CHAPTER 17

# Using an Experimental Therapeutics Approach to Target Psychopathy

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Mr. A was often bored growing up. School made him restless and challenged him too little. His hyperactive behavior made him hard to control, and he was unable to get along with his teachers. From an early age, he began to initiate verbal and physical fights, ignore the rules made by his parents, and consistently skip school. He casually recounted "the incident" that led to a string of 50+ school suspensions and expulsions. This "incident" included "whooping" his teacher and breaking her finger. He was 8 years old at the time. It was this same year that he earned his first arrest for stealing dirt bikes, which Mr. A claimed never to regret doing, as the days of dirt bike racing were the "happiest of [his] life."

Since adolescence, Mr. A moved around a lot, running away from home for months at a time and "shacking up" with his many sexual partners. From the age of 14, he lived with at least 11 different women, many of whom were much older. They provided for him financially. He bragged that he had always been a "ladies' man" and explained that none of these relationships were "real." He stated that he used his manicured charms and simply feigned emotions of love and caring to beguile and manipulate his supposed romantic partners into providing free housing, money, and sex. While taking advantage of these women, Mr. A often committed sexual infidelities. When asked about this, he laughed, coolly described being caught in the act, and proclaimed that he "never thought much of it."

Mr. A's unusual interpersonal style extended beyond that of sexual relationships. He had no close friendships and felt little interest in securing them. He explained that he often feels "detached" from others, as he "laughs when people cry" and thinks it weak to show true emotions. Furthermore, he admitted to lying often and claimed that he can "talk [his] way out of anything." He felt no sympathy for those he fooled and added "those who get conned are naive."

While in prison, Mr. A tended to keep to himself. He looked down on the other inmates, described his intelligence as far superior to theirs, and asserted that "they have no common sense, nothing intellectual to offer." He avoided having "anything to do with them," except to gain something from them, such as money or commissary goods. When he was motivated to cozy up to another inmate, he was often successful and boasted that they would "live like kings," while he profited from the relationship. As soon as the profits ran dry, however, Mr. A never hesitated to move on to the next opportunity.

Mr. A rarely found it necessary or even interesting to contemplate his past. When confronted about his crimes, including theft, assault, drugs, and murder, he replied that he "often feels indifferent about what happened" and "didn't think

about a victim ever in [his] life." He elaborated that he felt no sympathy for the man he murdered because he (the victim) had stolen from him, and "it was a matter of respect." He did feel strongly, however, that many others were to blame for his incarceration, including the individual who "ratted" on him, his "horrible" defense attorney, who was a "poor planner," and the "rigged" trial. When asked about his future, Mr. A was confident and nonchalant as he listed goals, which included "owning stuff," like his own business, and "having no problems." He felt little concern that his criminal past would present an obstacle to these goals, as he boasted, "I've had felonies since 8 and always got a job."

At the time of this interview, Mr. A was an inmate in a state correctional facility, serving time for drug possession. He consented to participating in our study of personality and decision-making factors that influence people's problems with the law. In reviewing his case file, we noted that Mr. A had been in correctional custody 15 times and that he had participated in a number of prison-based treatment programs (at least four documented), none of which seemed to result in any positive behavioral change. Our assessment of Mr. A revealed that he met criteria for a class of individuals typically referred to as psychopathic. Psychopathy has captured the attention of the media, lay public, legal authorities, and scholars. Most people are familiar with the names of "famous" psychopathic individuals, such as Jeffrey Dahmer, Ted Bundy, and John Wayne Gacy. That said, it is important to note that not all psychopathic individuals commit crimes as extreme as these individuals, and not all psychopathic individuals are the same in terms of the types of characteristics they display. So what are the core personality characteristics of psychopathic individuals?

Psychopathic individuals exhibit a chronic and flagrant disregard for moral, social, and oftentimes, legal norms. They display an inability to form genuine relationships with parents, teachers, friends, or lovers; limited and superficial affective processing, especially with respect to anticipatory anxiety and remorse; and an impulsive behavioral style, including a general failure to evaluate anticipated actions and inhibit inappropriate ones. Many, especially those like Mr. A, demonstrate a chronic antisocial lifestyle starting early in life, which entails great costs to society and to the affected individual (e.g., incarceration) (Hare, 2006; Skeem & Cooke, 2010). Both Mr. A's life history narrative and his presentation of self during our interview showed him to be simultaneously charming and callous, deliberate and impulsive, and criminally repetitive, as well as versatile. And similar to other psychopathic individuals, his temperament interfered with normal socialization throughout life and later, with therapeutic intervention.

