Intelligence, and Violence. *Journal of Consulting and Clinical Psychology*, *73*(3), 466–476.

Vize, C. E., Lynam, D. R., Lamkin, J., Miller, J. D., & Pardini, D. (2016). Identifying Essential Features of Juvenile Psychopathy in the Prediction of Later Antisocial Behavior: Is There an Additive, Synergistic, or Curvilinear Role for Fearless Dominance? *Clinical Psychological Science, 4*(3),572-590. doi: 10.1177/2167702615622384

Weiner, B. (2014). The attribution approach to emotion and motivation: History, hypotheses, home runs, headaches/heartaches. *Emotion Review*, *6*(4), 353-361.

Winer, E. S., Cervone, D., Bryant, J., McKinney, C., Liu, R. T., & Nadorff, M. R. (2016). Distinguishing Mediational Models and Analyses in Clinical Psychology: Atemporal Associations Do Not Imply Causation. *Journal of Clinical Psychology*, *72*(9), 947–955.

Wood, J. V., Heimpel, S. A., Manwell, L. A., & Whittington, E. J. (2009). This mood is familiar and I don't deserve to feel better anyway: Mechanisms underlying self-esteem differences in motivation to repair sad moods. *Journal of Personality and Social Psychology*, *96*(2), 363–380. https://doi.org/10.1037/a0012881

Supplemental Material

Supplemental Table 1

Zero-order correlations between psychopathic traits and emotion goals, along with correlations with beliefs about the utility of emotions and emotion goals across contexts, in Study 2 (S2; N = 520) sample.

		Emotion Goals for Collaboration			
		Anger	Fear	Sadness	Joy
		S2	S2	S2	S2
SRP-SF	Total	.22***	.18***	.09*	-.09*
	Interpersonal	.17***	.12**	.06	-.06
	Affective	.22***	.18***	.11*	-.16***
	Lifestyle	.14**	.12**	.03	-.01
	Antisocial	.24***	.24***	.14**	-.10*
TriPM	Total	.19***	.09*	.05	-.10*
	Boldness	0.6	-.01	.02	.02
	Meanness	.20***	.10*	.04	-.18
	Disinhibition	.16***	.11*	.05	-.05
Utility beliefs for Collaboration	Anger	.46***			
	Fear		.47***		
	Sadness			.62***	
	Joy				.64***

Note. SRP-SF = Self-Report Psychopathy Scale–Short Form. TriPM = Triarchic Psychopathy Measure. Utility beliefs = Beliefs about the utility of emotions.
* *p* < .05; ** *p* < .01; *** *p* < .001.

Supplemental Table 1 (cont'd)

Zero-order correlations between psychopathic traits and emotion goals, along with correlations with beliefs about the utility of emotions and emotion goals across contexts, in Study 2 (S2; N = 520) sample.

		Emotion Goals for Confrontation			
		Anger	Fear	Sadness	Joy
		S2	S2	S2	S2
SRP-SF	Total	.26***	.15**	.08	.01
	Interpersonal	.26***	.14**	.08	.01
	Affective	.19***	.11*	.07	-.02
	Lifestyle	.26***	.10*	.03	.01
	Antisocial	.12**	.17***	.11*	.06
TriPM	Total	.21***	.14**	.12**	.07
	Boldness	.08	.02	.05	.13**
	Meanness	.23***	.13**	.10*	-.01
	Disinhibition	.13**	.16***	.11*	.01
Utility beliefs for Confrontation	Anger	.61***			
	Fear		.55***		
	Sadness			.59***	
	Joy				.57***

Note. Emotion goals = Preferences for emotions. SRP-SF = Self-Report Psychopathy Scale–Short Form. TriPM = Triarchic Psychopathy Measure. ATE = Attitudes toward Emotions scale. Utility beliefs = Beliefs about the utility of emotions.
* *p* < .05; ** *p* < .01; *** *p* < .001.

Supplemental Table 1 (cont'd)

Zero-order correlations between psychopathic traits and emotion goals, along with correlations with beliefs about the utility of emotions and emotion goals across contexts, in Study 2 (S2; N = 520) sample.

		Emotion Goals for Protection			
		Anger	Fear	Sadness	Joy
		S2	S2	S2	S2
SRP-SF	Total	.24***	.18***	.12**	.00
	Interpersonal	.23***	.17***	.10*	-.01
	Affective	.15**	.13**	.10*	.01
	Lifestyle	.26***	.16***	.08	.00
	Antisocial	.15**	.16***	.16***	.03
TriPM	Total	.20***	.18***	.12**	-.01
	Boldness	.03	.06	-.02	.04
	Meanness	.23***	.15**	.11*	-.05
	Disinhibition	.18***	.18***	.17***	-.01
Utility beliefs for Protection	Anger	.64***			
	Fear		.55***		
	Sadness			.52***	
	Joy				.68***

Note. Emotion goals = Preferences for emotions. SRP-SF = Self-Report Psychopathy Scale–Short Form. TriPM = Triarchic Psychopathy Measure. ATE = Attitudes toward Emotions scale. Utility beliefs = Beliefs about the utility of emotions.
* *p* < .05; ** *p* < .01; *** *p* < .001.

Supplemental Table 1(cont'd)

Zero-order correlations between psychopathic traits and emotion goals, along with correlations with beliefs about the utility of emotions and emotion goals across contexts, in Study 2 (S2; N = 520) sample.

		Emotion Goals for Exploration			
		Anger	Fear	Sadness	Joy
		S2	S2	S2	S2
SRP-SF	Total	.24***	.18***	.14**	-.10*
	Interpersonal	.18***	.17***	.13**	-.04
	Affective	.22***	.13**	.11*	-.17***
	Lifestyle	.20***	.15**	.08	-.03
	Antisocial	.23***	.16***	.20***	-.10*
TriPM	Total	.19***	.14**	.10*	.12**
	Boldness	.04	.03	.08	-.01
	Meanness	.18***	.15**	.10*	-.19***
	Disinhibition	.19***	.13**	.11*	-.05
Utility beliefs for Exploration	Anger	.61***			
	Fear		.57***		
	Sadness			.62***	
	Joy				.58***

Note. Emotion goals = Preferences for emotions. SRP-SF = Self-Report Psychopathy Scale–Short Form. TriPM = Triarchic Psychopathy Measure. ATE = Attitudes toward Emotions scale. Utility beliefs = Beliefs about the utility of emotions.

* *p* < .05; ** *p* < .01; *** *p* < .001.

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Supplemental Table 2

Zero-order correlations between psychopathic traits and beliefs about the utility of emotions, across contexts in Study 2 (S2; N = 520) sample.

		Beliefs about the utility of emotions for collaboration			
		Anger	Fear	Sadness	Joy
		S2	S2	S2	S2
SRP-SF	Total	.10*	.14**	.05	-.14**
	Interpersonal	.10*	.10*	.01	-.08
	Affective	.11*	.16***	.08	-.19***
	Lifestyle	.09	.12**	.02	-.09
	Antisocial	.05	.10*	.09*	-.15**
TriPM	Total	.05	.10*	.04	-.15**
	Boldness	-.01	-.02	-.02	.01
	Meanness	.06	.11*	.03	-.23***
	Disinhibition	.06	.15**	.07	-.11*
		Beliefs about the utility of emotions for confrontation			
		Anger	Fear	Sadness	Joy
		S2	S2	S2	S2
SRP-SF	Total	.15**	.15**	.05	.05
	Interpersonal	.15**	.13**	.03	.08
	Affective	.10*	.15**	.04	.03
	Lifestyle	.15**	.12**	.03	.02
	Antisocial	.07	.11*	.10*	.05
TriPM	Total	.08	.12*	.04	.07
	Boldness	.04	.01	-.01	.06
	Meanness	.09*	.14**	.03	.05
	Disinhibition	.04	.10*	.06	.04

Note. SRP-SF = Self-Report Psychopathy Scale–Short Form. TriPM = Triarchic Psychopathy Measure.
* *p* < .05; ** *p* < .01; *** *p* < .001.

Supplemental Table 2 (cont'd)

Zero-order correlations between psychopathic traits and beliefs about the utility of emotions, across contexts in Study 2 (S2; N = 520) sample.

| | | Beliefs about the utility of emotions for protection | | | |
| | | Anger | Fear | Sadness | Joy |
		S2	S2	S2	S2
SRP-SF	Total	.16***	.18***	.05	.05
	Interpersonal	.14**	.16***	.05	.02
	Affective	.11*	.16***	.05	.02
	Lifestyle	.16***	.16***	.01	.05
	Antisocial	.10*	.10*	.10*	.08
TriPM	Total	.13**	.12**	.03	.01
	Boldness	-.02	-.01	-.07	.07
	Meanness	.16***	.12**	.04	-.04
	Disinhibition	.14**	.14**	.11*	-.01
		Beliefs about the utility of emotions for exploration			
		Anger	Fear	Sadness	Joy
		S2	S2	S2	S2
SRP-SF	Total	.21***	.21***	.11*	-.11*
	Interpersonal	.15**	.19***	.06	-.06
	Affective	.20***	.16***	.12**	-.16***
	Lifestyle	.16***	.19***	.05	-.05
	Antisocial	.19***	.14**	.15***	-.11*
TriPM	Total	.18***	.17***	.11*	-.14**
	Boldness	.03	.00	-01	-.05
	Meanness	.17***	.17***	.12**	-.21***
	Disinhibition	.18***	.21***	.14**	-.03

Note. SRP-SF = Self-Report Psychopathy Scale–Short Form. TriPM = Triarchic Psychopathy Measure.
* *p* < .05; ** *p* < .01; *** *p* < .001.

Supplemental Table 3

Multiple regression analysis results examining associations between psychopathic traits and emotion goals in Study 1 (S1; N = 148) and Study 2 (S2; N = 520) samples.

		Emotion Goals							
		Anger		Fear		Sadness		Joy	
		S1	S2	S1	S2	S1	S2	S1	S2
SRP-SF	$R^2_{adjusted}$	.21***	.08***	.07**[a]	.04***	.20***	.04***		.03**
	Interpersonal	.23*[a]	-.13*[a]						
	Affective		.20**		.14*[a]		.17**[a]		-.25***
	Lifestyle								.20**
	Antisocial	.35***	.17**	.31**	.17**	.48***	.17**		
TriPM	$R^2_{adjusted}$	.12***	.03***	ns	.01*[a]	.05*	.02**[a]	ns	.02*
	Boldness								
	Meanness								-.18**
	Disinhibition	.31**	.13*[a]			.30**[a]	.14*[a]		

Note. Emotion goals = Preferences for emotions. SRP-SF = Self-Report Psychopathy Scale–Short Form. TriPM = Triarchic Psychopathy Measure. For ease of presentation, only significant *β* coefficients are reported. [a] Beta coefficients that are not significant after Bonferroni-corrected significance level (i.e., *p* < .0018)
* *p* < .05; ** *p* < .01; *** *p* < .001.

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Chapter 3

Antagonism in Psychopathy: A Multi-Method Investigation

Abstract

Aiming to replicate and extend research on psychopathy and antagonism, the current study examined motivational correlates of psychopathy in a non-clinical sample (N=125). We employed a multimethod design, including self-report measures, a behavioral (social discounting) task, and a physiological assessment of motive dispositions (automatic affective reactions to antagonistic and affiliative stimuli measured with facial electromyography [fEMG]). Results showed that self-reported psychopathy was negatively associated with self-reported intimacy motive. In the social discounting task, we found a negative association between psychopathy and a tendency to share hypothetical monetary amounts with close others, though not with others in general. Both associations were significant for one of the two measures of psychopathy used. Finally, regarding fEMG findings, multilevel analyses revealed that although individuals with low levels of psychopathy reacted more positively to affiliation stimuli, individuals with high levels of psychopathy reacted equally positively to both affiliation and antagonistic stimuli, and these results were robust across psychopathy measures. These findings highlight the contribution of multimethod assessments in capturing nuances of motivation. Implicit physiological measures might be particularly sensitive in capturing motive dispositions in relation to psychopathy. Identifying mechanisms that foster positive connections between psychopathic traits and antagonistic tendencies may be theoretically and clinically informative.

Key words: Psychopathy, Motivation, Electromyography, Antagonism, Affiliation

Antagonism in Psychopathy: A Multi-Method Investigation

Psychopathic personality is defined by a constellation of interpersonal, affective, lifestyle and antisocial features, including (but not limited to) deceptiveness, manipulation, grandiosity, callousness, meanness, impulsivity, and disinhibition (Hare & Neumann, 2008; Patrick et al., 2009). Although individuals with extremely high levels of psychopathic traits are more common in forensic settings, a growing body of evidence supports the dimensional nature of psychopathy and the informative value of studies based on general populations (Collins et al., 2017; Hare & Neumann, 2008; Jeandarme et al., 2017; Salekin & Lynam, 2010; Vitacco et al., 2015). Across different conceptualizations (Blackburn, 2007; Patrick et al., 2009; Salekin et al., 2004), psychopathic personality is consistently associated with abnormalities in interpersonal functioning (Hall & Benning, 2006). In particular, building on accounts that define psychopathy as characterized by interpersonal antagonism (i.e., the tendency to devalue social bonds and act competitively and selfishly, rather than cooperatively and altruistically; Moshagen et al., 2018; Sherman & Lynam, 2017; Vachon, 2019), we sought to investigate motivational correlates of psychopathy in the domains of affiliation and antagonism, using a multimethod design.

There is consensus that antagonism is a central feature of psychopathy (e.g., Lynam & Widiger, 2007; Miller & Lynam, 2015, 2019; Vachon, 2019). Empirical research has documented moderate to strong associations between psychopathy and self-reported operationalizations of antagonism (for an overview see Vachon, 2019). In personality and psychopathy research, antagonism is considered the lower end of the Big Five personality trait of agreeableness, which predicts altruistic behavior and, conceptually, has some overlap – but is not identical to – affiliation (Denissen & Penke, 2008; Fleeson, 2007; Vachon, 2019). In terms of Interpersonal Circumplex[1] dimensions, antagonism is operationalized as low affiliation in various studies, and is often understood as one pole of the affiliation axis (Hostile-Arrogant to Cold-Separate; Wright, 2019). Within the interpersonal circumplex, psychopathic traits are located in a region similar to antagonism (Sherman & Lynam, 2017). Antagonistic traits also characterize the operationalization of psychopathy in Section III of the Diagnostic and Statistical Manual of Mental Disorder (DSM-5; APA, 2013).

The strong conceptual links between psychopathy and antagonism suggest a certain motivational foundation, which however is infrequently tested (e.g., Vize & Lynam, 2020) (for exception, which is discussed below, see Glenn, Efferson, Iyer, & Graham, 2017; Jonason & Zeigler-Hill, 2018). To address this lacuna, we sought to investigate associations between psychopathic traits and individual differences in motivation for antagonism and affiliation. Those two classes of motives represent two different other-directed orientations. We did not

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1   The Interpersonal Circumplex framework offers an integrative conceptualization of motives, traits and behavior in a two-dimensional model, with four poles, a combination of which represents interpersonal styles: submissiveness vs. dominance and affiliation vs. disaffiliation (see Wright, 2019).

also opt for an antagonism self-report measure, because the broader motivational difference in interpersonal orientation, which we aimed to capture, is already delineated in affiliative and intimacy tendencies. First, we aimed to replicate findings linking psychopathy and (low) affiliation using self-reports and a behavioral lab task. Second, we added a new analysis by examining the affective underpinnings of the dispositional propensity towards affiliation and antagonism by assessing automatic affective reactions to affiliative and antagonistic cues through facial electromyography (fEMG).

Methods to assess antagonistic motivation in psychopathy

Our focus on motivational correlates of psychopathy aligns with theoretical approaches that regard personality traits as motivational, contextual, and interpersonal constructs (Denissen & Penke, 2008; Wright, 2019). In motivational terms, antagonism is represented by a propensity to act selfishly and competitively, as opposed to cooperatively and altruistically (Denissen & Penke, 2008). Such motivational tendencies are likely expressed in interpersonal transactions through callous and quarrelsome behavior and are empirically and conceptually connected to low affiliation (see Wright, 2019; Hopwood & Bornstein, 2019). We investigated motivational correlates of psychopathy adopting different research methods pertaining to (1) what individuals report that they want, (2) how they behave to attain it, and (3) what their physiology indicates that they want. Three different angles of investigation may offer important information as to whether results might converge or not across methodologies. It is well established that different operationalizations of motivation captures different nuances of the broader motivation concept (Dufner et al., 2018; Dufner et al., 2015). Specifically, we included self-reported motivation, behavioral expressions of motivation, and affective indicators of motive dispositions. Motive dispositions (i.e., dispositional tendency to derive pleasure form motive relevant experiences) can be operationalized as individual differences in affective reactions to motive-relevant stimuli (Dufner et al., 2015). Such dispositions have not been studied in relation to psychopathy. Below, we discuss the conceptual and empirical background of these three levels of analysis with regard to psychopathy.

Self-reported Antagonism in Psychopathy

The assessment of self-reported motivation has already been applied in relation to psychopathy. A study by Glenn et al. (2017) found that psychopathy predicted reduced investment in motives and values related to the welfare of others, and predicted greater investment in motives and values related to relative power and wealth. Psychopathic traits were also found to be associated with reduced motivation to establish and preserve functional relationships (Jonason & Zeigler-Hill, 2018). Recently, Sherman and Lynam (2017) have proposed that low communion (i.e., low motivation to create and maintain close social bonds; Tellegen & Waller, 2008) is one of the core features of psychopathic personality. One way that has been used to assess this aspect of interpersonal antagonistic motivation is by measuring self-reported motivation towards communal motives, that is, the explicit valuing

of social bonds. Consistent with this, both theory (e.g., Patrick, 2018) and empirical evidence (e.g., Ali & Chammoro-Premuzic, 2010; Glenn et al., 2017; Sherman & Lynam, 2017) have linked psychopathy with reduced affiliation and intimacy (as opposed to hostility and cold-heartedness; Blackburn, 1998).

Both affiliation and intimacy reflect a need to belong and connect with others, but also present distinct characteristics. These nuances are reflected in the respective operationalizations: Affiliation represents the motivation to create and uphold relationships with people, but not necessarily sharing intimacy with them. Intimacy represents the motivation to maintain close, warm, and mutual bonds with significant others (Schönbrodt & Gerstenberg, 2012). To date, however, research has not clearly addressed potentially distinct associations between psychopathy and affiliation and intimacy. Currently, we are zeroing in on self-reported reduced affiliation and not directly on self-reported antagonism. Based on the above literature, we expected negative associations between psychopathic traits and self-reported communal motives (affiliation and intimacy).

Psychopathy and Antagonistic Behavior in Laboratory Tasks

Behavioral tasks can be used to assess the motivation to share (or to not share) resources as an index of antagonistic motivation (e.g., Schönbrodt & Gerstenberg, 2012). These tasks ideally resemble real-life situations wherein the extent to which someone values relational closeness influences the motivation to share resources, as evidenced by sharing behavior (e.g., Curry et al., 2011; Vieira et al., 2014). Tasks that do not consider the level of social closeness (in that the participant is not asked to decide on sharing based on the relational distance, but is only asked whether or not to share resources with another hypothetical person) typically do not correlate with other indices (e.g., self-reports) of intimacy (Schönbrodt & Gerstenberg, 2012). Thus, it is possible that these tasks measure a broader affiliation tendency as operationalized by a general tendency towards sharing, regardless of whether sharing is directed towards a close other or a stranger (e.g., Schönbrodt & Gerstenberg, 2012). Instead, studies using behavioral tasks that have investigated tendencies to share resources with hypothetical others at different levels of closeness have found negative associations between psychopathic traits and altruistic and cooperative behavior (e.g., Curry et al., 2011; Mokros et al., 2008).

A task that enables researchers to investigate the role of social closeness on the behavioral disposition to share (or not to share) resources is the social discounting task (Jones & Rachlin, 2006). In this task, the value attributed to social closeness can be quantified by assessing participants' (un)willingness to share hypothetical monetary amounts with people of different levels of relational distance. It was found that individuals with higher levels of psychopathic traits tended to be less inclined to share hypothetical monetary amounts even with people that they considered very close to them (Sherman & Lynam, 2017). This pattern suggested a low communal orientation as expressed by a derogation of relational closeness and a

motivation to increase personal gain to the detriment of others, even those described as the closest person. Based on the literature discussed and on the findings of Sherman and Lynam (2017), we expected negative associations between psychopathic traits and sharing tendencies in laboratory behavioral tasks (as an index of reduced affiliation and heightened antagonistic motivation).

Affective Contingencies as Indices of Motive Dispositions

A recently developed method to assess individual differences in motive dispositions captures spontaneous affective reactions to motive-relevant stimuli (Dufner et al., 2015). Specifically, it is theorized that the propensity to derive pleasure from motive-relevant experiences represents the affective core aspect of motive dispositions and varies across individuals (McClelland, 1987). Empirical evidence indicates that this propensity can be measured through fEMG (Dufner et al., 2015). Specifically, positive affective reactions are measured through increases in the muscular activation of the zygomaticus major (indicative of smiling) (e.g., Cacioppo et al., 1986); negative affective reactions through increases in the muscular activation of the corrugator supercilii (indicative of frowning) (Cacioppo et al., 1986). These responses can be recorded via fEMG measurements during the presentation of visual (motive-relevant) cues in the lab. It has been shown that such fEMG measurements possess incremental validity in predicting real-life behavior over and above self-rated measures of affiliative motivation (Dufner et al., 2015).

Despite their relevance to personality, affective contingencies have not been studied in association with psychopathic traits.[2] Exploring positive (hedonic) and negative (aversive) reactions to stimuli depicting interpersonal affiliation and antagonism may help elucidate the underlying motive dispositions for affiliation and antagonism as they relate to psychopathy. In addition, this allows disentangling affiliative and antagonistic dispositions unlike the self-reported and behavioral indices described above. If some individuals automatically react more positively than others to affiliation cues, indicating an underlying motive disposition toward affiliation, then these individuals might be more motivated to seek contexts wherein they can interact positively with others. In contrast, if individuals automatically react more positively (or less negatively) than others to antagonism cues, they are more likely to seek out those contexts where they can compete for resources. The present study investigated associations between psychopathic traits and motive dispositions (operationalized as affective contingencies) toward affiliation and antagonism. Based on findings that motives that lead people to maintain prosocial behaviors and refrain from antagonistic behaviors (e.g., affiliation) are less prominent in psychopathy (e.g., Glenn et al., 2017; Sherman & Lynam, 2017), we considered it plausible that psychopathic traits would be related to lower positive

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2   Psychopathy research thus far has not used fFMG to measure motive dispositions, but fEMG has been aptly used to measure mimicry, emotion contagion or empathy (e.g., Herpertz et al., 2001; Patrick et al., 1993; Wilhem et al., 2018).

affective reactivity to affiliative cues and lower negative affective reactivity to antagonistic cues, as evidenced by their spontaneous facial reactions.

The present study

The current was the first study to investigate motivational correlates of psychopathy employing direct (self-reports) measures, behavioral indices (laboratory task), and physiological assessment (fEMG) of motive dispositions. We hypothesized that higher scores on self-reported psychopathic traits would be negatively associated with scores on self-report measures of affiliation and intimacy motives. With regard to the social discounting task, we expected that higher levels of psychopathic traits would be related to the tendency to discount social closeness when deciding to share resources. Finally, in attempting to extend previous findings, this study was the first to use fEMG assessment as a means to capture individual differences in motive dispositions associated with psychopathic traits: motive dispositions towards affiliation and antagonism. In the lab, we presented participants with stimuli indicative of affiliation and antagonism while assessing their spontaneous facial reactions via fEMG, in order to assess positive (i.e., zygomaticus muscle) or negative (i.e., corrugator muscle) affective reactivity. Based on the hypothesis that higher self-reported levels of psychopathic traits would be linked to a lower affiliation motive, we expected them to be negatively associated with zygomaticus reactivity (indicative of positive affect) in response to affiliative stimuli. In contrast, higher scores on self-reported psychopathic traits were expected to tap into a lower aversion to antagonism, so we expected them to be negatively associated with corrugator reactivity (indicative of negative affect) in response to antagonistic stimuli. Based on the same stimuli and as an additional measure of affective responsivity, next to the EMG assessments, participants completed self-reported assessments of affect. Hypotheses were pre-registered (see preregistration document). Additional analyses beyond the pre-registration plan are explicitly mentioned in the results section. These were multilevel analyses which were conducted, to control for within-person random effects relevant to the multiple fEMG measurements.

