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ORIGINAL PAPER

An Examination of the Communication Styles Associated with Psychopathy and Their Influence on Observer Impressions

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Abstract Psychopathic individuals are characterized as "intra-species predators"—callous, impulsive, aggressive, and proficient at interpersonal manipulation. For example, despite their high risk for re-offending, psychopathic offenders often receive early release on parole. While reputed to be social chameleons, research suggests that even naive observers can accurately infer high levels of psychopathic traits in others with very brief exposures to behavior, but accuracy degrades with extended observation. We utilized a lens model approach to examine the communication styles (emotional facial expressions, body language, and verbal content) of offenders varying in levels of psychopathic traits using "thin slice" video clips of psychological assessment interviews and to reveal which cues observers use to inform their evaluations of psychopathy. Psychopathic traits were associated with more (a) Duchenne smiles, (b) negative (angry) emotional language, and (c) hand gestures (illustrators). Further, psychopathy was associated with a marked behavioral incongruence; when individuals scoring high in psychopathic traits engaged in Duchenne smiles they were also more likely to use angry language. Naïve observers relied on each of these valid behavioral signals to quickly and accurately detect psychopathic traits. These findings provide insight into psychopathic communication styles, opportunities for improving the detection of psychopathic personality traits, and may provide an avenue for understanding successful psychopathic manipulation.

Keywords Psychopathy · First impressions · Communication · Nonverbal behavior · Lens model

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Introduction

Although psychopathy is characterized by affective deficits and antisocial behavioral tendencies, psychopathic traits are also associated with success in manipulating and charming others (Hare 2003). The condition—as described by the Psychopathy Checklist-Revised (PCL-R; Hare 2003)—is often subdivided into two factors (each with two facets). Factor 1 reflects the interpersonal and affective features of the disorder, including a manipulative interpersonal style and a blunting of emotional capacities including diminished experience of emotional distress at the suffering of others, and decreased experience of social emotions such as guilt in response to causing harm. Factor 2 is associated with impulsivity, poor behavioral control, aggression, and a socially deviant lifestyle (Fowles and Dindo 2006; Gillespie et al. 2015; Hare et al. 2000; but see Patrick et al. 2009; Lilienfeld et al. 2015 for an alternative, three-factor model). Despite the pathological nature of psychopathy, clinical lore suggests that psychopathy is linked to elevated, "smooth" conversational skills, and skill at lying to, charming, and ultimately manipulating others. Psychopathic offenders convicted of a sexual (rape and/or molestation) offense, for example, are two and a half times more likely than non-psychopathic sexual offenders to be successful in their applications for parole, despite a substantially higher rate of re-offending (Porter et al. 2009; also see Häkkänen-Nyholm and Hare 2009). Some may even use their skill at conning others to become cult leaders, corrupt politicians, or corporate leaders (Babiak and Hare 2006; Lilienfeld et al. 2015).

While there is provisional evidence that psychopathic traits are related to successful interpersonal manipulation (e.g., Book et al. 2015), they do not necessarily go unnoticed by observers. Research suggests that naïve observers can accurately detect psychopathic traits in others, after watching only seconds ("thin slices") of their behavior. Fowler et al. (2009) presented observers with 5-, 10-, and 20-s segments of audio-only, video-only, or combined audio and video clips from videotaped PCL-R interviews of federal prison inmates. Contrary to previous research suggesting that lengthier interpersonal interactions lead to greater accuracy in observer personality judgments (e.g., Biesanz et al. 2007; Carney et al. 2007), participants in Fowler et al.'s (2009) study were more accurate at sensing the presence of psychopathic traits when provided with 5- and 10-s video clips relative to longer clips. Although these findings were modest in magnitude, they raised the possibility that human observers possess an intuitive "predator radar" that is reasonably accurate, but that can quickly be taken off course by extended interpersonal exposure to a psychopaths' verbal and nonverbal presentation. The fascinating issue of *how* this occurs remains to be resolved and surprisingly little research has even addressed the manner in which psychopaths communicate verbally and nonverbally. We examined whether individuals with higher levels of psychopathic traits behave differently than less psychopathic individuals, and whether naïve observers use this information to make accurate interpersonal judgments.

What is Known About Psychopathic Behavior?