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Although their numbers in the general population are small (approximately 1%), psychopathic individuals commit two to three times more violent and nonviolent crimes and recidivate at a much higher rate than nonpsychopathic individuals (Hare, 2006; Hare & Neumann, 2009). This persistent antisocial behavior is responsible for a disproportionate share of the estimated $2.34 trillion in annual costs associated with crime in the United States (Anderson, 1999; Kiehl & Hoffman, 2011). Furthermore, psychopathic individuals account for between 15 and 25% of the prison population (Hare, 1996). Nonetheless, a clear understanding of the complexity of their behavior remains somewhat elusive, and many clinicians, like those who determined the fate of Mr. A, believe that there is little possibility that psychopathic individuals are at all amenable to treatment.

Is it the case that psychopathic individuals are destined to fail all treatments? Or is it possible that a new approach to translating scientific knowledge about psychopathic behavior into treatment interventions may provide cause for greater optimism? In this chapter, we explain that the failure of traditional therapies may be rooted in the lack of attention to the relatively unique cognitive–affective dysfunctions associated with psychopathy. Using the case of Mr. A, we suggest that if progress in treatment is to be made, interventions must specifically target the cognitive–affective problems evident among psychopathic individuals.

## How Problematic are Treatments for Psychopathic Individuals?

Historically, the prognosis for psychopathy has been poor. Research consistently suggests that psychopathic individuals are resistant to various treatment approaches. Compared to nonpsychopathic individuals, they demonstrate poor program adjustment and higher attrition (Berger, Rotermund, Vieth, & Hohnhorst, 2012; Ogloff, Wong, & Greenwood, 1990; Olver & Wong,

2009, 2011), and achieve lower levels of therapeutic gain (Chakhssi, de Ruiter, & Bernstein, 2010; Hughes, Hogue, Hollin, & Champion, 1997; Roche, Shoss, Pincus, & Ménard, 2011). Furthermore, in some studies, treatment appears to be associated with heightened rates of recidivism for psychopathic individuals (Hare, Clark, Grann, & Thornton, 2000; Rice, Harris, & Cormier, 1992). This was true in the case of Mr. A, who received prison-based treatment during each of his incarcerations, and whose self-reports and official records confirm high rates of repeat offending following these treatments.

To what types of treatment are most prison inmates exposed? Typically, the vast majority revolves around some form of cognitive-behavioral therapy (CBT). Evaluations of the efficacy of CBT within prison populations, in general, are equivocal. However, and importantly, studies have clearly shown CBT, individual or group, to be ineffective for psychopathic individuals. Hitchcock (1994) compared the effects of CBT in psychopathic and nonpsychopathic inmates and found that this form of treatment had little effect in either sample. Other studies evaluating the efficacy of CBT reported that (1) psychopathy correlated negatively with clinical improvements in forensic patients (Hughes et al., 1997), (2) offenders with elevated levels of psychopathy were more likely to reoffend despite showing improvements due to treatment (Olver, Lewis, & Wong, 2013; Seto & Barbaree, 1999), (3) sexual offenders with high levels of psychopathy were more likely to quit the program and to recidivate (Olver & Wong, 2009), and (4) the interpersonal–affective characteristics (e.g., glibness/charm, callousness, shallow affect) of psychopathy, especially the affective characteristics, were a strong positive predictor of violent recidivism, despite participation in CBT treatment (Olver et al., 2013). Thus, the pattern of findings in studies using CBT in offender populations suggest no or very limited treatment efficacy. This lack in efficacy is especially true with higher levels of psychopathy.