Method

Participants and Procedures

Participants were undergraduate psychology students at a Dutch university offering Dutch- and English-taught bachelor's programs. In total, 131 participants were tested in the lab (see preregistration), of whom 125 had complete responses for all parts of the study (online and lab) and eventually comprised the study's sample (N = 125, M_{age} = 20.97, SD = 2.45, 68.33% females). In the study pre-registration, power analyses suggested that a sample size of 95 participants yielded sufficient power (i.e., 80) to capture associations of a magnitude r = 0.25, at alpha = 0.05. These are close to the average effect sizes reported in social/personality

psychology (average r = 0.24, see Richard et al., 2003). Power analyses with 1000 Monte Carlo simulations suggested that this sample size also yielded sufficient power (i.e., 100%, alpha = .05) to detect modest effect sizes (.01) of image type and psychopathy main effects, and of image type × psychopathy interaction effects in multilevel within-between-subjects analyses of muscle activity (see Supplement). Course credit was offered for participation. All study procedures were approved by the local university [blinded for review] Ethics Review Board (protocol n. EC-2017.04).

Participants enrolled in the study by responding to an advertisement of the research on the university research portal. Information about the content and the goals of the study was provided, as well as the possibility for debriefing upon request. Data were collected over two consecutive academic years between 2017 and 2018. First, participants were asked to complete questionnaires online. After completing the online questionnaires, the participants were invited to the lab. During the lab sessions, the social discounting task and fEMG assessments were conducted. The social discounting task was completed prior to the fEMG assessment. An experimenter and research assistants of both genders and of approximately the same age as the participants were present. Participants were greeted and asked to take a seat in the testing-room and were monitored through a one-way mirror that connected the testing- to the control-room (where the experimenters were). The testing-room was well-lit, with minimal setting including a comfortable chair and a desk with a computer screen. In order to avoid demand characteristics as much as possible, participants were told that skin conductance was being assessed. fEMG measurements were followed by a self-report measure of affective valence while the stimuli were presented again on the computer screen, as described below (see EMG assessments section).

Self-report Measures
Psychopathic traits
Psychopathic traits were assessed using two measures based on both Hare's four-facet model (Hare, 2003) and Patrick's triarchic model (Patrick et al., 2009) in order to investigate generalizability across instruments (which can have idiosyncratic content). Whereas both measures provide total and subscale scores, we focused on the total scores in the main text. We did so for parsimony and because the current multimethod design has not been previously used to assess motivational correlates of psychopathic traits and the present would be preliminary findings to draw some first conclusions. For the same reason and because of less variation in psychopathy in non-clinical samples we present in the main findings with total scores. Subscale analyses are presented in the Supplement (Tables S1, S2, & S3).

Participants completed the *Self Report Psychopathy-Short Form* (SRP-SF) (Neumann & Hare, 2016), as conceptualized by Hare's (2003) Psychopathy Checklist-Revised (PCL-R) model and provides total scores and scores on four facets: interpersonal, affective, lifestyle and antisocial.

The short version consists of 29 items, scored on a 5-point Likert-scale (1 = *strongly disagree*, to 5 = *strongly agree*). Internal consistency of SRP-SF total scores was α = .90. The *Triarchic Psychopathy Measure* (TriPM; Patrick, 2010) is a 58-item self-report scale, each item being scored on a 4-point Likert-scale, (0 = *false* to 3 = *true*). It provides scores on three scales: Boldness, Meanness and Disinhibition and a total score. Internal consistency of the TriPM total scores was α = .87.

Self-reported motives

As indices of affiliation motive, we used the affiliation and intimacy scales from the Unified Motive Scales (UMS-10, Schönbrodt & Gerstenberg, 2012). The scale was developed based on item response analyses of other motive scales. Affiliation and intimacy were measured through 20 items and responses were provided on a 6-point Likert-scale, ranging from 0 = *not important to me*, to 5 = *extremely important to me*. Internal consistency coefficients were α = .83 for the affiliation scale and α = .81 for the intimacy scale.

Self-reported affective reactions

After the EMG recordings, the same set of stimuli was presented again to the participants, who were asked to report their affective reactions. These assessments served as an additional -to the physiological- measure of affective responsivity. For the first year of data collection, participants rated how positive or negative their affective reactions were while watching the pictures (ranging from 1= *very negative* to 5= *very positive*) by responding to one item per stimulus type. For the second year of data collection, participants completed the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), wherein positive and negative affect were measured with 10 items each. Responses could range from 1= *very slightly/not at all* to 5= *extremely*. We computed total scores for positive affect and negative affect, and then subtracted negative from positive affect scores in order to create one total value for valence, with higher values corresponding to a more favorable ratio of positive vs. negative affect.

Laboratory tasks

Social discounting task

In accordance with Sherman and Lynam (2017), a social discounting task (Jones & Rachlin, 2006) was administered to measure behavioral indicators of communal motivation and value attributed to relational closeness. Participants were instructed to identify people they considered as closest to most distant and write the names of the chosen people on five concentric circles, each representing the level of social closeness (two names per circle). For each of the 10 names listed, participants responded to nine items on which they had the option to either (A) receive a given hypothetical monetary amount for themselves (from €155 to €75) or (B) receive for themselves € 75 and give the listed person €75. Furthermore, the "crossover point" for each participant was defined as the point where they changed from option (A) to the entirely pro-social option (B). The relationship between the undiscounted

values and discounted values is described by the equation $v = \frac{V}{(1+sN)}$ (Rachlin & Raineri, 1992), with v and V representing the discounted and undiscounted value of the monetary amount allocated to the other person, respectively, s the social discounting rate, and N the level of social closeness. By fitting data resulting from different values of N, the discounting rate s can be estimated. For each participant, higher s values indicate a stronger tendency to discount outcomes allocated to others of decreasing levels of social distance (higher s corresponds to less altruistic tendencies).

fEMG Assessments

We recorded muscular activity of the zygomaticus major and the corrugator supercilii in response to motive-relevant stimuli to indirectly assess motive dispositions. In order for the electrodes to obtain a stable baseline signal, participants were initially presented with two relaxing pictures (depicting a lake and a mountain scenery) for eight seconds. As experimental stimuli, we presented 15 affiliative pictures, 15 antagonistic pictures, and 12 control/neutral pictures (e.g., pictures of people in an office/supermarket). Affiliative stimuli depicted positive interactions between friends, couples, coworkers or family members (for the validation study of affiliative and control stimuli see Dufner et al., 2015). Antagonistic stimuli depicted competitive interactions, quarrels and disputes (e.g., people competing against each other, fighting or arguing). Each picture was preceded by a fixation cross (for 1000 ms) and shown for 4000 ms. Pictures were presented in randomized order.

Following Dufner et al., (2015), we extracted and analyzed the muscular activity between 1001 ms – 4000 ms of picture presentation[3]. Data was filtered (van Boxtel, 2010), rectified, and aggregated across each second. We used two-step approach to normalize the data, to remove the influence of confounding factors, such as thickness of skin, on EMG records (for detailed technical and data pre-processing description see Supplement). Because EMG responses were recorded over multiple occasions, the intra-class correlation (i.e., ICC) was computed as the indicator of reliability (equivalent to Cronbach's alpha). The ICC of zygomaticus activity was .56, and the ICC of corrugator was .62, comparable to previous research (Dufner et al., 2015).

Results

In the following sections, we first report the results of the analyses that were pre-registered. Then, we report the results of additional analyses that were conducted to account for the multi-level nature of the data, in order to examine within-person differences.

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3   Within this timespan, differences of muscle reactivity to stimuli vs. baseline-reactivity are more pronounced according to prior research (Dufner et al., 2015).

Zero-order Correlations

Means, standard deviations and results of (two-tailed) correlation analyses are presented in Table 1. Correlation analyses provided partial support to our hypothesis that psychopathic traits would be negatively associated with the self-reported affiliation and intimacy motives. More specifically, both psychopathy measures were negatively associated with the intimacy motive, but this association was significant only for the TriPM. No significant associations emerged between psychopathic traits and self-reported affiliation.

Our hypothesis that psychopathic traits would be associated with more selfish choices (i.e., tendency to share less) in the social discounting task was only partially supported. No significant associations emerged between the social discounting rates (s) and either psychopathy measure. However, both psychopathy measures were negatively associated with the undiscounted rate (V), indicating less willingness to share even with a person of maximum closeness (i.e., N = 0 in the equation above), although also in this case the association was significant only for the TriPM (also for the SRP-SF Lifestyle subscale, see Supplementary Table S1).

Finally, our hypotheses that psychopathic traits would be negatively associated with zygomaticus reactivity towards affiliative stimuli and negatively associated with corrugator supercilii reactivity towards antagonistic stimuli were not supported. In response to affiliative and antagonistic stimuli, zygomaticus muscle activity and corrugator muscle activity were not significantly correlated with the two psychopathy measures (no significant associations were found also on the subscale level, except for SRP-SF Affective scale, for which a significant positive association emerged with zygomaticus muscle activity towards antagonistic stimuli, see Supplementary Table S1). Similarly, no significant associations emerged between the two psychopathy measures and the self-reported affective valence of the presented stimuli.

Taken together, our analyses provided partial support to our hypotheses. First, we found a negative association between psychopathic traits and self-reported motivation towards intimacy, although this association was significant only for the TriPM. Second, we found an association with performance in the social discounting task, where again only the TriPM was significantly associated with reduced willingness to share resources with close others (in line with the reduced self-reported intimacy motive). In contrast, we did not find correlates of psychopathy in the EMG paradigm.

Multilevel Analyses

While the first two hypotheses could only be tested through a between-subject analysis, such an approach fails to account for the within-person random effects pertaining to multiple measurements of physiological (fEMG) reactions to antagonistic and affiliative stimuli. Furthermore, this approach did not allow for a comparative test of reactions to antagonistic

Table 1

Means, Standard Deviations (SD), and Zero-order Correlations with Confidence Intervals

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. TriPM	57.83	16.67											
2. SRP-SF	1.77	0.50	.67**										
			[.56, .76]										
3. UMS-AFF	3.77	0.75	.05	-.03									
			[-.14, .22]	[-.21, .15]									
4. UMS-INT	4.19	0.73	-.25**	-.17	.31**								
			[-.41, -.08]	[-.34, .01]	[.14, .46]								
5. AFF-Valence	0.01	1.00	-.13	-.15	.24**	.24**							
			[-.30, .05]	[-.32, .03]	[.07, .40]	[.06, .40]							
6. ANT-Valence	0.00	1.01	.09	.08	.10	.07	.04						
			[-.09, .26]	[-.10, .25]	[-.08, .27]	[-.11, .24]	[-.13, .22]						
7. AFF-Corr	0.01	0.09	.02	-.08	.08	-.03	.04	-.02					
			[-.16, .20]	[-.25, .11]	[-.11, .25]	[-.21, .15]	[-.13, .22]	[-.19, .16]					
8. ANT-Corr	0.01	0.09	-.02	-.09	.05	-.01	.06	-.05	.96**				
			[-.20, .16]	[-.26, .09]	[-.14, .22]	[-.19, .17]	[-.13, .22]	[-.22, .13]	[.95, .97]				
9. AFF-Zygo	-0.04	0.12	.05	.11	.04	-.02	.00	.13	.14	.08			
			[-.13, .23]	[-.07, .28]	[-.14, .22]	[-.20, .16]	[-.17, .18]	[-.04, .30]	[-.04, .31]	[-.09, .26]			
10. ANT-Zygo	-0.05	0.12	.13	.17	.05	-.02	-.12	.18*	.07	-.00	.93**		
			[-.06, .30]	[-.01, .34]	[-.13, .23]	[-.20, .16]	[-.29, .05]	[.01, .35]	[-.11, .24]	[-.18, .18]	[.90, .95]		
11. Undiscounted Value	90.94	19.81	-.20*	-.16	-.04	.15	.03	-.12	.09	.16	-.08	-.08	
			[-.37, -.02]	[-.33, .02]	[-.22, .14]	[-.03, .33]	[-.15, .20]	[-.29, .05]	[-.09, .26]	[-.01, .33]	[-.25, .10]	[-.25, .10]	
12. Discounting Rate	0.09	0.17	-.06	.01	.07	.08	.03	.02	.20*	.26**	.09	.06	.68**
			[-.24, .12]	[-.17, .19]	[-.11, .25]	[-.10, .25]	[-.15, .20]	[-.16, .20]	[.03, .37]	[.10, .43]	[-.07, .28]	[-.10, .25]	[.57, .76]

Note. AFF-Valence: self-rated emotional valence towards affiliative pictures; ANT-Valence: self-rated emotional valence towards antagonistic pictures. AFF-Corr: average corrugator muscle activity (per person) towards affiliative pictures; ANT-Corr: average corrugator muscle activity (per person) towards antagonistic pictures; AFF-Zygo: average zygomaticus muscle activity (per person) towards affiliative pictures; ANT-Zygo average zygomaticus muscle activity (per person) towards antagonistic pictures; Undiscounted Value: V hypothetical monetary amount shared. Discounting Rate: *s* social discounting rate

For the EMG measurements, the responses were averaged across per participant and partialed out the baseline responses (i.e., the EMG activities of the certain *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

versus affiliative stimuli but rather considered them individually. In general, people react more positively to affiliative stimuli compared to antagonistic stimuli, rather than react positively to affiliative stimuli and negatively to antagonistic stimuli. Thus, it was deemed important to investigate the relative reactions to each type of stimuli compared to each other instead of looking at them in absolute terms. For this reason, and to account for between-person variability in overall affective reactivity, the motive dispositions associated with psychopathic traits might be best captured by differences in responses to antagonistic stimuli *compared to* affiliative stimuli. In that sense, antagonistic dispositions of individuals with higher levels of psychopathic traits might not necessarily be revealed by their higher positive affective reactions towards antagonistic stimuli, but rather by a greater difference in their positive affective reactions towards antagonistic vs. affiliative stimuli. Based on this rationale, in the following section we report the results of the multilevel analyses of the relationship between psychopathy and individual differences in motive dispositions in affiliation and antagonism, as measured by fEMG. We note, however, that this data analytic plan was exploratory.

To test the hypotheses concerning indirect measures of affective reactivity, baseline-corrected zygomaticus and corrugator activity responses, averaged across each second, were entered as dependent variables. The independent variables were the psychopathy total scores (Level 2), the type of pictures (Level 1, i.e., affiliative vs. antagonistic) and the interaction between the two, and effects of these variables were set as fixed effects. Because of the high correlation (r = .67, 90% CI = [.56, .76]) between the TriPM and the SRP-SF total scores, we built separate models, with each of the psychopathy total scores entered as predictor in each model. We specified a random intercept for each participant. The results of the multilevel analyses are reported in Table 2 (fEMG models). We conducted robustness checks by testing these multilevel models controlling for participants' self-rated affiliation and intimacy motives, sex, age, and education level. The pattern of results of these robustness-check analyses was unchanged and is presented in the supplementary document (Table S4).

Overall, participants exhibited significantly lower zygomaticus activity in response to antagonistic stimuli compared to affiliative stimuli. Indeed, in both models (see Table 2, Models 2 and 4) there was a main effect of stimulus type on zygomaticus muscle activity. Importantly, in both models, there was a two-way interaction between stimulus type and psychopathy levels. Participants scoring higher on psychopathic traits (both TriPM and SRP-SF, examined separately) exhibited smaller differences in zygomaticus activity between antagonistic and affiliative stimuli than participants who scored lower in psychopathic traits (on the subscale level, these interactions were significant for SRP-SF Affective, Antisocial, TriPM Boldness, see Supplementary Tables S2 & S3). A graphical depiction of this interaction effect is displayed in the simple slopes analysis reported in Figures 1 and 2. At low levels of psychopathy (M–1SD of TriPM and SRP-SF), zygomaticus activity was significantly lower (b = -.02, p < .01) when viewing antagonistic stimuli compared to affiliative stimuli. By contrast, at
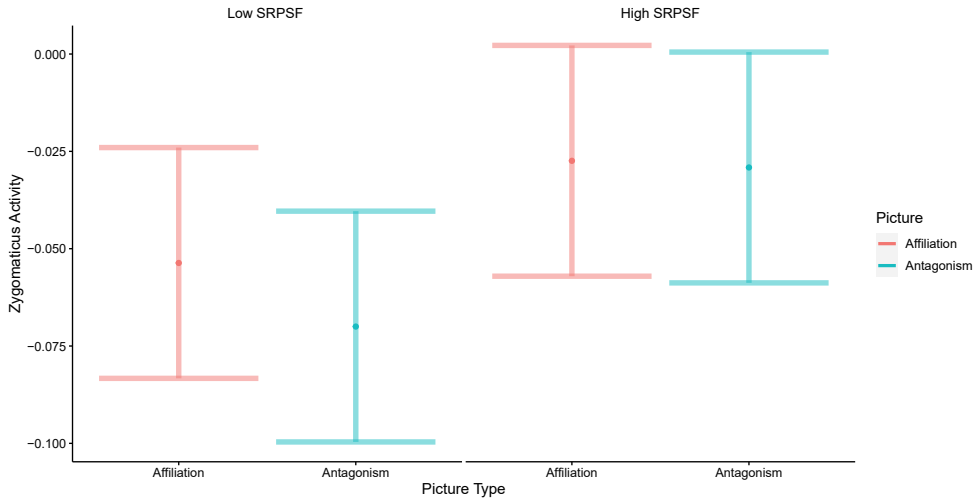
Figure 1. The effects of the types of the stimuli and the sum-scores of self-reported psychopathic traits (SRPSF) on participants' EMG responses (bars represent 95% confidence intervals).

Figure 2. The effects of the types of the stimuli and the sum-scores of self-reported psychopathic traits (TriPM) on participants' EMG responses (bars represent 95% confidence intervals).

high levels of psychopathy ($M + 1SD$ of TriPM and SRP-SF, examined separately), zygomaticus activity was equally high ($b = .00$, $p = 1.00$) when viewing antagonistic and affiliative stimuli (Figures 1 and 2). Taken together, these findings suggest that individuals lower in psychopathic traits tend to react less positively towards antagonism than towards affiliation, whereas individuals higher in psychopathic traits tend to react equally positively towards antagonism and affiliation.

Regarding the analyses on corrugator activity, in Model 1 (see Table 2), there was a main effect of stimulus type on corrugator activity, with participants exhibiting significantly higher corrugator muscle activity in response to the antagonistic stimuli compared to the affiliative stimuli. The rest of the results of multilevel analyses on corrugator activity did not reveal significant interaction effects between psychopathic traits and stimulus type (see Table 2, models 1 and 3). Taken together, these results suggest that participants had stronger aversive reactions toward antagonistic than affiliative stimuli. However, no differences in the intensity of these negative affective reactions to antagonism and affiliation stimuli occurred as a function of psychopathic traits levels (results remain unchanged on the subscale level, see Supplementary Tables S2 and S3).

Discussion

The current study employed a novel, multimethod design combining self-reports, behavioral task, and fEMG in an effort to replicate and extend findings on the motivational correlates of psychopathy, with special emphasis on affiliation and antagonism. We initially aimed to replicate findings on associations between psychopathy and low affiliation measured with self-report and behavioral indices and then focused on motive dispositions, operationalized as affective contingencies in reaction to affiliative and antagonistic stimuli (fEMG). We thus investigated the possibility that individuals with higher levels of psychopathic traits dispositionally derive less pleasure from affiliation and less aversion from antagonism. In the following, we discuss results obtained with all three methods of testing our hypotheses.

When testing associations of psychopathic traits with self-reported affiliation motive, we detected a significant negative association with intimacy and psychopathy as measured with the TriPM, thus providing only partial support to our first hypothesis. This finding suggests that individuals with psychopathic traits have a reduced motivation to seek and maintain relationships with others and specifically to share intimacy with them. It may be that closer bonds (i.e., intimacy) do not motivate psychopathic individuals as much as they motivate non-psychopathic individuals. This finding accords well with literature connecting psychopathy to low communion (Sherman & Lynam, 2017) and suggests that psychopathy is linked to reduced intimacy and investment in caring for close others (Ali & Chammorro-Premuzic, 2010; Glenn et al., 2017) rather than to low affiliation more broadly. This intimacy specific finding is in line with recent evidence (Christian, Sellbom & Wilkinson, 2018) that psychopathy was related with poorer interpersonal bonding within close (e.g., familial) relationships, but not with lack of relating altogether.

Additionally, the negative association between psychopathy and intimacy motive fits well with our next finding on behavioral indices of antagonism and the reduced motivation to
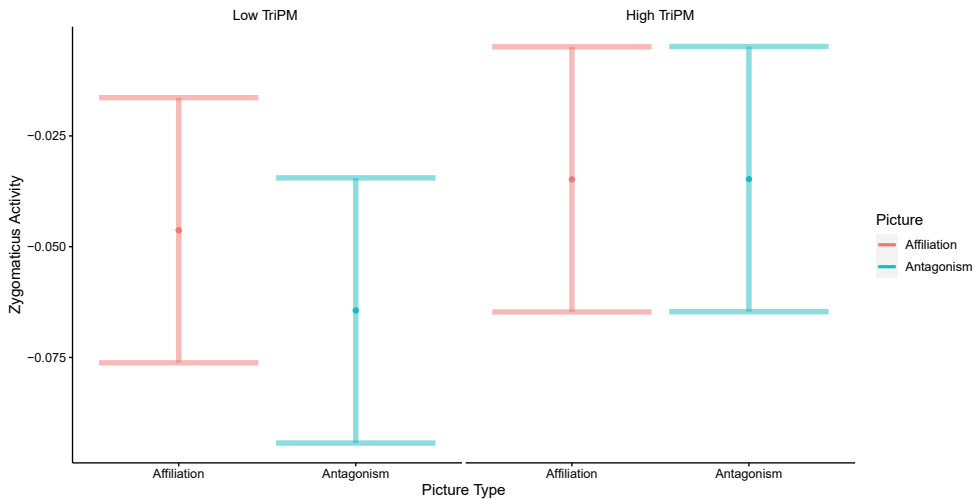
Table 2
The effects of the types of the stimuli and the sum-scores of self-reported psychopathic traits on participants' EMG responses

Model 1: TriPM on corrugator muscle responses

Random effects	Variance		S.D.
Subject	.01		.09
Fixed effects	**Estimate (S.E.)**		**Sig.**
Antagonistic (v.s. Affiliative)	.01769(.00089)		**.045**
TriPM	.00014(.00052)		.79
Antagonistic * TriPM	-.00024(.00015)		.10

Model 2: TriPM on zygomaticus muscle responses

Random effects	Variance		S.D.
Subject	.01		.12
Fixed effects	**Estimate (S.E.)**		**Sig.**
Antagonistic (v.s. Affiliative)	-.04054(.01229)		**<.01**
TriPM	.00034(.00065)		.60
Antagonistic * TriPM	.00055(.00020)		**<.01**

Model 3: SRP-SF on corrugator muscle responses

Random effects	Variance		S.D.
Subject	.01		.09
Fixed effects	**Estimate (S.E.)**		**Sig.**
Antagonistic (v.s. Affiliative)	.00835(.00895)		.35
SRP-SF	-.01366(.01701)		.42
Antagonistic * SRP-SF	-.00267(.00486)		.58

Model 4: SRP-SF on zygomaticus muscle responses

Random effects	Variance		S.D.
Subject	.00		.11
Fixed effects	**Estimate (S.E.)**		**Sig.**
Antagonistic (v.s. Affiliative)	-.03496(.01248)		**<.01**
SRP-SF	.02623(.02136)		.22
Antagonistic * SRP-SF	.01462(.00677)		**.03**

Note. Antagonistic (v.s. Affiliative) is a dummy variable indicating the type of the stimuli (0 = Affiliative stimuli; 1 = antagonistic stimuli). The numbers in bold indicate significant effects (i.e. $p < .05$).

share within intimate relationships. Namely, our hypothesis regarding a positive association between psychopathy and social discounting (s, i.e., systematic derogation of value attributed to outcomes allocated to others of decreasing social closeness) was not supported by our data. Instead, we found a significant positive association only when looking into sharing with closest others. Thus, in line with the findings obtained with self-reported motivation, psychopathy seemed related to limited communal orientation towards close others in particular (akin to intimacy) rather than more broadly with others. In line with the findings on self-reported motivation, this relationship was again significant for the TriPM only. The results regarding the behavioral measure are thus not fully in line with findings from one previous study that has examined relations between psychopathy and performance on the social discounting task (Sherman & Lynam, 2017) and with studies on other behavioral tests of sharing and altruism, although these latter studies did not examine the dependency of altruistic behavior on the level of closeness with others (e.g., Curry, Jones, Chesters, & Viding, 2011; Mokros et al., 2008).