Body Language

Although there has been much speculation about the beguiling charm characteristic of the psychopathic personality, there has been little systematic research on how psychopathic individuals communicate or behave during interpersonal interactions. The two studies to

date that have examined psychopathic behavior in the context of interviews were conducted prior to the development of the widely-used Psychopathy Checklist-Revised (PCL-R; Hare 2003). The first, by Rimé et al. (1978), found that "psychopathic" young offenders spoke more, and perhaps, as a result, used relatively more hand gestures than non-psychopathic offenders. Psychopathic young offenders also leaned forward more often, smiled less, and made more intense eye contact during conversation, relative to non-psychopaths. Similarly, Gillstrom and Hare (1988) found that—relative to non-psychopaths—psychopathic offenders used more hand gestures, while speaking, but which were unrelated to their content of speech. Findings suggest that psychopathic offenders are more animated speakers than their non-psychopathic counterparts. However, these studies were conducted prior to the development of standard research criteria for assessing psychopathy (i.e., PCL-R) and the measures utilized in these studies did not produce factor scores, which can provide granularity on the particular features of psychopathy that produce distinct behavioral profiles.

Despite this limitation of the previous research, findings corroborate clinical observations that psychopaths tend to use their hands as a powerful communication tool with which to control and dominate conversations and distract attention from their potentially deceptive or illogical verbal messages. This notion is further substantiated, albeit indirectly, by research indicating that individuals who use more, and broader, hand gestures, are perceived to be powerful and exert greater social influence than participants who exhibit less such behavior (Carney et al. 2005; Dunbar and Burgoon 2005; Hall et al. 2005). Thus, psychopaths may use an animated nonverbal communication style to assert their dominance in a conversation. Further, the use of hand movements may be used to distract an observer's attention from the deceptive content of their speech. Although psychopathy was not the focus of their investigation, Porter et al. (2008) found that federal offenders showed a higher rate of self-manipulations (e.g., touch/scratch head) and spoke faster when lying than did non-offenders. Further, Klaver et al. (2007) investigated behavioral clues to deception in a sample of offenders and found that increases in speech hesitations, illustrator use (e.g., hand gestures), and blink rate during communication were correlated with scores on interpersonal features of psychopathy. These associations were more pronounced during deception than truth-telling. Taken together, increased speech hesitations, blink rate, and self-manipulations might suggest that individuals with higher levels of psychopathic traits experience greater stress while lying than do individuals with lower levels of such traits (DePaulo et al. 2003; Zuckerman et al. 1981). Alternatively, an observer may perceive the increased use of various hand movements (i.e., illustrators and manipulators) as indicative of animation, more generally. Although the present research did not examine psychopathic behavior in genuine versus truthful statements, these studies suggest that more psychopathic individuals tend to behave differently than individuals with fewer psychopathic traits and that distinct nonverbal profiles may emerge in other contexts as well—including during clinical interviews where there is reason to engage in impression management.

Emotional Facial Expressions

There has been similarly little study of the emotional facial expressions of psychopathic individuals, but clinical lore and limited empirical research suggests that their chameleon-like personas include the ability to adopt convincing facial expressions that facilitate the persuasion and manipulation of others. For example, Book et al. (2015) found that psychopathic personality traits were associated with an increased ability to accurately mimic

fearful and remorseful emotional expressions. Further, research by Porter et al. (2011) found that individuals scoring high on psychopathic traits—particularly its Factor 1, interpersonal and affective features—were more successful at producing false emotional expressions while observing emotional images of a different valence (e.g., producing a smile while observing a sad image). Specifically, individuals with greater psychopathic traits were less likely to engage in "leakages" of emotion (i.e., facial movements) associated with the underlying emotion they were attempting to conceal than participants with fewer psychopathic traits. Indeed, the psychopath's shallow affect may facilitate such forms of emotional falsification by reducing the intensity of genuine emotional experience to be "leaked". In short, despite psychopaths' presumed dearth of emotional experience, or perhaps because of it, they appear to have a greater ability to adopt convincing but false emotional expressions.