CBT also has been integrated into other types of interventions. For instance, it has been incorporated into milieu therapy, which uses therapeutic communities to effect behavior change. Though there are differences across milieu therapy settings, this combined approach generally implements techniques that support self-examination, the development of accountability, and the enhancement of effective interpersonal engagement through CBT strategies. Similar to individual therapy, this integrated approach has not been effective in psychopathic individuals. Rice and colleagues (1992) evaluated a therapeutic community program that targeted the development of empathy and responsibility, which was believed to be a good approach for treating psychopathy. A follow-up evaluation, conducted approximately 10.5 years after treatment ended, showed that participants with psychopathy, compared to those without psychopathy, had a higher rate of violent recidivism. In contrast, offenders without psychopathy who followed the treatment had a lower rate of reoffending. These findings led Hare (2006) to suggest that "some of the most popular prison treatment and socialization programs may actually make psychopaths worse than they were before. . . . Group therapy and insight oriented programs help psychopaths develop better ways of manipulating, deceiving and using people but do little to help them understand themselves" (p. 717).

Another study of incarcerated offenders found that those with psychopathy tended to invest less time in the program and were less motivated to change their behavior, while nonpsychopathic offenders did benefit from the treatment (Ogloff et al., 1990). Hobson, Scott, and Rubia (2011) reported similar results. They demonstrated that the interpersonal–affective traits of psychopathy, such as shallow affect and charm, were strongly associated with disruptive behaviors in the therapeutic community and on the ward. Thus, research indicates that therapeutic communities may be useful for treating offenders in general but not psychopathic offenders in particular.

Overall, there is little evidence that traditional psychological interventions are effective for psychopathic individuals. Most consistently, psychopathic individuals are found to be unresponsive to individual, group, and community CBT. It should be noted, though, that most of the psychopathy-related treatment studies have been plagued by issues such as flawed design, relatively small sample size, inaccurate characterization of target populations, and use of outcome measures that some have deemed inappropriate (D'Silva, Duggan, & McCarthy, 2004; Harris & Rice, 2006). In light of these shortcomings, some have argued that it is premature to draw the general conclusion that treatment does not work in populations with high levels of psychopathy (D'Silva et al., 2004;

Salekin, Worley, & Grimes, 2010). That said, it is clear that current treatment options for psychopathy fall short. The question remains: Are these individuals untreatable, or are they just not receiving the correct treatment? We believe that in order to address the psychopathic individual's abject failure to adhere to social norms, it is essential to develop treatment programs that capitalize on an understanding of the specific processes underlying this form of psychopathology.

## What Are the Core Deficits of Psychopathic Individuals?

Over the past several decades, discoveries in neurobiology, cognitive neuroscience, and other disciplines have led to significant revisions in our understanding of the underlying cognitive–affective mechanisms contributing to psychopathy. The behavior of psychopathic individuals has most often been understood in the context of the low-fear model (Lykken, 1957). However, this traditional view tends to undervalue the role that cognitive–affective and cortical–subcortical brain interactions have in modulating the behavior of psychopathic individuals. Thus, more recent theoretical and empirical models of psychopathy attempt to integrate cognitive and affective patterns, and their influence on prototypical psychopathic behavior. In this section, we review briefly the evidence supporting different etiological models of psychopathy.

Many of the most prominent models of psychopathy attribute the behavior of psychopathic individuals to core deficits in experience of emotion, which prevents them from generating negative affect responses to aversive stimuli and limits their capacity for empathic experience sharing with others (Lykken, 1995; Patrick, 2007). Consistent with this suggestion, psychopathic individuals show deficits in viewing (e.g., processing facial emotions; Marsh & Blair, 2008), responding to (e.g., startle reflex while viewing emotional pictures; Levenston, Patrick, Bradley, & Lang, 2000; Patrick, 1994), and utilizing (e.g., attibuting mental states to onself and others; Shamay-Tsoory, Harari, Aharon-Peretz, & Levkovitz, 2010) emotion information. Additionally, psychopathic individuals show widespread structural and functional neural abnormalities (Baskin-Sommers, Neumann, Cope, & Kiehl, 2016; Koenigs, Baskin-Sommers, Zeier, & Newman, 2011), particularly in brain regions important for emotion processing. For example, psychopathic individuals show reduced recruitment of amygdala and medial orbitofrontal cortex (mOFC) during tasks that ask about moral dilemmas (Decety, Chen, Harenski, & Kiehl, 2013; Glenn, Iyer, Graham, Koleva, & Haidt, 2009), blunted amygdala responsiveness during tasks that ask participants to take the emotional perspective of others (Decety, Chen, et al., 2013; Marsh et al., 2013), and weaker mOFC engagement in response to tasks related to empathic processing (Decety, Skelly, & Kiehl, 2013) and emotional faces (Hyde, Byrd, Votruba-Drzal, Hariri, & Manuck, 2014). Finally, psychopathic individuals demonstrate reduced structural and functional connectivity between the amygdala and mOFC (Craig et al., 2009; Motzkin, Newman, Kiehl, & Koenigs, 2011), which indicates that psychopathic individuals have poorer tissue health connecting these regions and improper recruitment of cognitive functions to regulate emotions. These emotion deficits are clear in the case of Mr. A, who reported feeling "detached" from others, inappropriate affect in response to emotional or risky situations, indifference about hurting others, and little concern for his victims.