This lack of significant association with behavioral indices of communal motivation should be interpreted with caution and calls for further empirical testing. At the same time, the fact that in our sample it was the TriPM that revealed significant associations with both self-rated and behavioral measures of antagonistic motivation, merits attention. It may be that the content coverage of TriPM (and in particular meanness) includes more emphasis on overt antagonism (Patrick, 2018; Roy et al., 2020) and was more sensitive in capturing connections with the opposite of antagonism, i.e., more intimate aspects of affiliation. However, because the coefficients (of the associations of intimacy with SRP and TriPM) are not very different in size, this difference could also be attributed to chance and should be replicated by future studies.

The third method we implemented aimed to assess motive dispositions through affective reactions to motive-relevant stimuli using fEMG. In particular, we sought to investigate the affective underpinnings of the dispositional propensity towards affiliation and antagonism by assessing automatic affective reactions to affiliative and antagonistic cues through fEMG. The correlational analyses did not provide support to our hypotheses because fEMG scores did not correlate with psychopathy scores. Conducting multilevel analyses, wherein we accounted for the within-person variation random effects pertaining to multiple measurements and considered dispositions towards affiliation and antagonism as *relative* to each other rather than in *absolute* terms, we did find intriguing differences between individuals with high and low levels of psychopathic traits.

Specifically, results of multilevel analyses revealed that overall, participants exhibited facial muscular activity indicative of enjoyment (zygomaticus activity) towards affiliative cues. That accords well with universalist theories (e.g., Baumeister & Leary, 1995) and previous

research (Dufner et al., 2015) on the intrinsically satisfying effects of affiliative experiences. In addition to that, we found that zygomaticus activity was, overall, lower in response to antagonistic stimuli compared to affiliative stimuli. This finding adds to the aforementioned literature on the general human tendency to enjoy affiliative experiences by extending it from absolute value terms (between persons) to the relative difference emerging when comparing the enjoyment derived from cues relevant to different motives, in this case, affiliative and antagonistic (within persons). Notably, this pattern of relative positive affective automatic reactions did differ as a function of psychopathic traits. Individuals lower in psychopathic traits tended to react less positively towards antagonism than towards affiliation, whereas individuals higher in psychopathic traits tended to react equally positively towards antagonism and affiliation.

It thus seemed that while the affective reactions of individuals low in psychopathy show a pattern in line with the universal human tendencies of enjoying affiliation, as well as the currently revealed – overall – greater enjoyment of affiliation compared to antagonism, this was less the case for individuals high in psychopathy (both SRP-SF and TriPM). This suggests that individuals high in psychopathy experience affiliative and antagonistic cues as equally enjoyable and, thus, they might be more motivated to endorse antagonistic tendencies. The observed differences are in agreement with empirical evidence on individual differences in motive dispositions towards affiliation (in that although most individuals dispositionally enjoy affiliation, some do so more than others; Dufner et al., 2015). Our findings also offer preliminary evidence for motive dispositions in antagonism. Importantly, these findings were consistent across psychopathy measures and survived robustness checks, in which we controlled for participants' self-rated affiliation and intimacy motives, age, gender, and education level.

According to earlier findings on affective contingencies, people who enjoy affiliation more tend to act in a more affiliative manner (Dufner et al., 2015). It thus seems that the tendency of individuals higher in psychopathy to be less prosocial and altruistic and behave in an antagonistic manner could be related with the fact that they enjoy it equally, on an implicit level. Our findings are novel in demonstrating individual differences in antagonistic motivation as measured by affective contingencies. Importantly, self-reported affective reactions to affiliative and antagonistic stimuli did not reveal significant associations with psychopathy measures. Thus, it appears that individuals with higher levels of psychopathic traits have a greater dispositional tendency to derive pleasure from antagonistic stimuli even if they do not self-report the experience of positive affect in reaction to antagonistic stimuli.

Finally, it is worth noting that corrugator activity, as an indicator of negative affective reactivity did not reveal any motivational correlates. It might be that affiliation and antagonism motive-relevant systems are more sensitive to hedonic, rather than contra-hedonic automatic

processes. That is in agreement with theoretical and empirical evidence on the hedonic affective underpinnings of motivation measured as positive affective reactions (Dufner et al., 2015; Schönbrodt & Gerstenberg, 2012). Importantly, in our pre-registered hypotheses, we expected that psychopathic traits would be associated with reduced positive reactions to affiliation and reduced negative reactions to antagonism. The revealed patterns depict something different: the hedonic affective core of affiliation and antagonism motives for higher in psychopathy individuals seemed to be equally strong when captured as automatic affective reactions (i.e., dispositions). It might also be that more psychopathic individuals could be more motivated by/sensitive to reward than aversion automatic reactions.

Conceptual and Practical Implications

The current findings have conceptual and practical implications. Regarding the former, our results are partly convergent with empirical and conceptual accounts of psychopathy proposing the relevance of antagonism (for an overview se Vachon, 2019). That was partly evident in self-reported motivation and motivated behavior, but more prominent on a motive disposition level, as captured by affective contingencies. Our findings suggest that the antagonistic tendencies that characterize psychopathy may involve more than low affiliation, extending to a marked antagonistic motivation. In this context, the pattern of results supports the added value of multimethod assessments of motivational correlates in psychopathy. Indeed, psychopathic individuals may lack the insight or the willingness to self-report, and more indirect measures can uncover dispositional tendencies that would otherwise go unnoticed. Measures of implicit, spontaneous and unconscious affective reactions seem to be valuable in assessing motives and personality (Dufner et al., 2015). Additionally, implicit measures could circumvent biases of self-reported motivation pertaining to faking, self-perception and social desirability.

Our approach builds on frameworks of personality traits in terms of individual differences in dispositional reactions towards contextual cues (e.g., Denissen & Penke, 2008; Mischel & Shoda, 1995). Future research can elucidate these if-then contingencies in psychopathy even further, as well as in other personality constructs and pathologies. Finally, our findings are in line with recent advances in the psychopathy literature that move from a deficit perspective to a motivational perspective (e.g., Garofalo & Neumann, 2018; Glenn, Efferson, Iyer, & Graham, 2017; Groat & Shane, 2020; Jonason & Ferrell, 2016; Jonason & Zeigler-Hill, 2018; Shane & Groat, 2018; Spantidaki Kyriazi et al., 2020). According to the latter perspective, abnormalities in emotional[4] or cognitive functioning, as well as other maladaptive behavior typically ascribed to psychopathy may stem not only from limited *ability* but also from limited

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4   There is preliminary evidence of motivated emotion regulation in psychopathy and specifically that psychopathic traits are associated with negative other-directed emotions, like anger, as desired affective states which is in line with antagonistic motivation (Spantidaki Kyriazi et al., 2020).

motivation. The current results add to this perspective by highlighting possible motivational underpinnings of psychopathy.

Shifting the focus from what might be *lacking* in psychopathy to what actually *motivates* can be not only a promising focus of future research but also a starting point of interventions, if replicated in clinical samples. Investigating what it is that psychopathic individuals do value and what they experience as hedonically rewarding may contribute to a better understanding of psychopathy. This information can be implemented in developing clinical interventions in which the focus would be on increasing hedonic investments in prosocial, moral, altruistic experiences (in terms of emotions, motivated behavior and motive dispositions). To achieve this shift, we need to better understand what is automatically experienced as rewarding and enjoyable in psychopathic individuals.

Limitations and Directions for Future Research

In spite of the strength of a multimethod design and the implemented novel approach, the current findings should be viewed in light of the study limitations. The pattern of our results across methodologies indicates that more implicit aspects of motivation may be captured via indirect measures rather than direct, explicit measures. That said, we would strongly encourage future research to replicate these results across methodologies. Given our effect sizes, one possible limitation in this case may have been the sample size, which provided sufficient power for within-between subjects analyses but was on the low side for between-subjects analyses. Further, replication in more demographically diverse and also clinical samples is warranted in order to increase generalizability and inform interventions. Additionally, we detected heightened enjoyment of antagonism for individuals higher in psychopathy, even though engaging in antagonistic and less prosocial behaviors can lead to adverse consequences in terms of poor interpersonal outcomes and/or legal repercussions. It is thus worth delving deeper into what makes antagonistic interactions equally enjoyable with affiliative for higher in psychopathy individuals (vs. lower in psychopathy). This calls for rigorous empirical testing, involving non-communal motives that were not addressed in the present investigations, namely dominance and power (see Jonason & Ferrell, 2016). Also, additional methodologies might be useful additions to the three methodologies we used, for example longitudinal, experience sampling method and further lab observations. These additional methods could shed light on the within-person dynamics that perhaps make antagonistic interactions more rewarding for psychopathic individuals.

Conclusions

The current study provided empirical evidence of antagonistic motivational correlates of psychopathy that were partly evident in self-reported motivation and motivated behavior observed in the lab, but more prominent on a dispositional level (i.e., physiologically measured automatic affective reactions [fEMG]). These findings highlight the importance of multimethod

assessments of motivational correlates in psychopathy, as direct and indirect measures offer a different angle of capturing motivation. It appears that psychopathic individuals equally enjoy antagonism and affiliation and this is perhaps what makes them less inclined to be pro-social and altruistic. This focus adds to the literature on motivational underpinnings of psychopathic personality and could illuminate possible developmental trajectories and/or contexts that foster non-prosocial endorsements in psychopathic individuals. Identifying pathways that may strengthen positive contingencies between psychopathic traits and antagonistic tendencies may be of great theoretical and clinical value.

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References

Ali, F., & Chamorro-Premuzic, T. (2010). The dark side of love and life satisfaction: Associations with intimate relationships, psychopathy and Machiavellianism. *Personality and Individual Differences, 48*(2), 228-233.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529.

Blackburn, R. (1998). Psychopathy and the contribution of personality to violence. In T. Millon, E. Simonsen, M. Birket-Smith, & R. D. Davis (Eds.), *Psychopathy: Antisocial, criminal, and violent behavior* (p. 50–68). The Guilford Press.

Cacioppo, J. T., Petty, R. E., Losch, M. E., & Kim, H. S. (1986). Electromyographic activity over facial muscle regions can differentiate the valence and intensity of affective reactions. *Journal of Personality and Social Psychology*, *50*, 260-268.

Christian, E., Sellbom, M., & Wilkinson, R. B. (2019). Is psychopathy associated with deficits in bonding in an adult noninstitutionalized sample? The association between intimate social network size, attachment behavior, and psychopathy. *Journal of Social and Personal Relationships*, *36*(7), 1996-2014.

Colins, O. F., Fanti, K., Larsson, H., & Andershed, H. (2017). Psychopathic Traits in Early Childhood: Further Validation of the Child Problematic Traits Inventory. *Assessment*, *24*(5), 602–614. https://doi.org/10.1177/1073191115624544

Curry, O., Chesters, M. J., & Viding, E. (2011). The psychopath's dilemma: The effects of psychopathic personality traits in one-shot games. *Personality and Individual Differences, 50*(6), 804–809. https://doi.org/10.1016/j.paid.2010.12.036

Denissen, J. J., & Penke, L. (2008). Motivational individual reaction norms underlying the Five-Factor model of personality: First steps towards a theory-based conceptual framework. *Journal of research in personality*, *42*(5), 1285-1302.

Dufner, M., Arslan, R. C., & Denissen, J. J. (2018). The unconscious side of Facebook: Do online social network profiles leak cues to users' implicit motive dispositions?. *Motivation and Emotion*, *42*(1), 79-89.

Dufner, M., Arslan, R. C., Hagemeyer, B., Schönbrodt, F. D., & Denissen, J. J. (2015). Affective contingencies in the affiliative domain: Physiological assessment, associations with the affiliation motive, and prediction of behavior. *Journal of Personality and Social Psychology*, *109*(4), 662.

Fleeson, W. (2007). Situation-based contingencies underlying trait-content manifestation in behavior. *Journal of personality*, *75*(4), 825-862.

Garofalo, C., & Neumann, C.S. (2018). Psychopathy and Emotion Regulation: Taking Stock and Moving Forward. In: M. DeLisi (Ed.), *Routledge International Handbook of Psychopathy and Crime.* London, UK: Routledge

Glenn, A. L., Efferson, L. M., Iyer, R., & Graham, J. (2017). Values, goals, and motivations associated with psychopathy. *Journal of social and clinical psychology*, *36*(2), 108-125.

Gordts, S., Uzieblo, K., Neumann, C., Van den Bussche, E., & Rossi, G. (2017). Validity of the Self-Report Psychopathy Scales (SRP-III Full and Short Versions) in a Community Sample. *Assessment*, *24*(3), 308–325. https://doi.org/10.1177/1073191115606205

Groat, L. L., & Shane, M. S. (2019, April 17). A Motivational Framework for Psychopathy: Toward a Reconceptualization of the Disorder. https://doi.org/10.31234/osf.io/ay7np

Hall, J. R., & Benning, S. D. (2006). The "Successful" Psychopath: Adaptive and Subclinical Manifestations of Psychopathy in the General Population. In C. J. Patrick (Ed.), *Handbook of psychopathy* (p. 459–478). The Guilford Press.

Hare, R. D. (2003). *Hare Psychopathy Checklist–Revised* (PCL–R, 2nd ed.). Toronto, ON, Canada: Multi-Health Systems.

Hare, R. D., & Neumann, C. S. (2008). Psychopathy as a Clinical and Empirical Construct. *Annual Review of Clinical Psychology*, *4*(1), 217–246.

Herpertz, S. C., Werth, U., Lukas, G., Qunaibi, M., Schuerkens, A., Kunert, H. J., ... & Sass, H. (2001). Emotion in criminal offenders with psychopathy and borderline personality disorder. *Archives of general psychiatry*, *58*(8), 737-745.

Hopwood, C. J., & Bornstein, R. F. (2019). Psychodynamic approaches to treating antagonism. In J.A. Miller & D.R. Lynam (Eds.) *The Handbook of Antagonism: Conceptualizations, Assessment, Consequences, and Treatment of the Low End of Agreeableness* (pp. 337-350). Academic Press.

Jonason, P. K., & Ferrell, J. D. (2016). Looking under the hood: The psychogenic motivational foundations of the Dark Triad. *Personality and individual differences*, *94*, 324-331.

Jonason, P. K., & Zeigler-Hill, V. (2018). The fundamental social motives that characterize dark personality traits. *Personality and Individual Differences*, *132*, 98-107.

Jeandarme, I., Edens, J., Habets, P., Bruckers, L., Oei, T.I., & Bogaerts, S. (2017). PCL-R field validity in prison and hospital settings. *Law & Human Behavior*, *41*(1), 29-43.

Jones, B., & Rachlin, H. (2006). Social Discounting. *Psychological Science, 17*(4), 283-286.

McClelland, D. C. (1987). *Human motivation.* New York, NY: Cambridge University Press.

Miller, J. D., & Lynam, D. R. (2015). Psychopathy and Personality: Advances and Debates. *Journal of Personality, 83*(6), 585-592. https://doi.org/10.1111/jopy.12145

Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review, 102*(2), 246–268. https://doi.org/10.1037/0033-295X.102.2.246

Mokros, A., Menner, B., Eisenbarth, H., Alpers, G.W., Lange, K.W., & Osterheider, M. (2008). Diminished cooperativeness of psychopaths in a prisoner's dilemma game yields higher rewards. *Journal of Abnormal Psychology, 117*(2), 406-413.

Moshagen, M., Hilbig, B. E., & Zettler, I. (2018). The dark core of personality. *Psychological Review*, *125*(5), 656-688.

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Patrick, C. J. (2010). *Operationalizing the Triarchic Conceptualization of Psychopathy: Preliminary Description of Brief Scales for Assessment of Boldness, Meanness, and Disinhibition*. Unpublished Manual. Florida State: Florida State University.

Patrick, C. J. (Ed.). (2018). *Handbook of psychopathy* (2nd Ed.) Guilford Publications.

Patrick, C., Bradley, M. M., & Lang, P. J. (1993). Emotion in the criminal psychopath: Startle reflex modulation. *Journal of Abnormal Psychology, 102*, 82–92.

Patrick, C. J., Fowles, D. C., & Krueger, R. F. (2009). Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology*, *21*(3), 913-938. https://doi.org/10.1017/S0954579409000492

Rachlin, H., & Raineri, A. (1992). Irrationality, impulsiveness, and selfishness as discount reversal effects. In G. F. Loewenstein & J. Elster (Eds.), *Choice over time* (pp. 93–118). New York, NY: Russell Sage Foundation.

Ray, J. V., Hall, J., Rivera-Hudson, N., Poythress, N. G., Lilienfeld, S. O., & Morano, M. (2013). The relation between self-reported psychopathic traits and distorted response styles: A meta-analytic review. *Personality Disorders: Theory, Research, and Treatment*, *4*(1), 1–14.

Roy, S., Vize, C., Uzieblo, K., van Dongen, J. D., Miller, J., Lynam, D., ... & Snowden, R. (2020). Triarchic or septarchic? —Uncovering the Triarchic Psychopathy Measure's (TriPM) structure. *Personality Disorders: Theory, Research, and Treatment*. Advance online publication. https://doi.org/10.1037/per0000392

Salekin, R. T., & Lynam, D. R. (Eds.). (2010). *Handbook of child and adolescent psychopathy*. New York, NY, US: Guilford Press.

Salekin, R. T., Neumann, C. S., Leistico, A. M. R., & Zalot, A. A. (2004). Psychopathy in youth and intelligence: An investigation of Cleckley's hypothesis. *Journal of Clinical Child and Adolescent Psychology*, *33*(4), 731-742.

Schonbrodt, F. D., & Gerstenberg, F. X. R. (2012). An IRT analysis of motive questionnaires: The Unified Motive Scales. *Journal of Research in Personality*, *6*, 725–742.

Shane, M. S., & Groat, L. L. (2018). Capacity for upregulation of emotional processing in psychopathy: all you have to do is ask. *Social cognitive and affective neuroscience*, *13*(11), 1163-1176.

Sherman, E. D., & Lynam, D. R. (2017). Psychopathy and low communion: An overlooked and underappreciated core feature. *Personality Disorders: Theory, Research, and Treatment*, *8*(4), 309–318. https://doi.org/10.1037/per0000203

Spantidaki Kyriazi, F., Bogaerts, S., Tamir, M., Denissen, J.J.A., & Garofalo, C. (2020). Emotion Goals: A missing piece in research on psychopathy and emotion regulation. *Journal of Personality Disorders.* Published online. https://doi.org/10.1521/pedi_2020_34_488

Tellegen, A., & Waller, N. G. (2008). Exploring personality through test construction: Development of the Multidimensional Personality Questionnaire. *The SAGE handbook of personality theory and assessment*, *2*, 261-292.

Vachon, D. D. (2019). Antagonism in psychopathy. In J.A. Miller & D.R. Lynam (Eds.) *The Handbook of Antagonism: Conceptualizations, Assessment, Consequences, and Treatment of the Low End of Agreeableness* (pp. 199-220). Academic Press.

Van Boxtel, A. (2010). Facial EMG as a tool for inferring affective states. In A. J. Spink, F. Grieco, O. Krips, L. Loijens, L. Noldus, & P. Zimmerman (Eds.), *Proceedings of Measuring Behavior 2010* (pp. 104-108). Wageningen: Noldus Information technology.

Vieira, J. B., Almeida, P. R., Ferreira-Santos, F., Barbosa, F., Marques-Teixeira, J., & Marsh, A. A. (2014). Distinct neural activation patterns underlie economic decisions in high and low psychopathy scorers. *Social Cognitive and Affective Neuroscience, 9*(8), 1099–1107. https://doi.org/10.1093/scan/nst093

Vitacco, M. J., Neumann, C. S., & Jackson, R. L. (2005). Testing a Four-Factor Model of Psychopathy and Its Association with Ethnicity, Gender, Intelligence, and Violence. *Journal of Consulting and Clinical Psychology*, *73*(3), 466–476.

Vize, C. E., & Lynam, D. R. (2020). Merging Structural and Process-related Approaches to the Study of Agreeableness: A Preregistered Replication and Extension Attempt. *European Journal of Personality*. https://doi.org/10.1002/per.2241

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063–1070. https://doi.org/10.1037/0022-3514.54.6.1063

Wilhelm, O., Künecke, J., Mokros, A., & Olderbak, S. (2018). Facial responsiveness of psychopaths to the emotional expressions of others. *PLoS ONE*, *13*(1).

Wright, A.G.C. (2919). Antagonism from the perspective of interpersonal theory. In J.A. Miller & D.R. Lynam (Eds.) *The Handbook of Antagonism: Conceptualizations, Assessment, Consequences, and Treatment of the Low End of Agreeableness* (pp. 155-170). Academic Press.

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Supplementary Material

Power Analyses
Power analyses for multilevel models

In addition to our preregistered analyses, we instigated between person individual references to account for the multilevel nature of our data. We examined post-hoc the power our sample size yielded for these analyses. We collected data for 30 pictures from 120 participants (a total of 3600 observations nested within participants). Multilevel models examined main effects of image type, psychopathy, as well as their two-way interaction. We assumed modest effect sizes of predictors on zygomaticus activity (antagonism image type main effect: -0.01, psychopathy main effect = .00, antagonism image type x psychopathy interaction effect = .01). We compared this hypothesized model with a hypothesized model where only image type main effects would be present, via power analyses with 1000 Monte Carlo simulations. These power analyses suggested that our sample size yielded sufficient power (i.e., 100%, alpha = .05) to detect significant psychopathy main effects and image type x psychopathy interaction effects.

fEMG Assessments: methodological procedure and data pre-processing

We placed two electrodes to the corresponding muscle sites, on the left side of the face (Fridlund & Cacioppo, 1986), and one forehead electrode as reference. Before placement, participants' skin was cleaned using alcohol pads, then the Ag/AgCl electrodes (2mm diameter contact area) were placed, 15mm from one another. All pictures appeared at the center of a computer screen (40cm x 26cm) approximately 80 centimeters in front of the participants.