Verbal Content

In addition to body language and facial expressions, spoken words can provide insight into psychological tendencies (Pennebaker et al. 2003), including personality traits and mental illness (Oberlander and Gill 2006; Pennebaker and Graybeal 2001). In particular, research suggests that subtle patterns in word choice can help to reveal pathological personality traits, such as those of psychopathy. For example, Hancock et al. (2013) examined the crime narratives of psychopathic and non-psychopathic homicide offenders. They found that psychopaths used more rational cause-and-effect descriptors (e.g., "because", "since"), focused more on material needs (e.g., food, drink, money), and used fewer references to social needs (e.g., family, religion/spirituality) than did non-psychopathic participants. The narratives of psychopathic participants also contained a higher frequency of filled pauses ("uh", "um"), suggesting that describing a powerful "emotional" event to another person was cognitively challenging for them (Hancock et al. 2013; Kasl and Mahl 1965). Finally, psychopaths used more past tense and fewer present tense verbs in their narratives, with language marked by less emotional intensity. These findings are consistent with temporal construal theory (Trope and Liberman 2003), which posits that people refer to previous events in a more abstract manner—and in the past tense—as a function of emotional distance. Indeed, psychopathic criminals apparently recall their criminal actions in a more detached manner, with relatively less consideration of how these events affect their present functioning or feelings for their victims (Hancock et al. 2013). Although generalizability is important to consider (e.g., other linguistic features of speech might differentiate high versus low psychopathic individuals when the topic of conversation changes), this study raises the possibility that psychopaths' distinct psychological perspective may be revealed in their linguistic patterns.

The Current Study

There is good reason to believe that psychopathy is associated with distinctive nonverbal and verbal communication styles. The behavior of psychopathic individuals may diverge from non-psychopathic individuals as a natural result of their deviant affective and behavioral personality features. For example, psychopathic traits may be associated with less intense emotional facial expressions, reflecting their affective deficits. However, recognizing that emotional expressivity facilitates persuasion (Burgoon 1993; Kaufmann et al. 2003), more psychopathic individuals may also attempt to feign appropriate facial expressions (Book et al. 2015), resulting in punctuated displays of mimicked emotions

(e.g., Duchenne smiles; Gunnery et al. 2013; Book et al. 2015). Interestingly, such impression management tactics may result in a behavioral profile marked by inconsistency—wherein one aspect of more psychopathic individuals' behavior reveals their true nature (e.g., the use of negative, or angry words), which is contradicted by their attempts at behavioral control (e.g., the expression of charming happiness, to appear friendly and be disarming).

Guided by past research and theory, and with the context of the videos used by Fowler et al. (2009) in mind (i.e., an in-depth psychological assessment interview), we predicted that psychopathic traits would be associated with the presence of Duchenne smiles, indicating ostensible happiness (Ekman et al. 1990; Gunnery et al. 2013). Although the motive or outcome of such behavior is not directly examined here, Duchenne smiles may facilitate attempts to appear friendly and charming, and perhaps to persuade others that they are at low risk for re-offense. Given previous literature on psychopaths' ability to mimic emotional expressions, exhibit interpersonal charm, and manipulate others, we expected that psychopathic traits would be associated with a higher frequency of Duchenne smiles (up-turned lip corners with cheek raiser activation, which creates crow's feet around the eyes). We did not expect the same effect for non-Duchenne smiles (up-turned lip corners without cheek raiser activation), which are perceived to be less authentic, genuine, and trustworthy than are Duchenne smiles (Gunnery and Ruben 2016). We also predicted that psychopathic traits would be associated with the increased use of hand gestures during speech, indicating increased animation—a behavior associated with increased social influence (Dunbar and Burgoon 2005). Further, we predicted that psychopathic traits would be related to the use of fewer positive emotional words, likely as a result of their aggressive, antisocial tendencies (PCL-R Factor 2) and shallow emotional experience (PCL-R Factor 1; Hare 2003). However, we expected that the same personality traits would be related to the use of more negative, especially hostile, emotional words. Finally, although research suggests that psychopaths use more filled pauses while describing highly emotional events (e.g., Hancock et al. 2013), we predicted a decreased use of filled pauses. This prediction is driven by two primary reasons. First, inmates in this study were not describing highly emotional events. As such, we doubted whether the findings by Hancock et al. (2013) would extend to this sample. Second, in a clinical interview context, in which impression management attempts are likely to occur, psychopathic traits may be associated with a smooth and persuasive verbal style described by early clinicians who first described and defined the disorder systematically. For example, Cleckley (1946) suggested that psychopaths are "often so persuasive, given such excellent verbal evidence of penitence and reform … that they are more likely than others to be pardoned and paroled (p. 24)."

We utilized a *Brunswikian lens model* to examine which of these behavioral cues were ecologically valid predictors of psychopathic personality traits, which were correlated with perceptions of psychopathic traits by naïve observers, and the extent to which behaviors of the two types either (a) align to create accurate interpersonal perceptions or (b) diverge to produce errors (Brunswik 1956; Reynolds and Gifford 2001). Finally, we examined whether the combination of two incongruent behavioral channels—emotional language and emotional facial expression—would be associated with psychopathic traits, and naïve ratings of such traits. Specifically, we examined whether the use of hostile language while engaging in Duchenne smiles was an ecologically valid cue to PCL-R Total and Factor scores, and whether this discrepancy was associated with accurate interpersonal perceptions by observers.