While psychopathy research largely focuses on these basic emotion processes, there is substantial evidence that these deficits are moderated by context. Newman and Baskin-Sommers (2011) propose that the context specificity of the psychopathic individual's deficits is associated with a core dysfunction in the adaptive deployment of selective attention, which then interferes with processing information, including emotions. *Selective attention* is a multistage process that influences encoding, processing, and response selection, and basically any and all of our interactions. It is impossible to attend to every stimulus in our environment; therefore, we use selective attention to discern what stimuli are important as events occur (e.g., noticing a loud noise outside while one is talking to a friend). Newman and Baskin-Sommers suggest that a dysfunction at an early stage of selective attention, known as an *early attention bottleneck,* sifts through and evaluates multidimensional information serially rather than simultaneously, thus hindering information processing that either conflicts with goal-directed behavior or requires an efficient evaluation of information embedded within a complex, multifaceted context (Baskin-Sommers, Curtin, & Newman, 2011). For individuals with psychopathy, the

bottleneck creates an advantage in many situations that require individuals to filter potential distracters (Hiatt, Schmitt, & Newman, 2004; Mitchell et al., 2006; Wolf et al., 2012; Zeier, Maxwell, & Newman, 2009). For example, Mr. A is able to convince women to pay for housing and provide money and sex because he focuses on his conquests without being affected by the distress of others or inhibitory emotions that prevent many from taking advantage of others. However, this advantage is counterbalanced by the reduced ability of psychopathic individuals to attend to multiple ongoing streams of information (Baskin-Sommers, Curtin, & Newman, 2013; Glass & Newman, 2009; Newman & Kosson, 1986). In the case of Mr. A, the cold logic he described in the moment and upon recounting the murder he committed demonstrates a stark focus on "respect" and order, and ignores the downstream impact murder can have on the victim, on the victim's family (e.g., grief), and on Mr. A (e.g., reincarceration). Consequently, this trade-off results in a tendency to overlook important information, unless it specifically relates to the psychopathic individual's goal-directed focus of attention.

Research using diverse experimental tasks, ranging from those that assess learning about punishment (e.g., passive avoidance) and threat (e.g., instructed fear conditioning) to viewing emotional pictures to make moral decisions, to experiencing regret (e.g., counterfactual reasoning), support the attention bottleneck perspective. These studies demonstrate that psychopathic offenders display normal responses (e.g., behavioral inhibition, fear-potentiated startle, emotion-modulated startle, amygdala activation, electrodermal activity, and affective ratings) to affective information when it is part of their goal-directed task or embedded in a perceptually simple display (Baskin-Sommers et al., 2011, 2013; Baskin-Sommers, Stuppy-Sullivan, & Buckholtz, 2016; Dadds et al., 2006; Decety, Skelly, et al., 2013; Meffert, Gazzola, den Boer, Bartels, & Keysers, 2013; Newman, Curtin, Bertsch, & Baskin-Sommers, 2010; Newman & Kosson, 1986; Sadeh & Verona, 2012). Yet their reactions to the same affective stimuli are deficient, relative to reactions of nonpsychopathic offenders, when their attention has been allocated to an alternative goal or complex aspect of the situation (see Newman & Baskin-Sommers, 2011, for review).