EMG activity was recorded at a sampling rate of 2000 Hz via a Biopac MP150 data acquisition unit. Signals were filtered online with a 10 Hz highpass filter, and a 500Hz lowpass filter. Recorded signals were also filtered offline with a 30 Hz – 500 Hz bandpass filter to remove movement artifacts and prevent aliasing, and with a 50 Hz notch filter to remove power line interference (van Boxtel, 2010). Filtered signals were rectified and aggregated across each full second following the presentations of the stimulus.

First, we computed zygomaticus and corrugator muscular responses correcting for their corresponding baseline responses (the average muscle reactivity when viewing the relaxation pictures). Second, following a paradigm from previous research (e.g., Ball & Scurr, 2013), we computed the proportion of the baseline-corrected EMG responses to the maximal response (i.e., the maximal responses during the course of the entire recording). This two-step normalization process was done to remove the influence of confounding factors, such as thickness of skin, on EMG records.

Table S1

Means, standard deviations, and correlations with confidence intervals, including psychopathy subscales

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. TriPM_tot	57.83	16.67	1												
2. Boldness	28.34	8.53	.63** [.51, .73]												
3. Meanness	12.18	7.50	.77** [.69, .84]	.29** [.12, .45]											
4. Disinhibition	17.32	8.52	.65** [.53, .74]	-.03 [-.21, .15]	.34** [.17, .49]										
5. SRP-SF_tot	1.77	0.50	.67** [.56, .76]	.29** [.12, .45]	.60** [.47, .70]	.49** [.34, .61]									
6. Interpersonal	1.94	0.72	.51** [.37, .63]	.21* [.04, .38]	.51** [.37, .64]	.34** [.17, .49]	.85** [.80, .90]								
7. Affective	1.74	0.59	.52** [.38, .64]	.22* [.04, .39]	.63** [.51, .73]	.24** [.07, .41]	.83** [.77, .88]	.72** [.61, .79]							
8. Lifestyle	2.15	0.70	.66** [.55, .75]	.32** [.15, .48]	.48** [.33, .61]	.55** [.41, .67]	.83** [.76, .88]	.56** [.42, .67]	.57** [.44, .68]						
9. Antisocial	1.33	0.49	.45** [.30, .59]	.18* [.00, .35]	.31** [.14, .47]	.43** [.28, .57]	.71** [.61, .79]	.44** [.29, .58]	.41** [.25, .55]	.52** [.37, .64]					
10. UMS_AFF	3.77	0.75	.05 [-.14, .22]	.21* [.03, .37]	-.11 [-.28, .07]	-.02 [-.20, .16]	-.03 [-.21, .15]	-.07 [-.25, .11]	-.06 [-.24, .12]	.01 [-.17, .19]	.02 [-.16, .20]				
11. UMS_INT	4.19	0.73	-.25** [-.41, -.08]	.09 [-.09, .27]	-.35** [-.50, -.18]	-.27** [-.43, -.10]	-.17 [-.34, .01]	-.11 [-.28, .07]	-.13 [-.30, .05]	-.15 [-.32, .03]	-.17 [-.34, .01]	.31** [.14, .46]			
12. AFF-Valence	0.01	1.00	-.13 [-.30, .05]	.03 [-.15, .21]	-.24** [-.40, -.07]	-.08 [-.25, .10]	-.15 [-.32, .03]	-.13 [-.30, .05]	-.19* [-.36, -.01]	-.04 [-.22, .14]	-.13 [-.30, .05]	.24** [.07, .40]	.24** [.06, .40]		
13. ANT-Valence	0.00	1.01	.09 [-.09, .26]	.16 [-.01, .33]	.08 [-.10, .26]	-.06 [-.24, .12]	.08 [-.10, .25]	.05 [-.13, .23]	.15 [-.03, .32]	.09 [-.09, .27]	-.05 [-.23, .13]	.10 [-.08, .27]	.07 [-.11, .24]	.04 [-.13, .22]	

Continue

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Continued

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
14. AFF-Corr	0.01	0.09	.02 [-.16, .20]	-.01 [-.19, .17]	-.07 [-.24, .11]	.12 [-.06, .30]	-.08 [-.25, .11]	-.09 [-.26, .10]	-.10 [-.27, .09]	-.01 [-.19, .17]	-.06 [-.23, .12]	.08 [-.11, .25]	-.03 [-.21, .15]	.04 [-.13, .22]	-.02 [-.19, .16]					
15. ANT-Corr	0.01	0.09	-.02 [-.20, .16]	-.05 [-.23, .13]	-.12 [-.29, .07]	.11 [-.07, .29]	-.09 [-.26, .09]	-.06 [-.24, .12]	-.12 [-.29, .06]	-.06 [-.23, .12]	-.05 [-.22, .13]	.05 [-.14, .22]	-.01 [-.19, .17]	.06 [-.12, .23]	-.05 [-.22, .13]	.96** [.95, .97]				
16. AFF-Zygo	-0.04	0.12	.05 [-.13, .23]	.03 [-.15, .21]	.10 [-.08, .28]	-.02 [-.20, .16]	.11 [-.07, .28]	.02 [-.16, .20]	.16 [-.02, .33]	.14 [-.04, .31]	.05 [-.13, .23]	.04 [-.14, .22]	-.02 [-.20, .16]	.00 [-.17, .18]	.13 [-.04, .30]	.14 [-.04, .31]	.08 [-.09, .26]			
17. ANT-Zygo	-0.05	0.12	.13 [-.06, .30]	.09 [-.09, .27]	.16 [-.02, .33]	.01 [-.17, .19]	.17 [-.01, .34]	.06 [-.12, .23]	.23* [.05, .39]	.18 [-.00, .35]	.11 [-.07, .28]	.05 [-.13, .23]	-.02 [-.20, .16]	-.12 [-.29, .05]	.18* [.01, .35]	.07 [-.11, .24]	.00 [-.18, .18]	.93** [.90, .95]		
18. Undiscounted Value	9.94	19.81	-.20* [-.37, -.02]	-.13 [-.30, .06]	-.17 [-.34, .01]	-.11 [-.29, .07]	-.16 [-.33, .02]	-.09 [-.27, .09]	-.08 [-.25, .10]	-.19* [-.36, -.01]	-.15 [-.32, .03]	-.04 [-.22, .14]	.15 [-.03, .33]	.03 [-.15, .20]	-.12 [-.29, .05]	.09 [-.09, .26]	.16 [-.01, .33]	-.08 [-.25, .10]	-.08 [-.25, .10]	
19. Discounting Rate	0.09	0.17	-.06 [-.24, .12]	-.08 [-.25, .10]	.01 [-.17, .19]	-.05 [-.23, .13]	.01 [-.17, .19]	.08 [-.10, .26]	.06 [-.12, .24]	-.02 [-.20, .16]	-.12 [-.29, .06]	.07 [-.11, .25]	.08 [-.10, .25]	.03 [-.15, .20]	.02 [-.16, .20]	.20* [.03, .37]	.26** [.09, .42]	.09 [-.09, .26]	.06 [-.12, .23]	.68** [.57, .76]

Note. AFF-Valence: self-rated emotional valence towards affiliative pictures; ANT-Valence: self-rated emotional valence towards antagonistic pictures. AFF-Corr: average corrugator muscle activity (per person) towards affiliative pictures; ANT-Corr: average corrugator muscle activity (per person) towards antagonistic pictures; AFF-Zygo: average zygomaticus muscle activity (per person) towards affiliative pictures; ANT-Zygo average zygomaticus muscle activity (per person) towards antagonistic pictures; Undiscounted Value: V hypothetical monetary amount shared. Discounting Rate: s social discounting rate
For the EMG measurements, the responses were averaged across per participant and partialed out the baseline responses (i.e., the EMG activities of the certain M and SD are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates p < .05. ** indicates p < .01.

Table S2
The effects of the types of the stimuli and the sub-scales of TriPM on participants' EMG responses

Zygomaticus

	Disinhibition			Meanness			Boldness		
Random effects	**Variance**	**S.D.**		**Variance**	**S.D.**		**Variance**	**S.D.**	
Subject	.013	.12		.013	.11		.013	.12	
Fixed effects	**Estimate (S.E.)**	**Sig.**		**Estimate (S.E.)**	**Sig.**		**Estimate (S.E.)**	**Sig.**	
Antagonistic (v.s. Affiliative)	-.018(.0077)	.02		-.020(.0065)	**<.01**		-.035(.012)	**<.01**	
Disinhibition / Meanness / Boldness	.00032(.0013)	.80		.0016(.0014)	.26		-.00038(.0013)	.76	
Antagonistic * Disinhibition / Meanness / Boldness	-.00051(.00040)	.20		.00087(.00045)	.056		.00091(.00040)	**.02**	

Corrugator

	Disinhibition			Meanness			Boldness		
Random effects	**Variance**	**S.D.**		**Variance**	**S.D.**		**Variance**	**S.D.**	
Subject	.008	.09		.008	.09		.008	.09	
Fixed effects	**Estimate (S.E.)**	**Sig.**		**Estimate (S.E.)**	**Sig.**		**Estimate (S.E.)**	**Sig.**	
Antagonistic (v.s. Affiliative)	.00435(.00553)	.432		.01132(.00465)	**.015**		.01489(.00847)	.079	
Disinhibition / Meanness / Boldness	.00132(.00100)	.190		-.00082(.00114)	.471		-.00015(.00101)	.878	
Antagonistic * Disinhibition / Meanness / Boldness	-.00004(.00029)	.881		-.00063(.00033)	.052		-.00040(.00029)	.165	

Note. Antagonistic (v.s. Affiliative) is a dummy variable indicating the type of the stimuli (0 = Affiliative stimuli; 1 = antagonistic stimuli). The numbers in bold indicates significant effects (i.e. $p < .05$).

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Table S3
The effects of the types of the stimuli and the sub-scales of SRP-SF on participants' EMG responses

Zygomaticus

	Affective		Interpersonal		Lifestyle		Antisocial	
Random effects	**Variance**	**S.D.**	**Variance**	**S.D.**	**Variance**	**S.D.**	**Variance**	**S.D.**
Subject	.013	.11	.013	.09	.013	.11	.013	.12
Fixed effects	**Estimate (S.E.)**	**Sig.**	**Estimate (S.E.)**	**Sig.**	**Estimate (S.E.)**	**Sig.**	**Estimate (S.E.)**	**Sig.**
Antagonistic (v.s. Affiliative)	-.03325(.01056)	**.002**	-.02067(.00982)	**.035**	-.02400(.01104)	**.030**	-.02805(.00981)	**.004**
Affective / Interpersonal / Lifestyle / Antisocial	.03122 (.01797)	.085	.00335(.01514)	.826	.02351(.01536)	.129	.01216(.02200)	.581
Antagonistic * (sub-scale)	.01391(.00574)	**.015**	.00601(.00476)	.206	.00696(.00488)	.154	.01432(.00692)	**.039**

Corrugator

	Affective		Interpersonal		Lifestyle		Antisocial	
Random effects	**Variance**	**S.D.**	**Variance**	**S.D.**	**Variance**	**S.D.**	**Variance**	**S.D.**
Subject	.01	.09	.01	.09	.01	.09	.01	.09
Fixed effects	**Estimate (S.E.)**	**Sig.**	**Estimate (S.E.)**	**Sig.**	**Estimate (S.E.)**	**Sig.**	**Estimate (S.E.)**	**Sig.**
Antagonistic (v.s. Affiliative)	.01082(.00757)	.153	-.00135(.00704)	.848	.01733(.00791)	**.029**	.00144(.00704)	.837
Affective / Interpersonal / Lifestyle / Antisocial	-.01464(.01439)	.311	-.01090(.01195)	.363	-.00141(.01230)	.909	-.01042(.01743)	.551
Antagonistic * (sub-scale)	-.00414(.00412)	.315	.00256(.00341)	.453	-.00638(.00350)	.068	.00163(.00497)	.743

Note. Antagonistic (v.s. Affiliative) is a dummy variable indicating the type of the stimuli (0 = Affiliative stimuli; 1 = antagonistic stimuli). The numbers in bold indicates significant effects (i.e. $p < .05$).

Table S4
The effects of the types of the stimuli and the sum-scores of self-reported psychopathic traits on participants' EMG responses (**with** control variables)

	Model 1: TriPM on corrugator muscle responses			Model 2: TriPM on zygomaticus muscle responses			Model 3: SRP-SF on corrugator muscle responses			Model 4: SRP-SF on zygomaticus muscle responses		
Random effects	Variance	S.D.		Variance	S.D.		Variance	S.D.		Variance	S.D.	
Subject	.01	.09		.01	.12		.01	.09		.00	.11	
Fixed effects	Estimate (S.E.)	Sig.		Estimate (S.E.)	Sig.		Estimate (S.E.)	Sig.		Estimate (S.E.)	Sig.	
Antagonistic (v.s. Affiliative)	.018(.0088)	**.045**		-.041(.012)	**<.01**		.0083(.0090)	.35		-.035(.012)	**<.01**	
TriPM / SRP-SF	.00031(.00060)	.79		-.00056(.00072)	.60		-.0073(.019)	.71		-.000086(.024)	1.0	
Antagonistic * TriPM / SRP-SF	-.00024(.00015)	.10		.00055(.00020)	**<.01**		-.0027(.0049)	.58		.015(.0068)	**.03**	
Age	-.0035(.0037)	.34		.0032(.0044)	.47		-.0032(.0037)	.39		.0031(.0045)	.50	
Gender	-.017(.021)	.47		.065(.026)	**.015**		-.010(.021)	.61		.058(.025)	**.025**	
Education	.0042(.0063)	.51		-.0087(.0077)	.26		-.0032(.0064)	.60		-.0083(.0079)	.29	
UMS_AFF	.010(.012)	.40		.0042(.015)	.78		.010(.012)	.39		.0039(.015)	.79	
UMS_INT	-.0067(.013)	.61		.00043(.016)	.98		-.0082(.013)	.53		.0022(.016)	.89	

Note. Antagonistic (v.s. Affiliative) is a dummy variable indicating the type of the stimuli (0 = Affiliative stimuli; 1 = antagonistic stimuli). The numbers in bold indicate significant effects (i.e. *p* < .05).

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References

Ball, N., & Scurr, J. (2013). Electromyography normalization methods for high-velocity muscle actions: review and recommendations. *Journal of Applied Biomechanics*, *29*(5), 600-608.

Fridlund, A. J., & Cacioppo, J. T. (1986). Guidelines for human electromyographic research.

Van Boxtel, A. (2010). Facial EMG as a tool for inferring affective states. In A. J. Spink, F. Grieco, O. Krips, L. Loijens, L. Noldus, & P. Zimmerman (Eds.), *Proceedings of Measuring Behavior 2010* (pp. 104-108). Wageningen: Noldus Information technology.

Cumming, G. (2014). The New Statistics: Why and How. *Psychological Science. 25*(1), 7-29.

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Chapter 4

Psychopathy and Motive Dispositions Towards Sadism

Abstract

Focusing on sadism, we extended findings on motive dispositions towards affiliation and antagonism in psychopathy. In a non-clinical sample (N=101) we employed a novel, multimethod design (self-reports and Facial Electromyography [fEMG]) to assess automatic affective reactions (indexing motive dispositions) to affiliative, antagonistic, and sadistic images. Individuals low in psychopathy, resembling universal human tendencies, reacted more positively (zygomaticus reactivity) to affiliation than to antagonism and sadism. However, these differences fell to almost half the size at high levels of psychopathy, wherein individuals reacted positively not only to affiliative and antagonistic stimuli (wherein harm can be ambiguously perceived) but also to sadistic, wherein harm is contextually clear. We provide preliminary evidence for sadistic motive dispositions in psychopathy. Based on the predictive value of motive dispositions for motive-congruent behavior, it is possible that individuals with psychopathic traits are more likely to engage in sadistic behaviors because they are dispositionally motivated to do so.

Key words: Psychopathy, Motivation, Electromyography, Dispositions, Sadism

Psychopathy and Motive Dispositions Towards Sadism

Psychopathic personality consists of a constellation of affective, interpersonal, lifestyle and antisocial features, among which prominent features are callousness, meanness, deceptiveness, manipulation, grandiosity, disinhibition and impulsivity (Hare & Neumann, 2008; Patrick, Fowles, & Krueger, 2009). Going beyond an exclusive focus on deficits that characterize psychopathy, recent advances proposed a research focus on the motivational correlates of the construct (i.e., motivation underlying behaviors, emotion regulation, goal endorsement; Glenn et al., 2017; Shane & Groat, 2018; Spantidaki Kyriazi et al., 2020). One of the latest methodologies in motivation and personality research introduce the assessments at the dispositional level (i.e., stable individual differences in propensities towards specific types of rewards) through physiological, implicit affective reactions to motive-relevant stimuli (Dufner et al., 2015). This methodology is based on theoretical perspectives positing that the affective core aspect of motive dispositions is reflected by the tendency to be drawn to (react hedonically) motive-relevant experiences (McClelland, 1987). Based on this premise, evidence has shown that this propensity can be measured through facial electromyography (fEMG; Dufner et al., 2015). With regard to psychopathy, only one study has investigated individual differences in motive dispositions towards affiliation and antagonism (Blinded for Review). Findings from this earlier study revealed differential motive dispositions towards affiliation and antagonism as a function of psychopathic traits. Individuals scoring higher (vs. lower) in psychopathy showed a more positive disposition toward antagonistic stimuli, likely suggestive of a stronger antagonistic motive.

In the current study, we sought to extend findings on motivational correlates of psychopathy by investigating motive dispositions towards sadism. Namely, we aimed to further examine hedonic investment in non-prosocial (i.e., antagonistic) experiences, by investigating the possibility that individuals with high levels of psychopathy might dispositionally derive pleasure from experiences where severe harm and/or pain is being caused to others. Specifically, we aimed to investigate whether psychopathy was associated with individual differences in motive dispositions towards sadistic stimuli, since in sadistic interactions, there is a clear representation of malevolent intent and the consequences on others are clearly deleterious (i.e., as opposed to the potential, yet not inevitable, harm in the case of antagonistic interactions).

Psychopathy and Sadism: Background

Sadism is commonly defined as a persistent and intentional pattern of cruel and degrading behavior that results in physical and psychological distress for the victim and pleasure for the actor (Baumeister & Campbell, 1999; O' Meara et al., 2011; Paulhus, 2014)[5]. There is a

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5   In the Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM-5), sadism is classified as a paraphilia under the diagnostic category Sexual Sadism Disorder, wherein sexual arousal and pleasure are experienced from the suffering of another individual (physical or psychological), through behavioral expressions and/or fantasies

conceptually proposed and clinically observed relationship between sadism and psychopathic personality, which is also empirically documented (e.g., Holt et al., 1999; James & Proulx, 2014). Conceptually, both constructs share the interpersonal aspect of causing harm to others. Furthermore, psychopathic traits have been related to the experience of contempt and spite, opening the possibility that these emotional experiences are concordant with antagonistic – or even sadistic – tendencies (Garofalo et al., 2019). Empirically, research on psychopathy and sadism has largely focused on (male) forensic samples and on sexual sadism rather than on sadism more broadly (for an overview, see O' Connell & Marcus, 2019). In these studies, sadistic traits were self-reported or rated by clinicians. Overall, psychopathic traits were positively associated with (mainly sexual) sadism in forensic samples (O' Connell & Marcus, 2019). Beyond sexual sadism, there is also some evidence of positive associations between trait psychopathy and trait sadism in non-clinical samples (e.g., Buckels et al., 2019; Buckels et al., 2013; March, 2019).

The experienced pleasure for the person who acts sadistically suggests a hedonic investment. A hedonic investment in motive-relevant experiences also lies within the affective core of motive dispositions, and suggests that the pleasure derived from motive-relevant experiences motivates individuals to act accordingly (e.g., the more someone enjoys affiliation, the more motivated they are to act in an affiliative manner; Dufner et al., 2015; McClelland, 1987). In sadism, the pleasure is subjectively experienced when causing harm or seeing someone in pain. This commonality between hedonic investment and subjective pleasure may, therefore, suggest a possible motivational foundation of sadism. Yet, in relation to psychopathy, sadism has typically been operationalized as trait sadism (e.g., O'Meara et al., 2011; Paulus & Jones, 2015), but not at the level of motive dispositions towards sadism. Thus, while there is evidence of positive associations between psychopathic traits and sadistic tendencies and behaviors, it is unclear whether psychopathic traits are also characterized by a motive disposition towards (i.e., dispositional hedonic investment in) sadism. In other words, even though there is a non-trivial overlap (i.e., shared variance) between psychopathy and sadism, it is yet unclear whether this overlap reflects a dispositional motivation towards inflicting pain to others (or others' suffering more generally) in psychopathic individuals. The present study focuses on how motive dispositions towards sadism are related to psychopathy. Thus, we are not targeting the subjective pleasure experienced by the sadistic individual per se, but the individual tendency to show immediate – beyond conscious control – hedonic reactions to the suffering of others, operationalized as spontaneous affective reactions measured through physiological assessment (i.e., fEMG), and its association with psychopathic traits. This knowledge would add to the current understanding of the destructive behavior of psychopathic individuals, often interpreted as stemming from an inability to refrain from

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(APA, 2013). In the current study, we do not examine sexual sadism, but the disposition to spontaneously being drawn to sadistic behaviors of cruelty (e.g., Dufner et al., 2015; O' Meara et al, 2011) beyond sexual interactions.

such destructive behavior, suggesting that it could, at least partly, stem from dispositional motivation to derive pleasure from it. In the following section, we describe in more detail how these motive dispositions can be assessed and we provide a brief overview of recent findings on psychopathy and motive dispositions that set the stage for the current investigation.

Motive Dispositions in Psychopathy

Motivational tendencies are learned or acquired orientations to particular natural stimuli in the environment (Atkinson, 1982). Motive disposition theory posits that the propensity to derive pleasure in motive-relevant experiences varies from person to person and can manifest outside of conscious awareness (McClelland, 1987). An important, recent advancement in personality research was the assessment of individual differences in motive dispositions through spontaneous affective reactions to motive-relevant stimuli, measured via fEMG (Dufner et al., 2015). According to this approach, positive affect is assessed via zygomaticus major muscle activity (indicative of smiling) and negative affect is assessed via corrugator supercilii activity (indicative of frowning) (e.g., Cacioppo et al.,1986). These physiological – beyond conscious awareness – responses can be assessed in the lab, during the viewing of motive-relevant visual cues. With regard to the affiliation motive, it has been found that positive affective contingencies (i.e., automatic affective reactions to affiliative motive-relevant stimuli) can incrementally validly predict, over and above self-reports, affiliative behavior in daily life, supporting the validity of this method to assess motive dispositions (Dufner et al., 2015). This methodology seems sensitive in capturing hedonic aspects of implicit motivation (Dufner et al., 2015) and could be a valuable tool in psychopathy motivation literature, bypassing constraints typically ascribed to self-report measures, like social desirability and response biases. The operationalization of motive dispositions as automatic affective reactions evident through fEMG reactivity, is also a recent addition to the use of fEMG in psychopathy research, wherein this methodology has mainly been employed to assess emotion recognition, mimicry or expression, and empathy (e.g., Harrison et al.,2010; Seibt et al., 2013; Sonnby-Borgströme et al., 2008; Weyers et al., 2009; Wilhem et al., 2018).