Method

Cases and Measures

Offenders appearing in Fowler et al. (2009) served as participants in the present study. The sample consisted of 100 volunteer male inmates at a medium-security federal correctional institution in Florida. All of these inmates consented to the use of the videotaped interviews in future research. Individuals trained in psychopathy and clinical interviews administered a comprehensive PCL-R (Hare 2003) interview to the inmates. Both the interviewer and a trained observer completed the PCL-R for each offender. Scores were highly reliable (ICCs were .83 and .90 for PCL-R Factor 1 and 2 scores, respectively), and averaged across raters to create a mean PCL-R overall, Factor 1, and Factor 2 score for each offender. These data were used in the present study to examine which of the coded variables predicted PCL-R Total and Factor scores (i.e., ecological validity).

In Fowler et al. (2009), researchers created 90 clips of unique offenders (modality: audio-only, video-only, or combined audio–video) that lasted either 5, 10, or 20-s in duration from videotaped PCL-R interviews. In a within-subjects design, observers watched all 90 clips; that is, 10 clips in each duration by modality conditions.[1] Clips had been chosen from the first 30-s segment of uninterrupted speech by the offender occurring at least 10 min into the interview. Segments in which the inmate spoke about illegal or delinquent acts were excluded. A content analysis revealed that inmates spoke primarily about their (a) relationships with family and friends (b) work and (c) school.

Videos in Fowler et al.'s (2009) combined audio–video modality were coded for both verbal and nonverbal behavior, for the purposes of the present study. In the video-only condition, Fowler et al. (2009) simply muted the sound, and so both verbal and nonverbal behavior were also be coded in these videos. However, in the audio-only condition, video was permanently removed from the clips, and these clips could only be coded for verbal behavior; nonverbal behavior could not be coded. Issues of video and sound quality did, however, limit coding to some extent. Any clips which did not allow coders to see the face clearly were excluded from the coding of facial expressions, and any clips that focused on the face and did not include the body in frame were excluded from the coding of body language. Similarly, if audio clips were of such low quality that coders could not transcribe the audio, the clip was excluded from the linguistic analyses.

With the necessary exclusions of inadequate audio–video clips, we were able to code 88 clips for at least one type of behavior: facial expressions, body language, or linguistic. Specifically, our analyses included 50 videos in which facial expressions were coded, 51 videos in which body language were coded, and 64 clips that were transcribed and subjected to linguistic analyses. Of these, 34 clips were coded for all behaviors, namely, facial expressions, body language, and linguistic analysis. Given the presence of missing data—due to video/audio quality and modality conditions, all videos—regardless of length or modality—were collapsed into a single sample of videos that were included in each of three lens models (Psychopathy Total, Factor 1 and Factor 2 scores). PCL-R scores (Total, Factor 1, and Factor 1) did not differ across 5, 10, and 20-s video clips, $ps > .329$. Listwise deletions were not performed; this approach was elected to maximize statistical power for analyses and reduce the probability of Type I errors associated with running many

[1] Participants in Fowler et al.'s (2009) study also watched six 2-s clips in a combined audio–video modality. Due to the small number, and extremely brief nature of these videos, they were not included in the present study.

statistical tests if we were to conduct separate lens model analyses for each video length and modality condition. The 88 total clips featured inmates with a mean overall PCL-R score of 21.29 ($SD = 7.62$; range 6–37). In total, 18 inmates had total PCL-R scores of 30 or greater, meeting the criteria for a psychopathy diagnosis (Hare 2003). On average, inmates in these clips had a mean Factor 1 score of 9.06 ($SD = 3.27$) and a mean Factor 2 score of 9.20 ($SD = 4.06$). The correlation between these two factors was $r = .511$, $p < .001$, which is consistent with previous research reporting similar covariation ($r = .55$; Hare et al. 1991).