In practical terms, this cognitive–affective deficit in attention to context results in a myopic perspective on decision making and goal-directed behavior. Thus, individuals with psychopathy are adept at using information that is directly relevant to their goal to effectively regulate behavior (modulate behavior and ignore emotions to con someone; e.g., when Mr. A takes advantage of other inmates or women), but they display impulsive behavior (e.g., quitting a job in the absence of an alternative one; when Mr. A moves from one place to another) and egregious decision making (e.g., seeking publicity for a con while wanted by police) when information is beyond their immediate focus of attention.

A recent series of studies investigating fear-potentiated startle (FPS) and amygdala activation provides strong support for the context specificity of psychopathy-related cognitive–affective deficits. The first experimental task in these studies required participants to view and categorize letter stimuli that may also be used to predict the administration of electric shocks. Instructions engaged either a goal-directed focus on threat-relevant information (i.e., the color that predicted electric shocks) or an alternative, threat-irrelevant dimension of the letter stimuli (i.e., an uppercase/lowercase letter or its match/mismatch in a two-back task). The results provided no evidence of a psychopathy-related deficit in FPS under conditions that focused attention on threat-relevant information. However, psychopathy scores were significantly inversely related to FPS under conditions that required participants to focus on a threat-irrelevant dimension of stimuli (i.e., peripheral threat cues).

Although the results from Newman and colleagues (2010) provide some of the strongest evidence to date that the fear deficit in psychopathy is moderated by attention, the study did not specifically define the attentional mechanism underlying this effect. Moreover, several different cognitive–affective processes can influence goal-directed behavior and may involve diverse neural and cognitive systems. Narrowing down the possible mechanisms responsible for psychopathic individuals' attention abnormality provides a more nuanced conceptualization of why psychopathic individuals do what they do and identifies a precise target for intervention.

Baskin-Sommers and colleagues (2011) specified this attention-mediated abnormality in a new sample of offenders by measuring FPS in four conditions that crossed attentional focus (threat vs. alternative) with temporal presenta-

tion of goal-relevant cues (early vs. late). First, the authors replicated the key findings reported by Newman and colleagues (2010): Psychopathic individuals' deficit in FPS was virtually nonexistent under conditions that focused attention on the threat-relevant stimuli (i.e., threat-focus conditions), but it was pronounced when threat-relevant cues were peripheral to their primary focus of attention (i.e., alternative-focus conditions). More specifically, the psychopathic deficit in FPS was only apparent in the early alternative-focus condition, in which threat cues were presented after the alternative goal-directed focus was already established. Furthermore, in a separate sample of offenders, using the same task, Larson and colleagues (2013) demonstrated that psychopathic, compared to nonpsychopathic, individuals displayed significantly lower activation in the amygdala in the early alternative-focus condition, but there was no difference in amygdala activation in other conditions. Moreover, higher lateral prefrontal cortex activation, a neural substrate of the attention bottleneck, mediated the relationship between psychopathy and amygdala activation. Combined, these studies show that affective and inhibitory deficits can appear and disappear in psychopathic individuals, depending on the congruence of affective or inhibitory information with their goal (Brazil et al., 2012; Glass & Newman, 2009; Hiatt et al., 2004; Sadeh & Verona, 2008, 2012); that is, the emotion deficits of psychopathic individuals are not pansituational, or fundamental in an absolute sense, but rather are context-specific. By identifying the contexts under which psychopathic individuals do and do not experience emotion provides a target for intervention.

While substantial progress has been made in specifying the types of behaviors that characterize psychopathy and in identifying well-validated measures that assess their underlying etiology, there has been no sustained effort to translate this progress into treatment programs. In some ways, this is due to lingering doubts regarding the amenability of psychopathic individuals to treatment. However, these misgivings are rooted in the failure of traditional therapies to address the relatively unique cognitive–affective dysfunctions associated with this subgroup of offenders. Therefore, if progress in treatment is to be made, interventions must integrate scientific knowledge about the cognitive–affective problems that are specific to psychopathy.

## How Can We Apply Knowledge of Cognitive–Affective Mechanisms to Treatment for Psychopathy?

For decades, mental health professionals have struggled with the "one size fits all" approach to treatment. Clinicians have experienced great frustration when delivering treatment to clients who do not respond, or regrettably, even worsen. There has been little cross-fertilization between researchers and clinicians generally, and, with respect to psychopathic individuals, there has been little incentive to focus on innovations for a population deemed largely "untreatable." However, recent technological advances in individualized medicine have opened avenues for innovative approaches that integrate basic research with clinical practice. There is some early evidence that these new approaches may be effective, even in the treatment of psychopathy.