As introduced earlier, only one study to date has investigated affective contingencies towards affiliation and antagonism stimuli as indicators of motive dispositions in psychopathy, using fEMG in a non-clinical sample (Blinded for Review). In line with a universal human propensity towards affiliation, people are conceptually expected to react more positively to affiliative than to antagonistic cues (Baumeister & Leary, 1995). Accordingly, this previous study reported that, in general, participants reacted more positively to affiliation stimuli compared to antagonistic stimuli, and so did individuals with low levels of psychopathy. Importantly, though, individuals with higher levels of psychopathy automatically experienced antagonism as equally rewarding as affiliation, showing increased activity of the zygomaticus muscle (i.e., indicative of positive affective reaction). Notably, these associations did not emerge when investigating motivation on an overt and direct level, that is, by examining self-reported

motivation towards affiliation, which could have two important implications. First, this is in line with the theoretical assumption that motive dispositions operate at an implicit and indirect level that is not always accessible to conscious awareness (e.g., McClelland, 1987). Second, it suggests that motive dispositions and self-reported motivations are not always aligned and can have differential correlates, and that self-reported motivations may fail to capture some of the nuances of motive dispositions assessed via psychophysiological indices.

Based on accounts of motive dispositions as predictive of motive-congruent behavior (Dufner et al., 2015), the aforementioned findings suggested that psychopathic individuals' proclivity to non-prosocial behaviors could be related to the fact that they seem to experience them as equally rewarding as prosocial ones (as evident by an increased motivational disposition towards antagonism). At first glance, it may appear counterintuitive that psychopathic individuals have positive reactions towards affiliation. Yet, this pattern of findings was consistent with recent studies (e.g., Christian et al.,2019) on psychopathy and attachment, that underlined the importance of targeting motivation in social interactions and more specifically in affiliative experiences. In particular, Christian et al. (2019) showed that individuals higher in psychopathic traits do have and likely seek affiliative experiences (being with others, etc.), but their relationships are often conflictual and lack in bonding (in line with them enjoying antagonistic interactions).

In examining automatic affective reactions to antagonistic cues, that one conducted study conducted to date (Blinded for Review), tapped into the hedonic investment on the *potential* to cause harm and pain to others. This is because antagonistic cues depict competitive or quarrelsome interactions, wherein harm could be more ambiguously perceived (i.e., the outcome could be more or less harmful for the target-person). Building on the theoretical and clinical importance (further elaborated below) of identifying pathways that endorse motive relevant behaviors (Dufner et al., 2015; Denissen & Penke, 2008; Mischel & Shoda, 1995) we sought to extend findings on motive dispositions related to psychopathy (Blinded for Review) by zeroing in on sadism, wherein the harm to others is contextually clear. In relation to sadism, it would be plausible that sadistic tendencies associated with psychopathic traits might have a motivational underpinning on a dispositional level as well.

We propose that detecting motive dispositions towards sadism in relation to psychopathy could be clinically and conceptually meaningful. Individuals who automatically react more positively than others to affiliation cues, indicating an underlying motive disposition toward affiliation, are more motivated to seek contexts wherein they can have positive interactions with others (Dufner et al., 2015). In terms of clinical relevance to prevention and intervention planning, considering the detrimental societal impact of psychopathic traits, it is crucial to identify such motivational underpinnings that might, in turn, contribute to sadistic behaviors. Conceptually, this line of research would add to the growing literature on the motivational

correlates of psychopathy, which proposed broadening the focus from what might be *lacking* in psychopathic individuals (i.e., deficits) to what motivates them (i.e., propensities) (e.g., Garofalo & Neumann, 2018; Glenn et al., 2017; Groat & Shane, 2020; Shane & Groat, 2018; Spantidaki Kyriazi et al., 2020).

The present study

In attempting to extend findings on the motivational correlates of psychopathy, the current study investigated individual differences in sadistic motive dispositions. We presented participants in the lab with visual stimuli representing sadistic interactions: we used cruel and grief pictures to broaden the coverage of our stimuli to (1) interactions wherein someone harms others; and (2) stimuli where the harm has already been committed and the victim expresses grief. Both entail a potential trigger for the sadistic tendency to derive pleasure from the suffering of others. Simultaneously, we recorded participants' spontaneous facial reactions using fEMG, as a means to assess automatic positive (zygomaticus muscle activation) or automatic negative (corrugator muscle activation) affective reactivity. We compared fEMG reactivity towards sadistic cues with two other classes of motives previously investigated in relation to psychopathy – affiliation and antagonism – as a reference point. The latter was deemed particularly important because previous findings have shown that nuances of motive dispositions might be missed when examined in absolute rather than in relative terms (Blinded for Review). In other words, it is more informative to examine motive disposition comparing different classes of stimuli rather than looking at each class of stimulus individually. Based on these previous findings on affiliation and antagonism, we expected that on average, and in accordance to universal human tendencies, participants would react more positively towards affiliation cues than towards antagonism and sadism cues (1st Hypothesis). As a function of psychopathic traits, though, we expected to detect similarly positive (i.e., smiling) affective reactivity in response to affiliative and antagonistic stimuli for individuals scoring higher in psychopathy (evidenced by their spontaneous facial reactions in the zygomaticus muscle), in line with previous research (2nd Hypothesis). While there are no empirical findings on sadistic motive dispositions in psychopathy, building on the aforementioned literature, we hypothesized that individuals scoring higher in psychopathy would also experience some levels of pleasure (i.e., smiling) in viewing sadistic cues (3rd Hypothesis). In contrast, due to the inconsistent findings in previous research (Dufner et al., 2015; Blinded for Review) regarding the role of aversive automatic reactivity (i.e., corrugator activity), we did not formulate a-priori hypotheses in this regard. As an additional to the EMG assessments, direct measure of affective responsivity, we also asked participants to complete a self-report measure of affect, while re-watching the same three types of stimuli, and conducted robustness checks controlling for gender.

Method

Participants and Procedure

Our sample consisted of 101 undergraduate psychology students[6] (64% females, 25% males, 11% missing) of a Dutch university, following the International and Dutch bachelor's programs (45% Dutch, 26% German, 18% other nationality, 11% missing), aged 18 – 32 (M = 20.58, *SD* = 2.54). Of the 101 participants, 90 had both psychopathy and lab data. Power analyses with 1000 Monte Carlo simulations suggested that this sample yielded sufficient power to detect modest effect sizes (.01 to .04) of image type main effects, and of image type × psychopathy interaction effects in multilevel within-between-subjects analyses of muscle activity (power = 100%, alpha = .05). However, power was not adequate to detect modest effect sizes (*r*=.20) in between-subjects correlations (power = 48%, alpha = .05). Thus, the focal (multilevel) analyses based on which conclusions were drawn were sufficiently powered.

Study procedures were approved by the Ethics Review Board (protocol n. EC-2017.04) of the [blinded for review] university. Participants were recruited via an online call on the university research portal, providing all relevant information about the study goals and content. We conducted the assessments over two consecutive academic years, between 2018 and 2019. Self-report measures were completed online and in the lab. The fEMG assessments were also performed during the lab sessions. The experiment was monitored through a one-way mirror, connecting the testing- to the control-room and was carried out by an experimenter and trained research assistants. It was communicated to the participants that skin conductance would be assessed, to avoid any influence on their facial reactions. After the fEMG assessments, the pictures were viewed again and participants reported their affective responses toward them. Participation was reimbursed with course credit.

Measures
Psychopathic Traits
We used the total scores of two psychopathy measures to test the generalizability of our findings across different conceptualizations (Hare, 2003; Patrick et al., 2009), offering a broader assessment of the construct.

One measure of psychopathic traits was the *Self Report Psychopathy-Short Form* (SRP-SF) (Neumann & Hare, 2016). The short version of the scale consists of 29 items, scored on a 5-point Likert-scale (ranging from 1 = *strongly disagree*, to 5 = *strongly agree*). The items cover four facets (interpersonal, affective, lifestyle and antisocial) corresponding to Hare's (2003) Psychopathy Checklist-Revised (PCL-R) model. Additionally, psychopathic traits were assessed via the *Triarchic Psychopathy Measure* (TriPM; Patrick, 2010). The latter is a 58-

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6   55% of the current sample was included in a previous study (Blinded for Review).

item self-report scale, scored on a 4-point Likert-scale, (0 = *false* to 3 = *true*), covering three constructs: Boldness, Meanness and Disinhibition. For the current analyses the total scores used had good internal consistency coefficients, α = .91 for the SRP-SF and α = .88 for the TriPM. The correlation between SRP-SF and TriPM total scores was r= .63, p < .01.

fEMG Assessments

In order to indirectly test motive dispositions, we measured activity of the zygomaticus major and the corrugator supercilii muscles in response to the three aforementioned classes of motive-relevant stimuli. In the lab, two electrodes to the corresponding muscle sites were placed on the left side of the face (Fridlund & Cacioppo, 1986), and one forehead electrode as reference. Participants' skin was prepared using alcohol pads. Ag/AgCl electrodes (2mm diameter contact area) were then placed, and 15mm from one another. First, participants viewed for eight seconds two relaxation pictures (mountains and a lake), to obtain a stable baseline through the electrodes. We showed 24 pictures depicting sadistic contexts. The context of the presented interactions involved behaviors of cruelty that resulted in major pain and distress for the victims (12 cruelty pictures), as well as people in suffering and in grief (12 grief pictures). We compared affective reactivity to the sadistic pictures with reactivity to 15 affiliative pictures and 15 antagonistic pictures. As affiliative stimuli, pictures of prosocial, warm interactions between family members, friends, couples or colleagues were presented (see Dufner et al., 2015). As antagonistic stimuli, pictures of quarrelsome or competitive interactions were presented, as in people having disputes, fights or competing against each other (Blinded for Review). Every picture was preceded by a fixation cross (for 1000 ms) and appeared in randomized order for 4000 ms.

We recorded EMG activity using a Biopac MP150 data acquisition unit, at a sampling rate of 2000 Hz. We filtered signals online with a 10 Hz highpass filter, and a 500Hz lowpass filter. To remove movement artifacts and prevent aliasing we additionally filtered signals offline with a 30 Hz – 500 Hz bandpass filter, and to remove power line interference with a 50 Hz notch filter (van Boxtel, 2010). Then, signals were rectified and aggregated across each full second. According the paradigm of earlier studies (Dufner et al., 2015; Blinded for Review), we extracted and analyzed the muscular activity between 1001 ms – 4000 ms of stimulus appearance, and used a two-step approach to normalize our data and to eliminate confounding influences. Initially, we subtracted the average muscle activity corresponding to the baseline images from muscle activity during the motive-relevant images. We then computed the proportion of these baseline-corrected EMG responses to the maximal response during each experiment part (Ball & Scurr, 2013). We also tested the intra-class correlation (i.e., ICC) as indicator of reliability for the – multiple – EMG measurements (Dufner et al., 2015): zygomaticus activity (affiliation ICC = .48, a = .94; antagonism ICC = .53, a = .95; grief ICC = .67, a = .96; cruelty ICC = .77, a = .98) and for corrugator activity (affiliation ICC = .74, a = .98; antagonism ICC = .67, a = .97; grief ICC = .57, a = .95; cruelty ICC = .58, a = .95).

Self-reported Affective Reactions

Following the EMG assessments, participants viewed again the same set of pictures and reported on their subjective affective responses. We used the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). PANAS is a self-report measure, providing scores on positive affect and negative affect via 10 items each, on a scale of 1= *very slightly/not at all* to 5= *extremely*. Responses per image type were averaged across items separately for positive affect (affiliation: M = 2.88, SD = 0.70, a = .85; antagonism: M = 2.43, SD = 0.84, a = .91; grief: M = 1.98, SD = 0.59, a = .82; cruelty: M = 1.93, SD = 0.57, a = .79) and for negative affect (affiliation: M = 1.26, SD = 0.33, a = .71; antagonism: M = 1.49, SD = 0.49, a = .85; grief: M = 2.76, SD = 0.88, a = .88; cruelty: M = 2.91, SD = 0.84, a = .86).

Data Analytic Strategy

We preliminarily conducted correlation analyses to test bivariate associations between psychopathic traits and their hypothesized correlates. To investigate how psychopathy levels moderated differences in the affective reactions to diverse types of motive-relevant images, we ran a series of mixed effects models with the lme package in R (R Core Team, 2019). We computed separate models for each type of affective reaction index (zygomaticus activity, corrugator activity, positive affect, negative affect) and psychopathic traits measure (SRP-SF, TriPM). Dependent variables (zygomaticus activity, corrugator activity, positive affect, negative affect) were regressed: a) on image type (i.e., affiliation vs antagonism, grief, and cruelty; Level 1), b) on psychopathic traits (i.e., SRP-SF or TriPM, mean-centered; Level 2), and c) on the interaction between image type and psychopathic traits. Predictors were set as fixed effects. We set a random intercept per individual. Given the multicategorical nature of image type, regression results cannot provide a complete account of all significant fixed effect contrasts. We therefore also conducted a Type III ANOVA analysis on each model, to test the overall significance of fixed effects involving image type. When the ANOVA indicated a significant main effect of image, we compared differences in estimated marginal means per image type; when the ANOVA indicated a significant interaction effect, we decomposed it by comparing estimated marginal means of the dependent variable separately for low (M–1SD) and high (M + 1SD) levels of SRP-SF and TriPM. Finally, given that psychopathic trends tend to be more pronounced in men (e.g., Hare & Neumann, 2008), we examined the robustness of our findings by repeating analyses controlling for gender.

Results

Correlation Analyses

Results of correlation analyses are presented in Table 1. Of the psychopathy measures, SRP-SF was significantly positively associated with positive self-reported affect in response to images

Table 1

Means, Standard Deviations, and Correlations of Main Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. SRP-SF	1.68	0.52																	
2. TriPM	55.3	17.36	.63**																
3. Affiliation Pos PANAS	2.88	0.70	.05	-.03															
4. Antagonism Pos PANAS	2.43	0.84	.18	.07	.58**														
5. Grief Pos PANAS	1.98	0.59	.06	-.09	.50**	.30**													
6. Cruelty Pos PANAS	1.93	0.57	.27*	.07	.50**	.42**	.79**												
7. Affiliation NEG PANAS	1.26	0.33	.33**	.12	.35**	.31**	.27**	.24*											
8. Antagonism NEG PANAS	1.49	0.49	.20	.10	.40**	.30**	.29**	.34**	.40**										
9. Grief NEG PANAS	2.76	0.83	.07	.01	.49**	.26**	.52**	.45**	.27**	.41**									
10. Cruelty NEG PANAS	2.91	0.84	.00	-.05	.47**	.28**	.42**	.46**	.13	.40**	.86**								
11. Affiliation Zygomaticus	-0.02	0.09	.00	-.07	.04	.05	.01	.04	.00	.06	.04	.05							
12. Antagonism Zygomaticus	-0.04	0.09	.09	.05	-.06	.05	-.04	.02	.02	.02	-.02	-.01	.89**						
13. Grief Zygomaticus	-0.06	0.12	.16	.05	-.03	-.15	.10	.16	.11	-.03	.08	.07	.02	.15					
14. Cruelty Zygomaticus	-0.06	0.13	.16	.06	-.06	-.17	.08	.12	.10	-.03	.07	.04	.02	.14	.96**				
15. Affiliation Corrugator	-0.01	0.07	-.05	.02	-.04	.00	-.02	.02	-.10	.00	.03	.03	-.12	-.16	-.06	-.07			
16. Antagonism Corrugator	0.00	0.07	-.07	-.02	-.02	-.01	.02	.03	-.09	.01	.11	.09	-.07	-.13	-.05	-.06	.97**		
17. Grief Corrugator	0.03	0.07	-.06	-.08	.07	.05	.15	.13	-.09	-.19	.25*	.23*	.21*	.21*	.11	.09	.05	.19	
18. Cruelty Corrugator	0.03	0.08	-.12	-.12	.03	.02	.10	.07	-.09	-.21*	.21*	.19	.19	.20*	.07	.04	.11	.25*	.93**

Note. * $p < 0.05$ ** $p < 0.01$

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of sadism, as well as with negative self-reported affect in response to images of affiliation. All other associations involving psychopathic traits were not statistically significant.

Multilevel Analyses

Zygomaticus Activity Analyses

Results were similar between SRP-SF and TriPM (Table 2). In both models, there was a main effect of image type (SRP-SF model: $F(3, 4770) = 55.71$, $p < .001$; TriPM model: $F(3, 4770) = 55.50$, $p < .001$). Pairwise contrasts of estimated marginal means showed that, as expected, participants tended to display higher zygomaticus activity when viewing images of affiliation ($M = -0.02$, $SE = 0.01$), compared to when viewing images of antagonism ($M = -0.03$, $SE = 0.01$, contrast $p = .001$), and both sadism subtypes: grief ($M = -0.06$, $SE = 0.01$, contrast $p < .001$), or cruelty ($M = -0.07$, $SE = 0.01$, contrast $p < .001$). Furthermore, participants tended to display higher zygomaticus activity when viewing images of antagonism, compared to when viewing images of grief or cruelty, contrast $ps < .001$. However, there were no significant differences in participants' zygomaticus activity between responses to images of the two sadism subtypes, grief and cruelty, $p = .570$. In both models, the main effect of psychopathic traits was not statistically significant (SRP-SF: $F(1, 90) = 2.34$, $p = .133$; TriPM: $F(1, 90) = 0.13$, $p = .723$).

In both models, there was also a significant two-way interaction between image type and psychopathic traits (SRP-SF: $F(3, 4770) = 10.23$, $p < .001$; TriPM: $F(3, 4770) = 4.23$, $p = .005$). To probe the interaction in each model, we estimated marginal means of zygomaticus activity per image type, separately for low ($M–1SD$ of SRP-SF and TriPM) and high ($M + 1SD$ of SRP-SF and TriPM) levels of psychopathic traits (Table 3 and Figure 1).

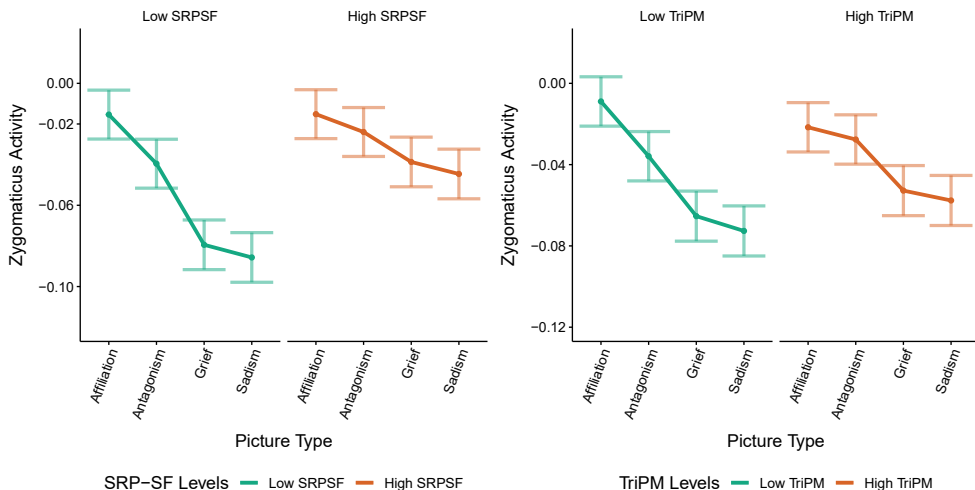

Figure 1. The effects of the types of the stimuli and the sum-scores of self-reported psychopathic traits (SRP-SF and TriPM) on participants' zygomaticus fEMG reactivity.

Table 2

Multilevel Models Predicting Muscle Activity from Psychopathy Levels

Model 1: SRP-SF on Zygomaticus Activity				Model 2: TriPM on Zygomaticus Activity				Model 3: SRP-SF on Corrugator Activity				Model 4: TriPM on Corrugator Activity			
Fixed Effects	Estimate	SE	T	Fixed Effects	Estimate	SE	t	Fixed Effects	Estimate	SE	t	Fixed Effects	Estimate	SE	t
(Intercept)	-0.02	0.01	-1.80	(Intercept)	-0.02	0.01	-1.78	(Intercept)	-0.01	0.01	-1.84	(Intercept)	-0.01	0.01	-1.83
Antagonism	-0.02	0.00	-3.92***	Antagonism	-0.02	0.00	-3.91***	Antagonism	0.01	0.00	2.64**	Antagonism	0.01	0.00	2.64**
Grief	-0.04	0.00	-9.82***	Grief	-0.04	0.00	-9.81***	Grief	0.04	0.00	15.46***	Grief	0.04	0.00	15.48***
Cruelty	-0.05	0.00	-11.19***	Cruelty	-0.05	0.00	-11.16***	Cruelty	0.05	0.00	16.62***	Cruelty	0.05	0.00	16.65***
SRP-SF	0.00	0.02	0.01	TriPM	0.00	0.00	-0.74	SRP-SF	-0.01	0.01	-0.61	TriPM	0.00	0.00	0.24
Antagonism*SRP-SF	0.01	0.01	1.83	Antagonism*TriPM	0.00	0.00	2.49*	Antagonism*SRP-SF	0.00	0.01	-0.60	Antagonism*TriPM	0.00	0.00	-1.04
Grief*SRP-SF	0.04	0.01	4.54***	Grief*TriPM	0.00	0.00	2.83**	Grief*SRP-SF	0.00	0.01	-0.07	Grief*TriPM	-0.00	0.00	-2.42*
Cruelty*SRP-SF	0.04	0.01	4.57***	Cruelty*TriPM	0.00	0.00	3.10**	Cruelty*SRP-SF	-0.01	0.01	-1.68	Cruelty*TriPM	-0.00	0.00	-3.65***
Random Effects	Variance		SD	Random Effects	Variance		SD	Random Effects	Variance		SD	Random Effects	Variance		SD
Subject	0.01		0.07	Subject	0.01		0.07	Subject	<0.01		0.05	Subject	<0.01		0.05

Note. *$p < 0.05$ ** $p < 0.01$ *** $p < 0.001$. Dummy coded with Affiliation as the reference image type.

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Table 3

Estimated Marginal Means of Muscle Activity for Lower (Above the Horizontal) and Higher (Below the Horizontal) Levels of Psychopathic Traits

		Model 1: SRP-SF on Zygomaticus Activity						Model 2: TriPM on Zygomaticus Activity						Model 3: SRP-SF on Corrugator Activity						Model 4: TriPM on Corrugator Activity					
Image Type	SRP-SF Levels	M	SE	df	Lower. CL	Upper. CL	TriPM Levels	M	SE	df	Lower. CL	Upper. CL	SRP-SF Levels	M	SE	df	Lower. CL	Upper. CL	TriPM Levels	M	SE	df	Lower. CL	Upper. CL
Affiliation	Low SRP-SF	-0.02^a	0.01	111.13	-0.04	0.01	Low TriPM	-0.01^a	0.01	105.53	-0.03	0.02	Low SRP-SF	-0.01^a	0.01	102.21	-0.02	0.01	Low TriPM	-0.01^a	0.01	102.09	-0.03	0.00
Antagonism		-0.04^b	0.01	111.13	-0.06	-0.02		-0.04^b	0.01	105.53	-0.06	-0.01		0.00^b	0.01	102.21	-0.02	0.02		0.00^b	0.01	102.09	-0.02	0.01
Grief		-0.08^c	0.01	118.14	-0.10	-0.06		-0.07^c	0.01	111.97	-0.09	-0.04		0.04^c	0.01	107.37	0.02	0.05		0.04^c	0.01	107.2	0.02	0.06
Cruelty		-0.09^c	0.01	118.14	-0.11	-0.06		-0.07^c	0.01	111.97	-0.10	-0.05		0.05^c	0.01	107.37	0.03	0.06		0.05^c	0.01	107.2	0.03	0.06
Affiliation	High SRP-SF	-0.02^a	0.01	111.13	-0.04	0.01	High TriPM	-0.02^w	0.01	105.53	-0.05	0.00	High SRP-SF	-0.01^a	0.01	102.21	-0.03	0.00	High TriPM	-0.01^w	0.01	102.09	-0.03	0.01
Antagonism		-0.02^{wx}	0.01	111.13	-0.05	0.00		-0.03^w	0.01	105.53	-0.05	0.00		-0.01^b	0.01	102.21	-0.03	0.01		-0.01^w	0.01	102.09	-0.02	0.01
Grief		-0.04^y	0.01	118.14	-0.06	-0.01		-0.05^x	0.01	111.97	-0.08	-0.03		0.03^c	0.01	107.37	0.01	0.05		0.03^x	0.01	107.2	0.01	0.04
Cruelty		-0.04^y	0.01	118.14	-0.07	-0.02		-0.06^c	0.01	111.97	-0.08	-0.03		0.03^c	0.01	107.37	0.01	0.05		0.03^x	0.01	107.2	0.01	0.04

Note. Estimated marginal means sharing the same superscript are not significantly different from each other (Tukey's HSD, $p < .01$).