Observer impressions of psychopathy were also shared by Fowler et al. (2009) for inclusion in the present study. The original observers were 40 graduate and undergraduate students who completed the ratings for monetary compensation. Observers were provided with brief (1–2 sentence; see "Appendix") descriptions of the psychopathic personality (overall) and its factors (Factor 1: interpersonal/affective deficits; Factor 2: impulsive/antisocial behavior), and rated the extent to which they thought each videotaped target fit each description on a 1 (*not at all*) to 7 (*very much*) scale. As reported by Fowler et al., these ratings were highly consistent across the 40 observers (group-level ICCs were .95, .96, and .87 for overall, Factor 1, and 2, respectively) and therefore were averaged to create a single rating of overall, Factor 1, and Factor 2 psychopathy for each target. Ratings were used in the present study to examine which of the coded variables predicted perceived psychopathy (i.e., cue utilization).

Coding Procedure

Facial Expression

The presence and duration of each of the seven widely accepted universal emotional facial expressions (happiness, sadness, anger, fear, disgust, contempt, surprise) were coded using a highly reliable coding procedure developed by Porter and ten Brinke (2008) and based on Ekman et al. (1976/2002) Facial Action Coding System (FACS). Training in this coding procedure involves the recognition of the action units (i.e., movements of single muscles, or a combination of muscles) that are related to emotional expression. Specifically, upper and lower face actions in each frame of the video were classified according to the emotional prototype that it most closely matched, or no/neutral emotion. Prototypes are defined by Ekman et al. (2002) Emotion FACS (EMFACS) which provides lists of action units that describe each emotion. For example, prototypical happiness is defined by Action Unit (AU) 6 in the upper face, which involves the contraction of the orbicularis oculi muscle and often creates crows' feet around the eye. Prototypical happiness also involves the contraction of the zygomatic major muscle in the lower face, pulling the corners of the lips up into a smile (i.e., AU 12). One primary trained coder (blind to each offender's PCL-R score) classified the emotional expression in each $1/30^{th}$-s frame of the video-clips for the presence and duration of the expression, in the upper and lower regions, separately. This amounted to over 17,186 frames that were coded twice, for presentation of emotions in the upper and lower face separately. Upon review of these codes, it became clear that only expressions of happiness occurred sufficiently frequently to be subjected to statistical analyses; expressions of sadness, anger, fear, disgust, contempt, and surprise were not examined further.

Since upper and lower face expressions were coded independently, they could differ in the emotion that each expressed at any one time. This procedure is necessary to capture the complex movement of the face and situations in which the individual might not engage in a

complete emotional expression, as in the context of deception (Porter and ten Brinke 2008). By examining the onset and offset times of upper and lower face happiness, codes were integrated to describe the presence of a Duchenne smile, when both AU 6 (cheek raiser) and AU 12 (lip corner puller) were present simultaneously, and non-Duchenne smiles, when AU12 was present without simultaneous AU6 activation (Ekman et al. 1990; Soussignan 2002). Although research by Ekman et al. (1990) suggests that Duchenne smiles occur more often when experiencing genuine happiness than when faking happiness, a substantial proportion of participants can simulate Duchenne smiles (Gunnery et al. 2013; see also Krumhuber and Manstead 2009). As such, although Duchenne and non-Duchenne smiles do not necessarily indicate genuine and deceptive happiness, respectively, they do represent separable expressive behaviors that tend to be perceived differently by observers. Specifically, Duchenne smiles are rated as more authentic, genuine, and trustworthy than are non-Duchenne smiles (Gunnery and Ruben 2016).

Body Language

The same trained coder also recorded two types of hand movements: the duration of illustrators (hand and arm gestures that follow the rhythm or content of speech; Friesen et al. 1979) as an index of animation, and self-manipulations (when the individual touched his own hand, head, or body) as an index of stress. Because video clip duration varied, all data were divided by the duration of the video clip to produce proportional durations of illustrator and self-manipulator variables.

Coding Reliability

A second coder examined the emotional facial and body language behaviors of a random sample ($n = 18$) of the videos to assess inter-rater reliability. Cronbach's alphas were used to examine the reliability of continuous codes for the proportional duration of ($\alpha = .97$) illustrators and manipulators ($\alpha = .97$). Krippendorff's alphas were used to examine the reliability of presence/absence codes for Duchenne ($\alpha = 1.00$) and non-Duchenne smiles ($\alpha = .61$; Hayes and Krippendorff 2007).

Verbal Content

Verbal content was transcribed when possible and submitted to analysis using Linguistic Inquiry Word Count software (LIWC; Pennebaker et al. 2007). Linguistic characteristics that were subjected to statistical analysis included positive and negative emotional words, words associated with anger specifically, and non-fluent utterances (e.g., ahs, ums, ers). Each variable is defined as the number of words in that semantic category, divided by the total number of words in the narrative, for a percentage score.