As briefly reviewed earlier, psychopathic individuals have a fundamental problem with attending to contextual cues, whether those are affective, inhibitory, or other forms of information. This dysfunction is located in several neural structures (i.e., amygdala, orbitofrontal cortex, and prefrontal cortex) and manifests in the psychopathic individual's unremitting, cold-blooded, and antisocial behavior. While some consider this picture of psychopathy to be evidence of its unreachability, we maintain that there is promise in taking this information regarding psychopathy-related cognitive–affective dysfunction and integrating it with our understanding of neural plasticity. In other words, treatment of psychopathic individuals may be effective if we recognize the malleability of dysfunctions in the brain and target the specific cognitive–affective mechanisms associated with this particular form of psychopathology.

*Cognitive remediation* is an intervention rooted in the assumption that if we can identify and understand the mechanisms of behavior, then we can improve functioning. Specifically, it emphasizes the training of individuals in particular cognitive skills—such as sustained attention and working memory—so that behavior can be modified (Klingberg, 2010; Wykes, Huddy, Cellard, McGurk, & Czobor, 2011). For example, in healthy adults, Klingberg and colleagues have shown that working memory training not only improves overall working memory capacity, but it also changes the functioning of dopamine neurotransmission and brain plastic-

ity (see McNab et al., 2009). Research examining the effects of cognitive remediation on disorders with known cognitive abnormalities, such as attention-deficit/hyperactivity disorder and schizophrenia, also have been promising (Stevenson, Whitmont, Bornholt, Livesey, & Stevenson, 2002; Wykes et al., 2003).

In light of the information emerging from the attention bottleneck perspective, we sought to adapt cognitive remediation interventions for the treatment of psychopathy. Baskin-Sommers, Curtin, and Newman (2015) designed a cognitive intervention that targeted the attention to context deficit associated with psychopathy and examined the efficacy of this intervention in a sample of incarcerated, adult male offenders. Participants in the study included 124 substance-dependent inmates who were classified as psychopathic or nonpsychopathic. The overall goal of this study was to evaluate the possibility of measuring the cognitive–affective deficits specific to psychopathy, bring about change in those deficits (i.e., training), and effect generalizable change relevant to other tasks that were not the focus of repeated practice (i.e., pre- and posttasks).

First, all participants completed five different attention, working memory, and emotion tasks that measured behavioral and psychophysiological responses (e.g., instructed fear conditioning, described earlier; Baskin-Sommers et al., 2011). Second, after completion of pretesting, psychopathic and nonpsychopathic offenders were randomly assigned to one of two computerized training packages, utilizing a 2 × 2 crossover design. Each of the training packages consisted of a 1-hour computer-based training session, once a week for 6 weeks, that used three tasks to target a particular deficit. The experimental training targeted the psychopathy-related attention to context deficit, while the control training targeted general affect regulation and cognitive control (deficits not present in psychopathic individuals). At the end of each training task within each session, participants were shown a graph of their progress on relevant task measures. The end-of-session graphs displayed the session number on the *x*-axis and some measure of behavioral performance for that task (e.g., percent correct) on the *y*-axis. During the presentation of each graph, the research assistant explained to the participant his score for that session and pointed out how the participant's performance compared to performance on other sessions, as appropriate. If the participant improved, the research assistant said something to the effect of "You can see that from Session *X* to this session, you did better. This suggests that your training is helping build the necessary skills to notice and use important information." If the participant's performance was the same, the research assistant would say, "Sometimes when you are learning new skills, you don't always improve on every session." Finally, if the participant's performance declined, the research assistant would state, "Sometimes when you are learning new skills, you don't always improve on every session. In fact, sometimes we do worse before we can do better. But with practice, things will eventually click, and everything will come together. You will have other opportunities to practice these skills." The purpose of these graphs was to address motivational engagement.