Pairwise contrasts showed that individuals with low levels of psychopathic traits (*M* -1*SD* of SRP-SF and TriPM) tended to display significantly higher zygomaticus activity when viewing images of affiliation than when viewing images of antagonism, grief, and cruelty, *ps* < .001. Furthermore, they also tended to display significantly higher zygomaticus activity when viewing images of antagonism compared to when viewing images of grief and cruelty, *ps* <.001, whereas they displayed no differences in zygomaticus activity when viewing images of grief compared to when viewing images of cruelty, *ps* ≥ .693.

However, these differences were less pronounced for individuals with high levels of psychopathic traits (*M* + 1*SD* of SRP-SF and TriPM). Individuals with high levels of psychopathic traits tended to also display significantly higher zygomaticus activity when viewing images of affiliation than when viewing images of grief and cruelty, *ps* ≤ .001, but not when viewing images of antagonism, *ps* ≥ .452. Individuals with high levels of psychopathic traits exhibited higher zygomaticus activity when viewing images of antagonism than when viewing images of sadism *ps* ≤ .006. Individuals with high levels of SRP-SF exhibited no differences in zygomaticus activity between viewing images of antagonism and of grief, *p* = .090, but those with high levels of TriPM did, *p* < .001. Finally, individuals with high levels of psychopathic traits did not display significant differences between viewing images of grief and of cruelty, *ps* ≥ .811.

Overall, this pattern of findings suggests that individuals with high levels of psychopathic traits tended to display significantly smaller differences in zygomaticus activity (sometimes, as high as half the size) across picture types than individuals with low levels of psychopathy.

Corrugator Activity Analyses
Results partly differed between SRP-SF and TriPM (Table 2). The results of the SRP-SF model showed a significant main effect of image type, *F*(3, 4764) = 148.69, *p* < .001. Pairwise contrasts of estimated marginal means across image types showed that, compared to when viewing images of affiliation (*M* = -0.01, SE = 0.01), participants tended to display higher corrugator activity when viewing images of antagonism (*M* > -0.01, *SE* = 0.01, contrast *p* = .042), grief (*M* = 0.33, *SE* = 0.01), and cruelty (*M* = 0.37, *SE* = 0.01, contrast *p* < .001). Compared to viewing images of antagonism, participants tended to display higher corrugator activity when viewing images of grief (contrast *p* < .001) and cruelty (contrast *p* < .001). Participants showed no differences in corrugator activity between grief and cruelty, contrast *p* = 0.683. Neither the main effect of SRP-SF, *F*(1, 88) = 0.85, *p* = .359, nor the interaction between image type and SRP-SF, *F*(3, 4764) = 1.13, *p* = .334, were statistically significant. For reasons of symmetrical plotting, we nevertheless computed estimated marginal means for individuals with low (*M* -1SD) and high (*M* +1*SD*) levels of SRP-SF (Table 3 and Figure 2).

Results from analyses with the TriPM showed a main effect of image type, *F*(3, 4764) = 149.07, *p* < .001, with main effects identical to those described above. The main effect of psychopathic
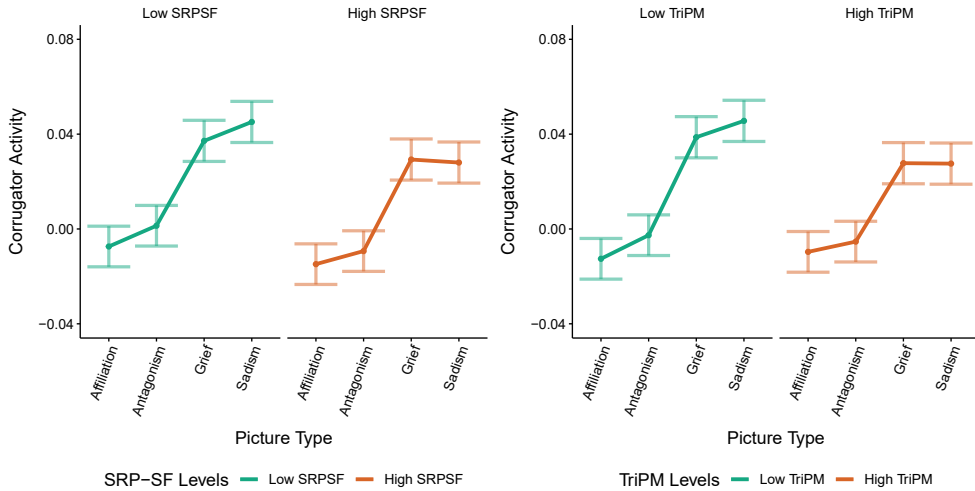
Figure 2. The effects of the types of the stimuli and the sum-scores of self-reported psychopathic traits (SRP-SF and TriPM) on participants' corrugator fEMG reactivity.

traits was not statistically significant, $F(1, 88) = 0.38$, $p = .540$. There was, however, a significant two-way interaction between image type and psychopathic traits, $F(3, 4764) = 4.14$, $p = .002$.

To probe the interaction between image type and TriPM levels, we estimated marginal means of corrugator activity per image type, separately for low (-1SD of TriPM) and high levels (+1SD) of TriPM (Table 3 and Figure 2). Pairwise contrasts showed that individuals with low levels (-1SD) of TriPM tended to display significantly lower corrugator activity when viewing images of affiliation than when viewing images of antagonism, grief, and cruelty, $ps < .001$. Furthermore, they also tended to display significantly lower corrugator activity when viewing images of antagonism compared to when viewing images of grief and cruelty, $ps < .001$, whereas they displayed no differences in corrugator activity when viewing images of grief compared to when viewing images of cruelty, $p = .371$.

However, these differences were less pronounced for individuals with high levels of TriPM (+1SD). Individuals with high levels of TriPM tended to also display significantly lower corrugator activity when viewing images of affiliation than when viewing images of grief and cruelty, $ps < .001$, but not when viewing images of antagonism, $p = .670$. Individuals with high levels of TriPM also tended to display significantly lower corrugator activity when viewing images of antagonism compared to when viewing images of grief and cruelty, $ps < .001$. Finally, they did not display significant differences when viewing images of grief and cruelty, $p = 1.00$.

Overall, this pattern of findings suggests that individuals with high levels of TriPM tended to display significantly smaller differences in corrugator activity across picture types than individuals with low levels of TriPM, and no differences in corrugator activity between affiliation and antagonism.

Self-reported Positive Affect

Results were similar between SRP-SF and TriPM (Table 4). In both models, there was a main effect of image type (SRP-SF model: $F(3, 270) = 71.66$, $p < .001$; TriPM model: $F(3, 270) = 71.03$, $p < .001$). Pairwise contrasts of estimated marginal means showed that participants reported significantly higher positive affect when viewing images of affiliation ($M = 2.89$, $SE = 0.07$) compared to when viewing images of antagonism ($M = 2.43$, $SE = 0.07$, contrast $p < .001$), grief ($M = 2.00$, $SE = 0.07$, contrast $p < .001$), and cruelty ($M = 1.95$, $SE = 0.07$, contrast $p < .001$). Furthermore, participants also reported significantly higher positive affect when viewing images of antagonism than when viewing images of grief and cruelty, contrast $ps < .001$. However, there were no significant differences in participants' reported positive affect between images of grief and cruelty, $p = .866$. In both models, there was neither a statistically significant effect of psychopathic traits (SRP-SF: $F(1, 90) = 2.94$, $p = .090$; TriPM: $F(1, 90) = 0.11$, $p = .914$), nor a statistically significant two-way interaction between image type and psychopathic traits (SRP-SF: $F(3, 270) = 1.88$, $p = .134$; TriPM: $F(3, 270) = 1.07$, $p = .364$) (largely in line with correlation findings). Taken together, these results directly replicate image type main effects on zygomaticus activity, showing that reported positive affect was highest in images of affiliation, then of antagonism, and then of grief and cruelty.

Self-reported Negative Affect

Results were similar between SRP-SF and TriPM (Table 4). In both models, there was a main effect of image type (SRP-SF model: $F(3, 270) = 263.61$, $p < .001$; TriPM model: $F(3, 270) = 262.91$, $p < .001$). Pairwise contrasts of estimated marginal means showed that participants reported significantly lower negative affect when viewing images of affiliation ($M = 1.26$, $SE = 0.07$) compared to when viewing images of antagonism ($M = 1.48$, $SE = 0.07$, contrast $p = .021$), grief ($M = 2.78$, $SE = 0.07$, contrast $p < .001$), and cruelty ($M = 2.91$, $SE = 0.07$, contrast $p < .001$). Additionally, participants reported significantly lower negative affect when viewing images of antagonism than when viewing images of grief and cruelty, contrast $ps < .001$. Nevertheless, there were no significant differences in participants' reported negative affect between images of grief and cruelty, $p = .263$. In both models, there was neither a statistically significant effect of psychopathic traits (SRP-SF: $F(1, 90) = 1.55$, $p = .792$; TriPM: $F(1, 90) = 0.07$, $p = .594$), nor a statistically significant two-way interaction between image type and psychopathic traits (SRP-SF: $F(3, 270) = 0.87$, $p = .455$; TriPM: $F(3, 270) = 0.63$, $p = .594$) (largely in line with correlation findings, as in positive self-reported affect). Taken together, these results directly replicate image type main effects on corrugator activity, showing that

Table 4

Multilevel Models Predicting Self-Reported Affect from Psychopathy Levels

	Model 1: SRP-SF on Positive Affect				Model 2: TriPM on Positive Affect				Model 3: SRP-SF on Negative Affect				Model 4: TriPM on Negative Affect			
Fixed Effects	Estimate	SE	T	Fixed Effects	Estimate	SE	t	Fixed Effects	Estimate	SE	t	Fixed Effects	Estimate	SE	t
(Intercept)	2.89	0.07	40.53***	(Intercept)	2.89	0.07	40.07***	(Intercept)	1.26	0.07	18.20***	(Intercept)	1.26	0.07	18.11***
Antagonism	-0.46	0.07	-6.28***	Antagonism	-0.46	0.07	-6.25***	Antagonism	0.22	0.07	2.92***	Antagonism	0.22	0.07	2.92***
Grief	-0.89	0.07	-12.10***	Grief	-0.89	0.07	-12.04***	Grief	1.51	0.07	20.27***	Grief	1.51	0.07	20.24***
Cruelty	-0.95	0.07	-12.88***	Cruelty	-0.95	0.07	-12.83***	Cruelty	1.65	0.07	22.12***	Cruelty	1.65	0.07	22.09***
SRP-SF	0.06	0.14	0.44	TriPM	<0.01	<0.01	-0.28	SRP-SF	0.21	0.13	1.57	TriPM	<0.01	<0.01	0.56
Antagonism* SRP-SF	0.24	0.14	1.69	Antagonism* TriPM	<0.01	<0.01	1.05	Antagonism* SRP-SF	-0.02	0.14	-0.16	Antagonism* TriPM	<0.01	<0.01	0.18
Grief*SRP-SF	0.01	0.14	0.05	Grief*TriPM	<0.01	<0.01	-0.50	Grief*SRP-SF	-0.11	0.14	-0.73	Grief*TriPM	<0.01	<0.01	-0.43
Cruelty* SRP-SF	0.24	0.14	1.71	Cruelty* TriPM	<0.01	<0.01	0.86	Cruelty* SRP-SF	-0.21	0.14	-1.46	Cruelty* TriPM	<0.01	<0.01	-1.09
Random Effects	Variance		SD	Random Effects	Variance		SD	Random Effects	Variance		SD	Random Effects	Variance		SD
Subject	0.22		0.46	Subject	0.22		0.47	Subject	0.18		0.43	Subject	0.19		0.43

Note. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$. Dummy coded with Affiliation as the reference image type.

reported negative affect was highest in response to images of cruelty and grief, then of antagonism, and then of affiliation.

Robustness Analyses

To test the robustness of our findings, we repeated all full model analyses controlling for the effect of gender and compared these models with the models of main analyses (Tables S1 & S2, Supplement). The pattern and statistical significance of existing findings remained unaltered for all models and, in the case of self-reported negative affect, became more nuanced, with female gender, SRP-SF and TriPM significantly predicting relatively higher overall self-reported negative affect. Robustness analyses thus largely replicated findings from the main analyses.

Discussion

Through a multimethod design that combined self-reported and physiologically indexed affective reactions to different classes of motive-relevant stimuli, we aimed to extend findings on the motivational correlates of psychopathy, focusing on motive dispositions towards sadism. We sought to delve deeper into the previously reported hedonic investment on antagonistic experiences assessed at the psychophysiological level (Blinded for Review), by investigating physiological reactions to sadistic experiences, wherein the malicious intention and the deleterious consequences are contextually clear (as opposed to antagonistic interactions where the harm may be more ambiguously perceived). We thus tested the idea that individuals with high levels of psychopathy might be dispositionally drawn to experiences where severe harm and/or pain is caused to others, keeping their physiological reactions to affiliation and antagonism as a reference point.

Correlational analysis captured a significant positive association between SRP-SF and positive self-reported affect in response to images of sadism, as well as with negative self-reported affect in response to images of affiliation. Multilevel analyses, however provided a richer picture of the relations of the sadistic motive dispositions associated with psychopathic traits.

Multilevel analyses examined dispositions towards each class of motive as *relative* to each other rather than in *absolute* terms. Overall, in accordance with universal human tendencies, participants reacted more positively towards affiliation cues than towards antagonism and sadism (both cruelty and grief subtypes) cues, corroborating our first hypothesis. This significantly increased enjoyment (evident through increased zygomaticus activity) aligns well with theories (e.g., Baumeister & Leary, 1995), as well as with prior empirical findings (Dufner et al., 2015; Blinded for Review) on the dispositional, pleasant, subjective experience of affiliative interactions. Furthermore, zygomaticus activation was greater for antagonistic

cues, compared to both sadism subtypes (cruelty and grief). The latter speaks to the value of analyzing and approaching the motive disposition investigation in terms of (within persons) relative differences, comparing the relative pleasantness of cues from different classes of motives.

Importantly, these analyses revealed intriguing differences as a function of psychopathic traits. Indeed, we detected differences in positive affective automatic reactions as a function of high and low levels of psychopathy (2nd and 3rd Hypothesis). More specifically, individuals at lower levels of psychopathy – also in accordance with universal human tendencies – tended to automatically be drawn and enjoy affiliation (evident through increased zygomaticus activation) more so than antagonism. However, as hypothesized, these differences were much less pronounced at high levels of psychopathy. This is in line with previous empirical findings on individual differences in motive dispositions in psychopathy (Blinded for Review), and with empirical evidence on individual differences in motive dispositions towards affiliation (Dufner et al., 2015), suggesting that affiliation is more endorsed by those who spontaneously enjoy it more (in this study, individuals at the low levels of psychopathy).

Taken together, this suggests that individuals high in psychopathy tend to experience affiliation and antagonism as equally enjoyable, and are thus more likely to endorse antagonistic tendencies, as opposed to individuals lower in psychopathy. Importantly, corroborating previous fEMG findings (Blinded for Review), we did not detect significant differences in zygomaticus reactivity towards images of affiliation and antagonism for individuals higher in psychopathy (vs. those who scored lower on psychopathy). Similarly, and with regard to our third hypothesis, at low levels of psychopathy, individuals tended to automatically enjoy affiliation more than sadism (both subtypes of sadism stimuli), but these differences were less pronounced at high levels of psychopathy. This pattern of findings regarding zygomaticus reactivity, suggests that at high levels of psychopathy, the differences observed among individuals low in psychopathy diminish often as much as half the size across picture types.

These findings suggest that the previously reported hedonic investment that draws individuals higher in psychopathy to antagonistic experiences extends to sadistic experiences as well. The latter is particularly important: whereas in antagonistic interactions the observer may automatically react positively to the potential to cause harm, or simply to quarrelsome or competitive interactions, in sadistic interactions there is a direct and unambiguous context of pain and distress. This dispositional hedonic investment provides also preliminary empirical evidence for sadistic motive dispositions in psychopathy, in that individuals with higher levels of psychopathy tend to, some extent, be dispositionally drawn to sadistic cues, which may in turn explain their greater tendency to endorse sadistic behaviors (Dufner et al., 2015).

With regard to the contra-hedonic automatic investment in the different motivational stimuli, evident via corrugator reactivity, current findings revealed the following: individuals with low levels of psychopathic traits were less averse towards cues of affiliation than towards antagonism and sadism. They were also less averse towards images of antagonism than towards images of sadism. In line with previous studies (Dufner et al., 2015; Blinded for Review), corrugator effects are less pronounced, though they currently still emerge for TriPM. The only exception was that no difference in corrugator reactivity for individuals with high psychopathy levels was detected between affiliation and antagonism. The findings on corrugator reactivity should, however, be interpreted with caution, given the lack of consistency in previous research regarding the role of automatically experienced unpleasantness (Dufner et al., 2015; Blinded for Review). Future research is warranted to further test this automatically experienced aversion towards motivational cues.

Apart from the indirect measures of physiological affective reactivity (fEMG) we also administered direct, self-report measures of affective responsivity while asking participants to re-watch the same set of pictures. Results of self-reported affect directly replicate overall patterns of fEMG obtained results. More specifically, with regard to positive self-reported affect, the highest ratings were for images of affiliation, then of antagonism and finally for sadism (grief and cruelty). Similarly, with regard to negative self-reported affect, the highest ratings were for images of sadism (cruelty and grief), then of antagonism and lastly of affiliation. Overall, the fact that direct self-reported measures of affect corroborate the findings of indirect physiological measures of affect, may offer more confidence in the robustness of the current findings. Importantly, while the overall tendencies are corroborated, analyses with self-reported affect did not reveal the intriguing patterns and differences in motive dispositions as a function of psychopathic traits. The latter null finding stressed the additional value of using physiological measures to capture dispositional, implicit, aspects of motivation that often eludes conscious awareness. More generally, it may be that psychopathic individuals derive pleasure from sadistic cues at an implicit level even though they do not self-report increased positive affect at the subjective level.

In addition, we tested the robustness of our findings by repeating all full model analyses controlling for the effect of sex. Only in the case of self-reported negative affect, the main effects became more nuanced for women, with both psychopathy measures predicting relatively higher overall self-reported negative affect. Notably, the pattern and statistical significance of existing findings remained unaltered for all models, replicating our main findings.

Conceptual and Clinical Implications

In the current study, we provided preliminary empirical evidence of sadistic motive dispositions in psychopathy. Based on accounts of motive dispositions as predictive of

motive-congruent behavior (Dufner et al., 2015), the aforementioned findings may have important conceptual and clinical implications. A conceptual contribution of the current study is that it maps on well with previous evidence suggesting that, while at low levels of psychopathy, individuals resemble motive dispositional tendencies according to universalist theories (i.e., wherein prosociality and affiliation are clearly experienced as more pleasant and rewarding; Baumeister & Leary, 1995), this may not be the case for individuals with high levels of psychopathy. At high levels of psychopathy (vs. at low levels) these differences start to diminish (often as much as half the size), suggesting that psychopathic individuals are dispositionally drawn similarly to positive (affiliative) and negative (antagonistic) interactions, and even to interactions that involve extreme pain and suffering for others (sadism). In capturing these intriguing patterns, fEMG seems again a valuable methodology, as it offers the chance to investigate multiple classes of motives simultaneously and in a way that is outside of individuals' effortful control and hence resistant to social desirability biases.

An additional conceptual implication is that among individuals higher in psychopathy, the reported positive spontaneous (i.e., outside conscious awareness) reaction towards sadistic cues, suggests a dispositional pleasure associated to sadism and a potential likelihood to endorse such motive relevant behaviors (Dufner et al., 2015). The present findings align well with existing evidence of psychopathic individuals experiencing, on a dispositional level, affiliative and antagonistic stimuli as equally pleasant, rendering them likely to endorse both (Blinded for Review). Notably, in the current study we found that for individuals high in psychopathy, the heightened hedonic investment on antagonistic interactions, extends from the ambiguous, potential harm, to the actual harm, suffering and distress being caused to others, captured in sadistic cues. It would be plausible that sadistic tendencies associated with psychopathic traits (e.g., Holt et al., 1999; James & Proulx, 2014), might thus have a motivational underpinning on a dispositional level as well. That is, the present finding suggests that the destructive and sadistic tendencies manifested by psychopathic individuals may not, or at least not fully, stem from deficits in inhibition (e.g., due to deficits in fear recognition or empathy), but also from a genuine, dispositional enjoyment in harming others, which is implicit and not subjectively reported.

Importantly, even individuals with high psychopathy levels are not entirely deprived of affiliative tendencies (Christian et al., 2019; Blinded for Review) which might strike as counterintuitive, but highlights the importance of approaching the motivational tendencies in relative terms and not in absolute. Rather than completely lacking affiliative motivation, even individuals with high levels of psychopathy may seek affiliative interactions (being with others, etc.), but these interactions usually lack intimacy and are conflictual and less altruistic, given their heightened enjoyment of antagonism and, as currently revealed, sadism. Overall, our findings add to recent advances in the psychopathy literature that propose a focus from a deficit perspective to a motivational perspective that emphasize what psychopathic individuals

want and enjoy besides what they *cannot do or cannot enjoy* (e.g., Garofalo & Neumann, 2018; Glenn et al., 2017; Groat & Shane, 2020; Shane & Groat, 2018; Spantidaki Kyriazi et al., 2020). According to the latter approach, abnormalities commonly associated with psychopathy may spring not only from limitation in the *ability* but also from abnormalities in their (dispositional) *motivation and propensities*.

Replication in clinical samples is warranted, since turning the spotlight from what might be *lacking* to what is valued and motivating can be a starting point for intervention planning. For example, allowing a certain degree of speculation, increasing hedonic investments in positive, prosocial experiences and even contra-hedonic investments in negative, antisocial interactions could be a promising clinical path. Rigorous empirical testing is further needed in order to disentangle these unconscious investments and the reasons why psychopathic individuals (in contrast to non-psychopathic ones) seem to be drawn to the pain and suffering of others on a dispositional level, as well as the developmental pathways that nourished these tendencies. Identifying pathways that endorse motive relevant behaviors (Dufner et al., 2015; Denissen & Penke, 2008; Mischel & Shoda, 1995) might be particularly crucial in the case of sadistic behaviors, given their detrimental social cost.

Limitations and Directions for Future Research

The present findings should be viewed in light of the study limitations, which also engender directions for future research. The current sample consisted mainly of Dutch and German university students. We encourage future studies to test our findings employing larger and more diverse demographically samples. Given the grave societal impact of sadistic behaviors, replication is warranted in clinical samples as well, which would enhance the generalizability and the applied value of our results (e.g., inform intervention planning). Adding to the methodological set up of future studies, we strongly recommend that the detected sadistic motivational disposition is tested as predictive of – or in combination with –actual sadistic behaviors, or in individuals who have committed sadistic behaviors, and in combination with self-reported sadistic motivation, none of which was currently tested. It is also worth delving deeper into the rewarding spontaneous experience of antisocial interactions with clear repercussions for the actor, as in the case of sadistic tendencies.

Conclusions

We currently provide empirical evidence of sadistic motive dispositions associated with psychopathic traits. In summary, we found that – contrary to universal human tendencies – individuals high in psychopathy tend to be similarly drawn to affiliation and antagonism, but also sadism. The latter is an important addition to the literature of motive dispositions in psychopathy, since the current is the first study to empirically show that what is enjoyed – outside of effortful control – by psychopathic individuals is not only quarrelsome, competitive interactions that involve a potential to cause harm, as in antagonistic interactions. Indeed,

we provided evidence that individuals high in psychopathy are also drawn to interactions where real harm and suffering is being caused, in an unambiguous and contextually clear way, suggesting that this motive disposition might make these individuals more likely to endorse these tendencies. Based on the detrimental societal impact of psychopathic and sadistic tendencies, the necessity for more investigation in the dynamics that nourish these positive affective contingencies towards sadism is warranted at the levels of conceptualization as well as intervention-policy planning.

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental* disorders (5th ed.). Arlington, VA

Atkinson, J. W. (1982). *Motivational determinants of thematic apperception*. In A. J. Stewart (Ed.), Motivation and society (pp. 3– 40). San Francisco, CA: Jossey-Bass.

Ball, N., & Scurr, J. (2013). Electromyography normalization methods for high-velocity muscle actions: review and recommendations. *Journal of Applied Biomechanics*, *29*(5), 600-608.

Baumeister, R. F., & Campbell, W. K. (1999). The intrinsic appeal of evil: Sadism, sensational thrills, and threatened egotism. *Personality and Social Psychology Review, 3(3), 210-221.*

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529. doi:10.1037/0033-2909.117.3.497

Buckels, E. E., Jones, D. N., & Paulhus, D. L. (2013). Behavioral confirmation of everyday sadism. Psychological science, 24(11), 2201-2209.

Buckels, E. E., Trapnell, P. D., Andjelovic, T., & Paulhus, D. L. (2019). Internet trolling and everyday sadism: Parallel effects on pain perception and moral judgment. Journal of personality, 87(2), 328-340.

Cacioppo, J. T., Petty, R. E., Losch, M. E., & Kim, H. S. (1986). Electromyographic activity over facial muscle regions can differentiate the valence and intensity of affective reactions. *Journal of Personality and Social Psychology*, *50*, 260-268. doi:10.1037/0022-3514.50.2.260

Christian, E., Sellbom, M., & Wilkinson, R. B. (2019). Is psychopathy associated with deficits in bonding in an adult noninstitutionalized sample? The association between intimate social network size, attachment behavior, and psychopathy. *Journal of Social and Personal Relationships*, *36*(7), 1996-2014.

Denissen, J. J., & Penke, L. (2008). Motivational individual reaction norms underlying the Five-Factor model of personality: First steps towards a theory-based conceptual framework. *Journal of research in personality*, *42*(5), 1285-1302.

Dufner, M., Arslan, R. C., Hagemeyer, B., Schönbrodt, F. D., & Denissen, J. J. (2015). Affective contingencies in the affiliative domain: Physiological assessment, associations with the affiliation motive, and prediction of behavior. *Journal of Personality and Social Psychology*, *109*(4), 662.

Fridlund, A. J., & Cacioppo, J. T. (1986). Guidelines for human electromyographic research.

Garofalo, C., & Neumann, C.S. (2018). Psychopathy and Emotion Regulation: Taking Stock and Moving Forward. In: M. DeLisi (Ed.), *Routledge International Handbook of Psychopathy and Crime.* London, UK: Routledge

Garofalo, C., Neumann, C. S., Zeigler-Hill, V., & Meloy, J. R. (2019). Spiteful and contemptuous: A new look at the emotional experiences related to psychopathy. *Personality Disorders: Theory, Research, and Treatment*, *10*(2), 173.

Glenn, A. L., Efferson, L. M., Iyer, R., & Graham, J. (2017). Values, goals, and motivations associated with psychopathy. *Journal of social and clinical psychology*, *36*(2), 108-125.

4

Groat, L. L., & Shane, M. S. (2019, April 17). A Motivational Framework for Psychopathy: Toward a Reconceptualization of the Disorder. https://doi.org/10.31234/osf.io/ay7np

Hare, R. D. (2003). *Hare Psychopathy Checklist–Revised* (PCL–R, 2nd ed.). Toronto, ON, Canada: Multi-Health Systems.

Hare, R. D., & Neumann, C. S. (2008). Psychopathy as a Clinical and Empirical Construct. *Annual Review of Clinical Psychology*, *4*(1), 217–246.

Harrison, N. A., Morgan, R., & Critchley, H. D. (2010). From facial mimicry to emotional empathy: A role for norepinephrine?. *Social neuroscience*, *5*(4), 393-400.

Holt, S. E., Meloy, J. R., & Strack, S. (1999). Sadism and psychopathy in violent and sexually violent offenders. *Journal of the American Academy of Psychiatry and the Law Online*, *27*(1), 23-32.

James, J., & Proulx, J. (2014). A psychological and developmental profile of sexual murderers: A systematic review. *Aggression and Violent Behavior*, *19*(5), 592-607.

McClelland, D. C. (1987). *Human motivation.* New York, NY: Cambridge University Press.

Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review, 102*(2), 246–268. https://doi.org/10.1037/0033-295X.102.2.246

O'Connell, D., & Marcus, D. K. (2019). A meta-analysis of the association between psychopathy and sadism in forensic samples. *Aggression and violent behavior*, *46*, 109-115.

O'Meara, A., Davies, J., & Hammond, S. (2011). The psychometric properties and utility of the Short Sadistic Impulse Scale (SSIS). *Psychological assessment*, *23*(2), 523.

Patrick, C. J. (2010). *Operationalizing the Triarchic Conceptualization of Psychopathy: Preliminary Description of Brief Scales for Assessment of Boldness, Meanness, and Disinhibition*. Unpublished Manual. Florida State: Florida State University.

Patrick, C. J., Fowles, D. C., & Krueger, R. F. (2009). Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology*, *21*(3), 913-938. https://doi.org/10.1017/S0954579409000492

Patrick, C. J., Fowles, D. C., & Krueger, R. F. (2009). Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology*, *21*(3), 913-938. https://doi.org/10.1017/S0954579409000492

Paulhus, D. L. & Jones, D. N. (2015). Measuring dark personalities via questionnaire. In G. J. Boyle, D. H. Saklofske & G. Matthews (Eds.), Measures of personality and social psychological constructs (pp.562-594). San Diego, CA: Academic Press.

R Core Team. (2019). R: *A language and environment for statistical computing.* R Foundation for Statistical Computing. https://www.R-project.org/

Seibt, B., Weyers, P., Likowski, K. U., Pauli, P., Mühlberger, A. & Hess, U. (2013). Non-conscious interdependence priming modulates congruent and incongruent facial reactions to emotional displays. *Social Cognition, 31*, 613–631.

Shane, M. S., & Groat, L. L. (2018). Capacity for upregulation of emotional processing in psychopathy: all you have to do is ask. *Social cognitive and affective neuroscience*, *13*(11), 1163-1176.

Sonnby-Borgström, M., Jönsson, P., & Svensson, O. (2008). Imitative responses and verbally reported emotional contagion from spontaneous, unconscious to emotionally regulated, conscious information-processing levels. *Neuro-Psychoanalysis, 10*(1), 81–98. https://doi.org/10.1080/15 294145.2008.10773573

Spantidaki Kyriazi, F., Bogaerts, S., Tamir, M., Denissen, J.J.A., & Garofalo, C. (2020). Emotion Goals: A missing piece in research on psychopathy and emotion regulation. *Journal of Personality Disorders.* Published Online. https://doi.org/10.1521/pedi_2020_34_488

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of personality and social psychology*, *54*(6), 1063.

Weyers, P., Mühlberger, A., Kund, A., Hess, U., & Pauli, P. (2009). Modulation of facial reactions to avatar emotional faces by nonconscious competition priming. *Psychophysiology*, *46*(2), 328-335.

Wilhelm, O., Künecke, J., Mokros, A., & Olderbak, S. (2018). Facial responsiveness of psychopaths to the emotional expressions of others. *PLoS ONE*, *13*(1).

4

Supplemental Material

Table S1

Robustness Analyses with Multilevel Models Predicting Muscle Activity from Psychopathy Levels, Controlling for Participants' Gender

Fixed Effects	Model 1: SRP-SF on Zygomaticus Activity $\chi^2(1) = 0.33$			Model 2: TriPM on Zygomaticus Activity $\chi^2(1) = 0.95$			Model 3: SRP-SF on Corrugator Activity $\chi^2(1) = 0.94$			Model 4: TriPM on Corrugator Activity $\chi^2(1) = 0.83$		
	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
(Intercept)	-0.02	0.02	-1.41	-0.02	0.02	-0.92	-0.01	0.01	-0.99	-0.01	0.01	-1.08
Female	0.01	0.02	0.57	0.00	0.02	0.06	0.00	0.01	0.07	0.00	0.02	0.21
Antagonism	-0.02	0.00	-3.92***	-0.02	0.00	-3.92***	0.01	0.00	2.64**	0.01	0.00	2.64**
Grief	-0.04	0.00	-9.83***	-0.04	0.00	-9.81***	0.04	0.00	15.47***	0.04	0.00	15.48***
Cruelty	-0.05	0.00	-11.19***	-0.05	0.00	-11.17***	0.05	0.00	16.64***	0.05	0.00	16.66***
SRP-SF / TriPM	0.00	0.02	0.26	0.00	0.00	-0.61	-0.01	0.01	-0.53	0.00	0.00	0.32
Antagonism*SRP-SF / Antagonism*TriPM	0.01	0.01	1.83	0.00	0.00	2.49*	-0.00	0.01	-0.60	0.00	0.00	-1.04
Grief*SRP-SF / Grief*TriPM	0.04	0.01	4.54***	0.00	0.00	2.83**	-0.00	0.01	-0.07	0.00	0.00	-2.42*
Cruelty*SRP-SF / Cruelty*TriPM	0.04	0.01	4.58***	0.00	0.00	3.10**	-0.01	0.01	-1.69	0.00	0.00	-3.66***
Random Effects	Variance		SD	Variance		SD	Variance		SD	Variance		SD
Subject	.01		0.07	.01		0.08	<0.01		0.05	<0.01		0.05

Note. *p < 0.05 ** p < 0.01 *** p < 0.001. Model comparison refers to comparison with main analysis model. Image type was dummy coded with Affiliation as the reference image type. Gender was dummy coded with Male as the reference gender.

Table S2

Robustness Analyses with Multilevel Models Predicting Self-Reported Affect from Psychopathy Levels, Controlling for Participants' Gender

Model 1: SRP-SF on Positive Affect $\chi^2(5) = 0.13$				Model 2: TriPM on Positive Affect $\chi^2(5) = 0.58$				Model 3: SRP-SF on Negative Affect $\chi^2(5) = 18.40**$				Model 4: TriPM on Negative Affect $\chi^2(5) = 13.69*$			
Model Comparison Fixed Effects	Estimate	SE	t	Model Comparison Fixed Effects	Estimate	SE	t	Model Comparison Fixed Effects	Estimate	SE	t	Model Comparison Fixed Effects	Estimate	SE	t
(Intercept)	2.89	0.12	23.59***	(Intercept)	2.98	0.13	23.19***	(Intercept)	0.92	0.11	8.44***	(Intercept)	0.93	0.12	8.10***
Female	<0.01	0.14	0.02	Female	-0.12	0.15	-0.79	Female	0.47	0.12	3.93***	Female	0.46	0.13	3.54***
Antagonism	-0.46	0.07	-6.28***	Antagonism	-0.46	0.07	-6.25***	Antagonism	0.22	0.07	2.92**	Antagonism	0.22	0.07	2.92**
Grief	-0.89	0.07	-12.10***	Grief	-0.89	0.07	-12.04***	Grief	1.51	0.07	20.27***	Grief	1.51	0.07	20.24***
Cruelty	-0.95	0.07	-12.88***	Cruelty	-0.95	0.07	-12.83***	Cruelty	1.65	0.07	22.12***	Cruelty	1.65	0.07	22.09***
SRP-SF	0.06	0.15	0.42	TriPM	<0.01	<0.01	-0.59	SRP-SF	0.39	0.14	2.87**	TriPM	0.01	<0.01	1.98*
Antagonism*SRP-SF	0.24	0.14	1.69	Antagonism*TriPM	<0.01	<0.01	1.05	Antagonism*SRP-SF	-0.02	0.14	-0.16	Antagonism*TriPM	<0.01	<0.01	0.18
Grief*SRP-SF	0.01	0.14	0.05	Grief*TriPM	<0.01	<0.01	-0.50	Grief*SRP-SF	-0.11	0.14	-0.73	Grief*TriPM	<0.01	<0.01	-0.43
Cruelty*SRP-SF	0.24	0.14	1.71	Cruelty*TriPM	<0.01	<0.01	0.86	Cruelty*SRP-SF	-0.21	0.14	-1.46	Cruelty*TriPM	<0.01	<0.01	-1.09
Random Effects	Variance		SD	Random Effects	Variance		SD	Random Effects	Variance		SD	Random Effects	Variance		SD
Subject	0.22		0.46	Subject	0.22		0.47	Subject	0.15		0.38	Subject	0.16		0.30

Note. * p < 0.05 ** p < 0.01 *** p < 0.001. Model comparison refers to comparison with main analysis model. Image type was dummy coded with Affiliation as the reference image type. Gender was dummy coded with Male as the reference gender.

4

Chapter 5

General Discussion

The current dissertation presents a novel empirical study of motivated emotion regulation and motive dispositions in psychopathy. We implemented self-report assessments and experimental designs using fEMG and a laboratory behavioral task. In the following, the main findings of each study (chapters 2, 3 & 4) are summarized and discussed in terms of theoretical, applied clinical, and methodological implications, as well as of directions for future research.

Main Findings

In **Chapter 2**, in two studies we tested a motivated emotion regulation model (Tamir, 2016) in psychopathy by examining individual differences in emotion goals (i.e., what individuals want to feel). In two non-clinical samples (undergraduate students, N =148 and community participants, N = 520*),* we tested the basic hypothesis that more psychopathic individuals would not want to downregulate negative other-directed emotions and, in particular, anger. Regarding fear, sadness and joy, our focus was more explorative.[7] Psychopathic traits were related with goal endorsements of the four emotions in question (anger, fear, sadness and joy; in asking "if you could control your emotions, what would you want to feel") in a way that contradicts traditional hedonic assumptions that everyone wants to "feel good". Importantly, these endorsements for desired affect were driven by hedonic and instrumental motives in differential ways. As expected, and in line with general human tendencies (e.g., Augustine et al., 2010), individuals in both studies wanted, on average, to experience joy. In addition, our findings suggest that individuals with higher psychopathy levels reported to be drawn to negative other-directed emotions. Indeed, anger was the most consistently endorsed emotion goal in both studies. Psychopathic individuals seemed to be driven by perceiving anger as a pleasant or less aversive emotion and also, as a useful emotion for their endeavors. A less consistent pattern was revealed with regard to fear, sadness and joy endorsement. It appeared that psychopathic individuals were rather unmotivated to downregulate fear, in line with its increased perceived usefulness (instrumental motives). In contrast, psychopathic individuals tended to be less motivated to upregulate joy, consistent with its perceived reduced pleasantness (hedonic motives). Although the emotion goal of sadness was positively associated with higher psychopathy scores, no motivational mediation effects occurred and may be related to different motivational processes. Finally, we found that differential emotion goal endorsement in both studies was not explained by concurrent (state) and general (trait) affect, adding to the robustness of the findings. That is, differential emotion goal endorsement is largely relevant to the hedonic and instrumental value that psychopathic individuals attach to them. These findings are also in line with previous evidence on common emotional experiences associated with psychopathic traits, according to which

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7   The explorative direction was preferred based on previous equivocal findings on emotional experience in psychopathy (see Chapter 2).

negative emotions are positively associated with psychopathy, while the inverse pattern emerged for positive emotions (e.g., Lishner et al., 2012).

Chapter 3 expanded the scope of research to a different motivational level. In a pre-registered, multimethod design, we tested the hypothesis that psychopathic individuals would be attracted to (and endorse) negative, other-directed interactions (antagonistic vs. affiliative interactions), evident though the different methodologies applied. Thus, this motivational tendency was assessed in a sample of university students, both at the explicit level via self-reports, and at the implicit level: behaviorally, via a social discounting task (Sherman & Lynam, 2017) and physiologically, via fEMG (Dufner et al., 2015). Physiological assessments of automatic affective reactions were measured electromyographically as smiling (positive – hedonic) and frowning (negative – contra-hedonic) within three milliseconds (timeframe wherein differences with baseline muscle activity are more pronounced; see Dufner et al., 2015) of viewing affiliative and antagonistic stimuli (pictures). We presented first empirical findings of antagonistic motivational underpinnings of psychopathy, which was partly apparent in self-reported motives and motivated behavior (social discounting task). Individuals with higher psychopathy levels reported to be less drawn to intimacy and tended to be less motivated to share and be altruistic in what they considered to be their most intimate relationships. Notably, antagonistic orientation was more consistent at an implicit level, i.e., in motive dispositions towards antagonism and affiliation. Participants were on average more implicitly attracted to affiliation (vs. antagonism). The latter is in line with the universal human tendencies towards affiliation (e.g., Baumeister & Leary, 1995). However, this pattern was less prominent for individuals with higher psychopathy scores, who seemed to be equally drawn to antagonism and affiliation on a dispositional level. These results suggest that an increased intrinsic, outside of effortful control, enjoyment of antagonism, expressed as affective contingencies towards antagonistic cues, may underlie non-prosocial tendencies profoundly related to psychopathic traits. In accordance with previous research, stressing the central role of antagonism in psychopathy (Sherman & Lynam, 2017; Vachon, 2019) and the indirectly observed preference for negative other-directed (e.g., fighting) interactions in gaming (Visser et al., 2020), these results add another level of analysis by introducing the level of dispositional underpinnings of antagonism in psychopathy.

In **Chapter 4** we sought to expand the research on affective contingencies, to zoom in on the hedonic investment in negative, other-directed interactions that we detected. In particular, through a multimethod design, we tested the notion that what dispositionally and outside of effortful control draws psychopathic individuals to negative, other-directed interactions, is beyond the potential to cause harm to others – as in antagonistic interactions – to the clearly defined harm being caused to others in sadistic interactions. The aim was to unveil a possible motivational foundation of sadism that, besides commonalities, exceeds the level of subjective pleasure and extends to the level of established motive dispositions towards sadism. In a

sample of university students, we recorded fEMG reactivity to sadistic stimuli (pictures) and compared it to reactivity towards affiliation and antagonism, aiming to assess automatic affective reactions (Dufner et al., 2015). Our findings provided first empirical support to motive dispositions towards sadism in psychopathy. In line with the findings presented in the previous chapter, participants with lower psychopathy were generally very clearly drawn to affiliation and to a much lesser degree to antagonism and sadism. We nevertheless found a pattern for individuals scoring high in psychopathy. The previous differences in zygomaticus reactivity (clear preference for affiliation) were diminished, often as much as half the size across stimulus types. It was found that individuals high in psychopathic traits tended to be attracted to prosocial interactions in a way akin to antisocial interactions, even to interactions with detrimental consequences, as in the case of sadism. This established hedonic investment (affective contingencies), could ignite sadistic tendencies of psychopathic individuals and trigger sadistic behaviors.

Importantly, these findings were revealed deploying our multiple measurements. Conducting multilevel analyses revealed within-person tendencies that were important for between-person interpretations. This approach captured differences that would be left unnoticed with other types of analyses. We propose that the antagonistic core of psychopathic motivation might similarly get lost among absolute values approaches, when not investigated also through within-person approaches. Finally, the current design, and particularly the nuances revealed in our non-clinical samples, speak for the intensity of antagonistic personality tendencies (Moshagen et al., 2019; Vachon, 2019), which can be detected even in samples with low psychopathy means.

In summary, the current dissertation provided empirical support to a motivational aspect of psychopathic traits that is geared towards negative-other directed emotions and interactions. In psychopathic individuals (vs. non-psychopathic) this enjoyment paralleled the attraction, attuned to universal human tendencies, to affiliation and positive emotionality (e.g., Augustine et al., 2010; Baumeister & Leary, 1995; Bloom, 2011; Dufner et al., 2015). We thus presented findings that psychopathic individuals may exhibit abnormalities in emotional functioning, which are not exhausted to regulatory abilities, but are relevant to the direction of regulatory efforts (i.e., motivated emotion regulation) towards negative emotions and primarily anger. At another level of examination, the association with negative, other-directed motivational orientation was partly supported by self-attributed motivation and behavior and more consistently through unconsciously revealed motive dispositions. Our findings are in line with literature on the focal role of antagonism in psychopathy (Vachon, 2019). Antagonism appears so pervasive in psychopathy, that it becomes manifested through many levels of psychosocial functioning: in explicit endorsements, implicit endorsements, direct behavior and even in the imaginary worlds that individuals with higher levels of psychopathy enter. Indeed, these individuals were especially antagonistic even when playing a life simulation

video game (Visser et al., 2020). The motivational framework we tested in four studies is also advancing the motivational focus in psychopathy research (Glenn et al., 2017; Groat & Shane, 2019) by providing empirical indications of motivated regulatory and dispositional mechanisms.

Implications for Theory and Research

The theoretical denominator of all studies in the current dissertation is the adaptation of a motivational perspective to psychopathy (e.g., Glenn et al., 2017; Shane & Groat 2018; Sherman & Lynam, 2017). This integrative perspective bridges personality and clinical backgrounds in addressing many of the unanswered questions surrounding the psychopathy construct. In this dissertation, we advocate a motivational mechanism that can be expressed explicitly and implicitly, and that can be of considerable relevance in understanding processes that ignite and sustain psychopathic tendencies. The dissertation delineates motivational correlates of psychopathy in the areas of emotionality (chapter 2), behaviors and implicit attractions/aversions (chapters 3 & 4). Underlying motivational underpinnings become empirically accessible by asking individuals what they want to feel and by investigating the affective core of motives (Schönbrodt & Gerstenberg, 2012): what is hedonically enjoyed is wanted and endorsed, and becomes established in a trait-congruent manner (Dufner et al., 2015).

Proposing a motivational perspective in psychopathy research adds to the study of cognitive and emotional correlates of psychopathic tendencies and proposes to reframe explanations rooted in what is lacking (deficit perspective) and what is wanted (motivation perspective; Glenn et al., 2017; Shane & Groat 2018; Sherman & Lynam, 2017). A motivational perspective suggests that there could be motivated processes that can be channeled into dysfunctional directions, both intra- and interpersonally (Denissen & Penke, 2008; Hopwood & Bornstein, 2019; Tamir, 2016). These motivated tendencies might become important aspects of people's self-concept (e.g., "I am an antagonistic person that acts aggressively"). To maintain consistency in their self-concept, people might further continue to maintain – not necessarily consciously – a negative interpersonal orientation and emotional endorsement (Bender & Skodol, 2007; Kernberg, 1993; Klimstra & Denissen, 2017). If so, it can be speculated that motivational mechanisms might lead more psychopathic individuals to maintain their syntonic emotional preferences and interpersonal-tendencies in accordance with what they are used to experiencing as syntonic to their self-concept. The potential conceptual addition, would be that the deficit perspective can be reframed: from a potential inability to be prosocial, to the desire to not be prosocial in line with one's conscious or unconscious self-concept.