Consistent with the research noted earlier on cognitive–affective mechanisms related to psychopathy, the actual training for psychopathy was focused on attending to and integrating contextual information. Each task provided individuals with opportunities to practice attention to peripheral or nonsalient cues and notice changes in contextual information (e.g., rule changes using a reversal learning task, context discrimination using a divided visual field task, and integrating facial information to respond to instructions about the direction of eye gaze). For example, in the reversal learning task, animals appeared on the screen. The participant had to choose one of the animals. After the participant's response, the participant was told whether he was correct (win 100 points) or incorrect (lose 100 points). One animal began as being correct more often, but at some point during the task, that winning animal started losing the participant points, and the previously losing animal started winning him points. Therefore, to do well on this task, the participant had to notice that shift (i.e., context) related to winning and losing animals. In the divided visual field task, participants were suppose to indicate whether a string was all letters, all numbers, or a combination of letters and numbers. But surrounding those strings was a colored box; if the box was green, the participant responded per the instructions, but if it was yellow, the participant was instructed to withhold his response. In other words, to do this task well, the participant needed to pay attention to the color of the box before making a response. Finally, in the gaze task, participants had to respond to

whether the eyes on a face were looking left or right, by pressing the button that matched the eye gaze (right gaze, right button; left gaze left button). However, each session, the participant was told that for one of the emotion faces (e.g., anger, happy, fear), he had the press the button that was the opposite of the eye gaze (e.g., if the eyes look left, press the right button). Therefore, if the participant failed to notice the emotion on the face, then he would probably respond incorrectly. The control training package was not designed to target psychopathy but instead focused on providing practice inhibiting behavior and regulating emotion reactions more generally (e.g., incentive salience and cognitive control using a GoStop task, distress tolerance using breath holding, and cognitive control using a Simon task). For example, in the Go-Stop task, participants saw circles and squares and had to press one button for the circle and the other for the square. However, on some trials, participants heard a tone after the square or circle appeared on the screen. When participants heard a tone, they were supposed to withhold their response. After the trial, participants were told whether they were correct (won 5 cents) or incorrect (lost 25 cents). This type of task did not test the attention to and integration of contextual information; rather, the focus was more on learning to inhibit a response in the face of rewards and punishment (processes not related to the core cognitive–affective dysfunctions in psychopathy). The other two control tasks measured distress tolerance and cognitive control, respectively, which also are not deficient processes in psychopathic individuals. Last, following completion of the training session, all participants repeated the pretesting behavioral and psychophysiological assessments.

After 6 weeks of computerized training, psychopathic participants in the attention to context (i.e., the psychopathy-specific) training group demonstrated significant improvement on the three training tasks. Conversely, psychopathic participants in the control condition showed no significant improvement over the course of training on the non-psychopathy-specific tasks. Moreover, psychopathic participants who received the deficit-matched training related to attending to contextual cues showed significant improvement on the pre- and postmeasures, whereas those who received the control training did not improve from pre- to postmeasures; that is, whereas psychopathic individuals previously showed deficits in FPS on instructed fear conditioning, they no longer showed significant deficits on this measure if they received the attention to context training. Together, these results demonstrate that it is possible to identify and target the cognitive–affective deficits associated with psychopathy; specifically, training designed to remedy these deficits resulted in differential improvement on trained and nontrained tasks.

As noted throughout this chapter, Mr. A can be viewed as a prototypical psychopathic individual whose cold, callous, impulsive, and antisocial behavior is best understood as a problem attending to contextual cues. He ignores the feelings of others and the consequences of his behavior not because he does not care or is incapable, but because he has a diminished ability to notice and integrate all pieces of a situation at the same time. Moreover, traditional treatments have failed Mr. A, and this is quite likely because those treatments require noticing cues in a situation or patterns across time that are necessitated by integrating contextual cues. However, Baskin-Sommers and colleagues (2015) demonstrated that it is possible to identify failures in attention to context and modify those failures. For Mr. A, learning to integrate the facial emotion and direction of the eyes, to notice rule changes in a game, and to discriminate between stimuli to determine the best response address his core deficiency. Importantly, Mr. A does not need to be aware of these changes or deliberately engage with them. The advantage of the training is that he just needs to learn how to play the games better, and by extension, is learning to use functions that are normally inadequate for him. Ultimately, this type of training targets the fractionated view Mr. A has of the world around him and trains him to develop a more unified representation of a given context.