Furthermore, it is conceptually important to have support that psychopathic individuals are not averse to causing harm to others, that being purpose-serving and satisfying. The mechanism we are advocating, provides some interpretation to ostensible paradoxes. First,

it is possible for individuals, and in particular psychopathic individuals, to want to *feel bad* (e.g., angry), because it *does good* (instrumentally) and it *feels good* (hedonically) (Chapter 2). Second, it is possible that individuals are differentially attracted to affiliation, supporting a dimensionality to prosocial universal human dispositions (Baumeister & Leary, 1995; Dufner et al., 2015). For individuals higher in psychopathy, this differential implicit attraction to affiliation, antagonism and sadism, was actually so intense that resembled in magnitude the universal attraction to affiliation (Chapters 3 & 4). It appears that psychopathic individuals are oriented towards others, but the direction of this orientation is not prosocial, because harming others is actually satisfying.

The apparent contradiction of psychopathic individuals seeking affiliation with others (Christian et al., 2019) can be refined by adopting a motivational perspective. Psychopathic individuals may be interested in socializing with others, such as "hanging out with mates", but they are not invested in being intimate and bonded with others. The latter was supported by our findings of reporting a weaker preference for intimacy motivation and unwillingness to share resources with very close others (Chapter 3). In psychopathy, this could speak of an extraversion orientation associated with broader social tendencies, but also of a channeling of this orientation far from intimate bonding (closer to disagreeable – antagonistic motivation). The initial counter-intuitiveness of the findings that psychopathic individuals are drawn to affiliation could potentially be reframed.

After all, the satisfaction of a disposition to enjoy harming others requires being with others who could be harmed: it could be speculated that this "togetherness" might also be rooted in the potential for manipulation or deception, or be instrumentally significant in achieving an anti-social goal that could not be otherwise satisfied. Psychopathic individuals' lack in communal orientation to others (Sherman & Lynam, 2017; Visser et al., 2020) seems to also be related with their motive dispositions towards affiliation vs. antagonism and sadism: they dispositionally enjoy being antisocial to a considerable extent (compared to non-psychopathic individuals), such that they might seek antisociality out (based on the findings that motive dispositions can predict behavior; Dufner et al., 2015).

Clinical Implications

The motivational perspective in psychopathy brings forward further implications for clinical practice, which are discussed below with a degree of speculation given the non-clinical samples used in all four studies and the necessity for further replication in forensic samples. The motivated emotion regulation framework (Tamir, 2016) bears clinical implications in providing evidence that goals of regulatory efforts are malleable by addressing the underlying instrumental and hedonic motivation. According to motivated emotion regulation literature, the direction of the regulatory efforts (i.e., emotion goals) of an individual can be rechanneled by interventions that would focus on altering the perceived utility of emotions and the change

of the beliefs about the utility of, for instance, negative other-directed emotions (Tamir et al., 2015). Experiential techniques (e.g., meditation) have also been found to enhance the capacity to endorse positive, prosocial emotions (e.g., Fredrickson et al., 2008). Understanding and addressing underlying motives can pave the way to intervene in emotion goals and regulation associated with psychopathic traits.

In a similar vein, and deploying the potential of motive dispositions to predict motivated behavior (Dufner et al., 2015), it can be clinically significant to consider motive dispositions in psychopathy. Affective contingencies that underlie a tendency could be redirected into new affective investments, intra- and interpersonally adaptive. Intervention planning can, thus, be orchestrated around retuning the attractions and enjoyments that provoke relevant behaviors. This adds another focus for e.g., CBT based treatments, often implemented in forensic settings to address the motivation and stimuli behind the behavior, aside from altering the behavioral expression. If affiliative affective contingencies, i.e., affiliative motive dispositions, predict the tendency of individuals who enjoy affiliation to act in a more affiliative manner than those who enjoy it less (Dufner et al., 2015), it might be important to make affiliative, pro-social tendencies more enjoyable for individuals with heightened psychopathic tendencies. This change needs time, as affective contingencies have also been established through repeated reinforcing experiences (Dufner et al., 2015). This clinical potential creates the need for these intrinsic and implicit motives to be accessed. An implicit motive is inherently harder to be conveyed, either because implicit motives usually elude conscious awareness, because it is a matter of resistance to therapy, or because someone would not be willing to disclose antisocial tendencies, like attraction to sadistic tendencies.

Methodological considerations to assess motivational correlates: Psychopathy and beyond

In addition to the theoretical and clinical relevance of this dissertation, extending emotion goals and motive dispositions methodology bears significant methodological contributions. Asking what psychopathic individuals want to feel adds a different light to the assessment of emotional functioning, especially when it is experimentally enhanced (Tamir & Millgram, 2017). In addition, employing multimethod designs to assess the affective mechanisms of motives provides the opportunity to test simultaneously explicit-direct and implicit-indirect motives frameworks (Schönbrodt & Gerstenberg, 2012). The latter bridges psychodynamic and trait perspectives in creating a common ground for awareness-accessible and non-accessible elements (Hopwood & Bornstein, 2019). As evident in our findings, nuances of motivation are assessed in a more well-rounded manner combining implicit and explicit measures (physiological and self-reports). For psychopathy-related tendencies, this can be increasingly valuable in operationalizing intrinsic, non-socially desirable motives which would not be easily self-attributable in part because they would be beyond self-awareness. The possibility to assess underlying motivations in an empirically sound way bridges the way to

rendering it accessible to intervention and evidence-based intervention assessments. Last but not least, fEMG methodology provides the apparatus to access aspects of motivation that cannot be faked or concealed due to lack of self-awareness. In the field of psychopathy and personality pathology, more broadly, this is important in capturing and understanding maladaptive and antisocial tendencies.

The multimethod designs and the analytic strategies we employed in this dissertation also point towards a perspective that looks into relevant differences, rather than absolute value comparisons. This speaks for the dimensional, integrative theoretical approach in examining psychopathy and its motivational correlates, which we also adapted in contrast to categorical, black and white approaches (see also Hopwood & Bornstein, 2019; Vachon, 2019). Furthermore, in chapters 2, 3 and 4 we found evidence that nuances of emotion goals and implicit motivation could have been missed if not examined in terms of relative differences. That is, for instance, the emotion goal of anger was not preferred to the emotion goal of joy in absolute value terms, rather it was endorsed based on psychopathy levels (more psychopathic individuals wanted to endorse anger more than less-psychopathic individuals; chapter 2). In addition, comparing in associations three classes of motives, namely affiliation, antagonism and sadism (chapters 3 & 4) failed to capture the intriguing patterns revealed when examining these dispositions in terms of relevant differences.

Strengths, Limitations, and Directions for Future Research

The current studies introduced a novel motivational scope of psychopathic traits in testing and providing first findings of motivated emotion regulation and motive dispositions in psychopathy. As earlier conferred, this scope can offer a new angle in terms of conceptualization and research approach to psychopathic traits. Regarding the two studies presented in chapter 2, one of the strengths pertains to the samples used, which included both university and general community participants offering a broader representation of the population. Additionally, the main results were consistent among both studies and among both psychopathy measures. Those were the first empirical studies testing a motivated emotion regulation framework in psychopathy. In chapter 3, a multimethod approach was implemented which was novel to psychopathy research and offered the possibility to examine multiple levels of expression of the motivated orientation towards others: self-attributed, behavioral, dispositional-physiological. This approach involved rigorous empirical testing in the laboratory with lengthy (approx. 60 minutes per participant) and precise assessments of behavior and physiology. Chapter 4, presented an extension of the methodology to assess motive dispositions in psychopathy -fEMG- to sadism (in addition to antagonism and affiliation). Notably, findings of both chapters were consistent in terms of motivational direction and in line with the widely documented centrality of antagonism in psychopathy (see Vachon, 2019). Furthermore, chapters 3and 4 present studies of psychopathy in relation

to affiliation, antagonism and sadism that –to the best of our knowledge– have not been studied before on the level of motivational, dispositional attraction.

In continuing from the aforementioned need for clinical replication, we also present in this section limitations of the studies, which, notwithstanding theoretical, clinical and methodological strengths, should be taken into consideration and be empirically addressed. A limitation of the presented studies was related with the absence of testing in clinical samples. While implementing our complex experimental design within clinical settings would, be very challenging, we do recognize the need that our findings are rigorously tested in clinical settings, which would shed light to more severe manifestations of psychopathic tendencies. These replications would also be meaningful in terms of intervention and policy planning. Furthermore, we believe that in terms of increasing the generalizability of our findings, future studies would benefit from including more ethnically and educationally diverse populations, as we mainly examined Dutch and highly educated individuals. Another limitation was the detection of some inconsistent patterns regarding subscale analyses and different psychopathy measures . Inconsistencies among psychopathy measures and their meaning in terms of content coverage would be important to receive more empirical attention. With regard to limitations of emotion goals findings, we propose that besides anger, which was a consistent emotion goal, fear, sadness and joy should be further assessed as to their motivational endorsements in psychopathy. Inconsistent patterns in the fEMG findings should also be further addressed: it appeared that in line with previous research (Dufner et al., 2015), zygomaticus reactivity (smiling) is more consistently reflective of motive dispositions (vs. corrugator reactivity [frowning]). Future investigations would be important to experimentally examine pro-hedonic (zygomaticus) and contra-hedonic reactions to motive-relevant cues and include other classes of motives as well. Reliance on larger samples would also replicate with a higher degree of certainty (increase power and effect sizes) the currently presented tendencies.

Providing evidence of dispositional, implicit attraction towards antagonistic and sadistic interactions does bypass self-report biases, though they remain a snapshot of the present, even if theoretically rooted and developed through years of reinforcements (Dufner et al., 2015). It is important to take this finding and extend the investigation to longitudinal trajectories that led to the established dispositional reaction detected in the present. The affective contingencies methodology in the field of personality traits and disorders should, thus, be investigated over time in terms of initiating and sustaining factors. Such a strand of research would enhance developmental theories regarding psychopathic and generally antisocial tendencies and would inform prevention planning.

Building on the motivational perspective in understanding psychopathy (Glenn et al., 2017; Shane & Groat 2018; Sherman & Lynam, 2017) and the investigation of implicit hedonic

investments of psychopathic individuals could also enhance broader personality pathology research. Further addressing the motivational core of personality traits (Denissen & Penke, 2008) could help advance hypotheses bridging phenomenological considerations (trait perspective) and considerations eluding conscious awareness and control (psychodynamic perspective) (Hopwood & Bornstein, 2019).

When delineating a motivational foundation of psychopathic tendencies rooted in enjoying harm, are we arguing that some people are in fact not fundamentally good? We believe that a negative response would better address this question. On a broader level, we advocate adopting a dimensional and integrative perspective in research, allowing good and bad tendencies to co-exist. These tendencies are socially detrimental to the extent that they endorse motive-relevant behaviors. We also suggest that they are also malleable and open to be redirected to pro-social directions based on relocating hedonic investments. The latter is an auspicious potential, which also creates the necessity of further empirical testing and replication in more severe dimensions of psychopathy, as in clinical-forensic settings.

Concluding Remarks

Individuals can be both good and bad. Those who enjoy being good much more than not, tend to act accordingly most of the times. Those who enjoy being bad might in turn endorse it. Understanding the motivational mechanisms that fire and maintain these tendencies can be beneficial in conceptualizing, assessing and –potentially– treating tendencies with so detrimental (inter)personal and societal cost, like psychopathic traits. This approach goes beyond established deficit perspectives in adding the scope of what is wanted to what is lacking in psychopathy. This dissertation investigated what motivates psychopathic individuals and it seems that it is the enjoyment of harming others. This enjoyment was manifested as preference for negative emotions, and in particular anger. It was also manifested as implicit attraction to negative interactions, wherein others are in competition, quarrel or even suffering. Unveiling first evidence of motivation for negative other-directed emotions (anger), as well as dispositional tendencies to be drawn to negative other-directed interactions (antagonistic and sadistic) in psychopathic traits, bears two main implications; on the one hand, these explicit and implicit hedonic investments were established through time and tend to be trait-like stable. At the same time, though, enjoyments bear the potential to be rechanneled to more prosocial directions, in that over-time, prosociality might be more enjoyed and reinforced for psychopathic individuals.

References

Augustine, A. A., Hemenover, S. H., Larsen, R. J., & Shulman, T. E. (2010). Composition and consistency of the desired affective state: The role of personality and motivation. *Motivation and Emotion*, *34*(2), 133–143. https://doi.org/10.1007/s11031-010-9162-0

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529. doi:10.1037/0033-2909.117.3.497

Bender, D. S., & Skodol, A. E. (2007). Borderline personality as a self-other representational disturbance. *Journal of Personality Disorders*, *21*(5), 500-517.

Bloom, P. (2010). *How pleasure works: The new science of why we like what we like*. W.W. Norton & Company.

Denissen, J. J., & Penke, L. (2008). Motivational individual reaction norms underlying the Five-Factor model of personality: First steps towards a theory-based conceptual framework. *Journal of research in personality*, *42*(5), 1285-1302.

Dufner, M., Arslan, R. C., Hagemeyer, B., Schönbrodt, F. D., & Denissen, J. J. (2015). Affective contingencies in the affiliative domain: Physiological assessment, associations with the affiliation motive, and prediction of behavior. *Journal of Personality and Social Psychology*, *109*(4), 662.

Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology, 95*(5), 1045-1062.

Glenn, A. L., Efferson, L. M., Iyer, R., & Graham, J. (2017). Values, goals, and motivations associated with psychopathy. *Journal of social and clinical psychology*, *36*(2), 108-125.

Groat, L. L., & Shane, M. S. (2019, April 17). A Motivational Framework for Psychopathy: Toward a Reconceptualization of the Disorder. https://doi.org/10.31234/osf.io/ay7np

Hopwood, C. J., & Bornstein, R. F. (2019). Psychodynamic approaches to treating antagonism. In J.A. Miller & D.R. Lynam (Eds.) *The Handbook of Antagonism: Conceptualizations, Assessment, Consequences, and Treatment of the Low End of Agreeableness* (pp. 337-350). Academic Press.

Kernberg, O. F. (1993). *Severe personality disorders: Psychotherapeutic strategies*. Yale University Press.

Klimstra, T. A., & Denissen, J. J. A. (2017). A theoretical framework for the associations between identity and psychopathology. *Developmental Psychology*, *53*(11), 2052–2065.

Lishner, D. A., Vitacco, M. J., Hong, P. Y., Mosley, J., Miska, K., & Stocks, E. L. (2012). Evaluating the relation between psychopathy and affective empathy: Two preliminary studies. *International Journal of Offender Therapy and Comparative Criminology*, *56*(8), 1161-1181.

Moshagen, M., Hilbig, B. E., & Zettler, I. (2018). The dark core of personality. *Psychological Review*, *125*(5), 656-688.

O'Connell, D., & Marcus, D. K. (2019). A meta-analysis of the association between psychopathy and sadism in forensic samples. *Aggression and violent behavior*, *46*, 109-115.

Schönbrodt, F. D., & Gerstenberg, F. X. R. (2012). An IRT analysis of motive questionnaires: The Unified Motive Scales. *Journal of Research in Personality*, *6*, 725–742.

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Shane, M. S., & Groat, L. L. (2018). Capacity for upregulation of emotional processing in psychopathy: all you have to do is ask. *Social cognitive and affective neuroscience*, *13*(11), 1163-1176.

Sherman, E. D., & Lynam, D. R. (2017). Psychopathy and low communion: An overlooked and underappreciated core feature. *Personality Disorders: Theory, Research, and Treatment*, *8*(4), 309-318.

Tamir, M. (2016). Why Do People Regulate Their Emotions? A Taxonomy of Motives in Emotion Regulation. *Personality and Social Psychology Review*, *20*(3), 199–222.

Tamir, M., & Millgram, Y. (2017). Principles, Lessons, and Implications of a Motivational Analysis of Emotion Regulation. In A. J. Elliot (Ed.), *Advances in Motivation Science* (pp. 207-247).

Tamir, M., Bigman, Y. E., Rhodes, E., Salerno, J., & Schreier, J. (2015). An Expectancy-Value Model of Emotion Regulation: Implications for Motivation, Emotional Experience, and Decision Making. *Emotion,15*, 90-103. https://doi.org/10.1037/emo0000021

Vachon, D. D. (2019). Antagonism in psychopathy. In J.A. Miller & D.R. Lynam (Eds.) *The Handbook of Antagonism: Conceptualizations, Assessment, Consequences, and Treatment of the Low End of Agreeableness* (pp. 199-220). Academic Press.

Visser, B. A., Batinic, M., Worth, N., Book, A., & Toll, E. (2020). Psychopathic Sims: Testing the Cheater-Hawk Hypothesis in a Video Game. *Evolutionary Psychological Science*, 6(3), 229-240.

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Summary

The current dissertation introduces novel empirical studies of motivated emotion regulation and motive dispositions in psychopathy. Implementing multi-study and multimethod designs, we tested the hypothesis that emotional abnormalities typically ascribed to psychopathic personality are not limited to the level of deficit (i.e., lack of ability) but extend to the level of motivation. Specifically, we tested a motivational aspect of psychopathic tendencies which is represented through endorsements of negative other-directed desired emotions and preferences for antagonistic interpersonal interactions. In doing so, we proposed that psychopathic individuals might manifest antisocial tendencies, not only because they might be unable to act prosocially, but also – and in contrast to universal human tendencies– because they might not *want to*.

In the two studies presented in **Chapter 2,** we tested a motivated emotion regulation model (Tamir, 2016) in psychopathy by examining individual differences in emotion goals (i.e., what individuals want to feel). Targeting four core emotions, namely anger, fear, sadness and joy, we tested the hypothesis that more psychopathic individuals would not want to downregulate negative other-directed emotions—and, particularly, anger. Our findings showed that psychopathic traits were positively related to goal endorsements of the four examined emotions in question (anger, fear, sadness and joy; in asking "if you could control your emotions, what would you want to feel") in a manner that contradicts traditional hedonic assumptions that everyone wants to "feel good". In addition, these endorsements were driven by hedonic and instrumental motives in differential ways. Specifically, consistent with general human tendencies (e.g., Augustine et al., 2010), individuals in both studies wanted, on average, to experience joy. Importantly though, we found that individuals with higher psychopathy levels reported to be drawn to negative other-directed emotions. Indeed, anger was the most consistently endorsed emotion goal across both studies. Psychopathic individuals seemed to be motivated by perceiving anger as a pleasant or less aversive emotion, and as a useful emotion for their various objectives. A less consistent pattern was revealed regarding the other three emotions. It appeared that psychopathic individuals were rather unmotivated to downregulate fear, in line with considering it a useful emotion. Conversely, psychopathic individuals tended to be less motivated to upregulate joy, in line with considering it a less pleasant emotion. Although the emotion goal of sadness was positively associated with higher psychopathy scores, no motivational mediation effects arose, and that could be related to different motivational processes. Adding to the robustness of the findings, differential emotion goal endorsement in both studies was not explained by concurrent

(state) and general (trait) affect, rather it seemed largely due to the attached hedonic and instrumental value.

In **Chapter 3** the research scope was expanded to a different motivational level. Employing a pre-registered, multimethod design, we tested the hypothesis that psychopathic individuals would show a positive disposition towards antagonistic interactions. This motivational tendency was assessed both at the explicit level via self-reports, and at the implicit level: behaviorally, via a social discounting task (Sherman & Lynam, 2017) and physiologically, via fEMG (Dufner et al., 2015). We electromyographically assessed automatic affective reactions as smiling (positive – hedonic) and frowning (negative – contra-hedonic) within three milliseconds (timeframe wherein differences with baseline muscle activity are more pronounced; see Dufner et al., 2015) of viewing affiliative and antagonistic stimuli (pictures). To our knowledge, this study generated the first empirical findings of antagonistic motivational underpinnings of psychopathy, reflected in self-reported motives and motivated behavior. Individuals with higher psychopathy levels reported to be less drawn to intimacy and tended to be less motivated to share and be altruistic within relationships they ranked as their closest. Notably, negative other-directed orientation was more consistent at an implicit level, i.e., in motive dispositions towards antagonism and affiliation. In line with universal human tendencies (e.g., Baumeister & Leary, 1995), participants were on average more implicitly attracted to affiliation (vs. antagonism). This pattern, however, was less pronounced for more psychopathic individuals, who seemed to be equally drawn to antagonism and affiliation on a dispositional level. These findings suggest that an increased intrinsic (i.e., beyond effortful control) enjoyment of antagonism, expressed as positive affective reactivity towards antagonistic cues, may underlie non-prosocial tendencies profoundly associated with psychopathic traits. Consistent with existing research, stressing the central role of antagonism in psychopathy (Sherman & Lynam, 2017; Vachon, 2019) and the indirectly observed preference for negative other-directed (e.g., fighting) interactions in gaming (Visser et al., 2020), the findings of this study added another level of analysis by introducing the level of dispositional underpinnings of antagonism in psychopathy.

In **Chapter 4** we expanded our focus on the hedonic investment in negative other-directed interactions. Via a multimethod design, we tested the hypothesis that psychopathic individuals are dispositionally drawn to negative, other-directed interactions and that this attraction extends beyond the potential to cause harm to others – as in antagonistic interactions – to the clearly defined harm being inflicted to others in sadistic interactions. We recorded fEMG reactivity to sadistic stimuli (pictures) and compared it to reactivity towards affiliation and antagonism, aiming to assess automatic affective reactions (Dufner et al., 2015). Our findings provided the first empirical evidence of motive dispositions towards sadism in psychopathy. Consistent with the findings presented in chapter 2, participants with lower psychopathy were generally very clearly drawn to affiliation and to a much lesser extent to antagonism and

sadism. However, we found a different pattern for individuals scoring high in psychopathy. The aforementioned differences in zygomaticus reactivity (limpid preference for affiliation) were diminished, often as much as half the size across stimulus types. Individuals with higher psychopathy levels tended to be drawn to prosocial interactions in a way akin to antisocial interactions, even to interactions with unambiguously harmful consequences, as in the case of sadism. This dispositional enjoyment of sadistic interactions could potentially foster sadistic tendencies of psychopathic individuals and trigger sadistic behaviors.

Taken together, the findings of the current dissertation provided empirical support to a motivational aspect of psychopathic traits that is geared towards negative other-directed emotions and interactions. We presented findings that psychopathic individuals may exhibit abnormalities in emotional functioning that include the desired direction of their regulatory efforts (i.e., emotion goals) towards negative emotions and primarily anger. At another level of analysis, the association with negative, other-directed motivational orientation was partly supported by self-attributed motivation and behavior and more consistently through implicitly revealed motive dispositions toward affiliation, antagonism and sadism. By presenting the first empirical investigation of motivated emotion regulation and motive dispositions in psychopathy, the present dissertation goes beyond deficit perspectives and adds to the literature investigating motivational aspects of psychopathy. According to this view, there is the possibility that not only through skill-based, but also through motive-focused interventions, prosociality could become more enjoyed and reinforced for individuals with higher psychopathy levels.

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Foteini Spantidaki Kyriazi was born on 26 March 1989 in Athens, Greece, where she grew up and enjoyed her beloved Mediterranean landscapes between Crete and Olympia. She always loved reading philosophy and psychoanalysis and happily studied Psychology at the National & Kapodistrian University of Athens. After multiple residencies and specializations in psychometrics and differential diagnosis, she started the three-year Master Degree in Clinical Psychology at the University of Athens. There, she was trained in various psychiatric and general hospitals, as well as in psychotherapeutic centers for children, adolescents and adults. Soon after her graduation as a clinical psychologist, she started her PhD at Tilburg University, in 2016. Her research tested a motivational perspective in emotion regulation and motive dispositions in psychopathy. During her doctoral studies she was trained in conducting multimethod, experimental designs – of which she is really fond. She also taught an array of courses of the International Psychology Curriculum and supervised master students in their research. The past four years she travelled a lot for international conferences, where she presented her work. She loves dancing, soccer and traveling with her little clan. You will currently find her looking for new destinations, counting the waves in Greece and the canals in Amsterdam. She lives with her husband, Stathis and their cat, Sevach.