These findings represent only a first test of the efficacy of a cognitive remediation approach to the treatment of psychopathy, but they are especially promising because they oppose the common notion that the deficits associated with psychopathy are intractable, and that effective treatment is not possible. However, it is important to remember that these tests were conducted in a laboratory setting, and it would be naive to assume that psychopathy can be treated by playing focused computer games for 6 hours. Therefore, it is essential to test whether this type of cognitive remediation training translates to real-word behavior and settings

outside of the lab. Additionally, questions related to durability, efficiency, and portability of the lab-based interventions must be addressed. For example, the use of homework assignments (e.g., vignettes that depict situations relevant to attending to context), booster training sessions, and other assessments may help generalize the training effects to more ecologically valid indices of self-regulation and community adjustment. Despite the substantial work needed to move forward this line of research, our work emphasizes the value of identifying, developing, and testing mechanism-based intervention. Moreover, it highlights the substantial potential to address psychopathic individuals' disinhibited and costly behavior by identifying and targeting the specific cognitive–affective dysfunctions that characterize this form of psychopathology.

## Summary

Psychopathy is a multifaceted disorder that has perplexed clinicians for many years. Individuals with psychopathy present as callous, superficial, manipulative, impulsive, and antisocial. To be in a room with a psychopathic individual can feel like the walls are closing in on you, but at the same time you are enjoying your time with this person. The grandiosity, charm, and control psychopathic individuals display leave clinicians feeling overwhelmed and uncertain. These traits, in addition to historically poor treatment outcomes, contribute to the common belief that psychopathy is simply an untreatable disorder. Fundamentally, though, psychopathic individuals are humans: people who have experiences and predispositions that shape them and determine how they engage with the world around them. We invite clinicians to begin to think in interdisciplinary and evidence-based ways to meet the needs of such challenging clients rather than view these individuals as hopeless.

Decades of experimental research have identified that individuals with psychopathy are effectively oblivious to emotional, inhibitory, and punishment cues that contraindicate ongoing goal-directed behavior. Thinking critically about what this means for engaging in treatment, it is not surprising that psychopathic individuals struggle to incorporate treatment skills and information into their real-world behavior. Therefore, traditional treatment approaches may be futile on their own. If, however, the underlying mechanisms of the psychopathy-related attention-to-context deficit are addressed, clinicians may be better able to effectively use treatments designed to help with real-world functioning. Combining cognitive remediation training and traditional therapeutic approaches has the potential to address the cognitive–affective dysfunctions associated with psychopathy from multiple angles. The use of cognitive remediation provides a psychobiologically based approach to target dysfunctions that impact how information in processed by psychopathic individuals and circumvents issues of insight, motivation for change, and treatment engagement. Once key psychobiological substrates are modified, the way in which psychopathic individuals take in information may also change, positioning them to view and use other therapeutic skills in a different, more adaptive manner.

Though research on novel approaches to treating psychopathy is in its infancy, clinicians can take steps to integrate knowledge of the mechanisms underlying psychopathic behavior into their case conceptualization and treatment approach. For instance, clinicians can ask questions that consider attending to contextual cues (e.g., noticing the emotions of others, noting the consequences), they can read available empirical research that extends beyond traditional treatment (e.g., cognitive remediation/computerized training), they can critically evaluate the situations in which therapeutic skills work (e.g., when emotions are self-focused or central to the psychopathic individual's goal) and do not work (e.g., when situations are complex), and they can consider mechanistic reasons for treatment success or failure. Ultimately, it is most likely that the combination of these traditional therapeutic techniques and technology (e.g., cognitive remediation through computerized training) will have the greatest potential for targeting the complex behavior of psychopathic individuals. Regardless of the approach, the key is to be aware of and target the underlying mechanisms.

Psychopathy produces suffering for the individual, for his or her family members, for the community, and for society at large. Importantly, the underlying cognitive–affective mechanisms tell us *why* the psychopathic individual continues to engage in these behaviors, despite the persistence of suffering. Utilizing the approach of knowledge integration from basic science on these cognitive–affective mechanisms

to intervention research highlights the path for alleviating this suffering.

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