Refer to Table 1 for descriptive statistics for all facial expression, body language, and verbal content coded behaviors.

Table 1 Descriptive statistics for all facial expression, body language, and verbal content cues

	Present		Absent
Facial expressions ($n = 50$)			
Duchenne smiles	8		42
Non-Duchenne smiles	13		37
	Mean	Standard deviation	Range
Body language ($n = 51$)			
Illustrators	0.414	0.353	0.00–1.00
Manipulators	0.086	0.226	0.00–1.00
Verbal content ($n = 64$)			
Positive emotional words	1.511	2.764	0–11.11
Negative emotional words	1.305	2.691	0–11.43
Anger words	0.418	1.519	0–8.57
Filled pauses	5.649	6.032	0–37.50

Results

Psychopathy: Factor 1—Interpersonal/Affective Deficits

Ecologically Valid Behavioral Cues

A series of Pearson correlations revealed that PCL-R Factor 1 scores, reflecting interpersonal and affective deficits, were associated with an increased use of illustrators to complement speech, more negative emotion words associated with hostility or anger, and Duchenne smiles (see Fig. 1).

Cue-utilization by Naïve Observers

Observer ratings of Factor 1 psychopathy were positively associated with inmates' use of illustrators, negative emotion words indicating hostility, and the presence of Duchenne smiles. Observers also based their Factor 1 ratings on decreased use of filled pauses.

Achievement

Achievement (i.e., the correlation between PCL-R Factor 1 scores and naïve observers' Factor 1 ratings), as previously reported by Fowler et al. (2009),[2] was $r = .35$, $p = .001$.

[2] Achievement (accuracy) correlations reported by Fowler et al. (2009) are slightly different than those reported here, because we use a smaller sub-set ($N = 88$) of their original sample ($N = 96$).

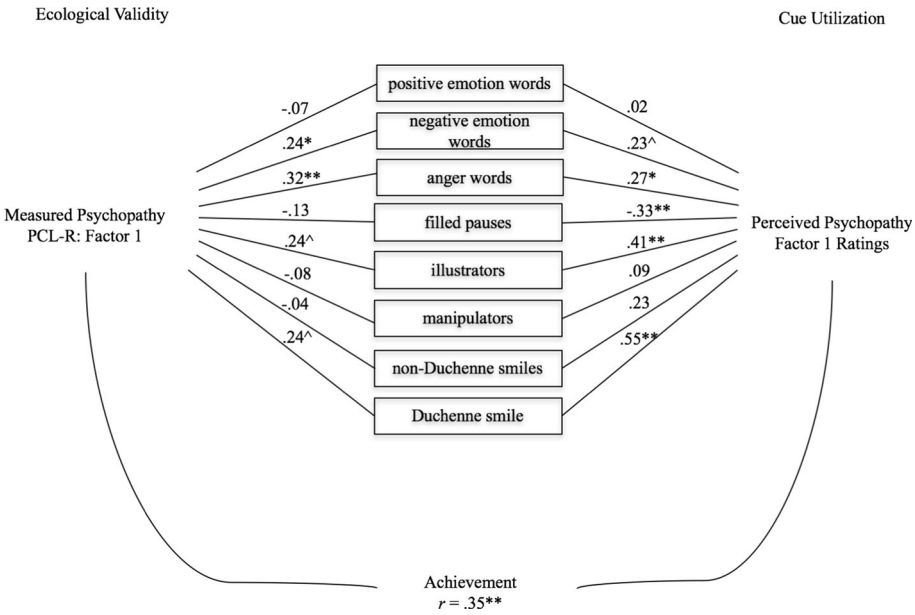

Fig. 1 Brunswikian lens model revealing ecologically valid cues of PCL-R Factor 1 (interpersonal/affective deficits) scores, and cues that naïve observers utilized to make judgments of the same personality trait. Pearson correlations are presented on each line. $^{\wedge}p < .10$, $*p < .05$, $**p < .01$

Psychopathy: Factor 2—Impulsive/Antisocial Behavior

Ecologically Valid Behavioral Cues

A series of Pearson correlations revealed that PCL-R Factor 2 scores, reflecting impulsive and antisocial behavioral tendencies, were associated with the use of hostile words, although this relation only approached statistical significance (see Fig. 2). No other coded behaviors were reliable indicators of PCL-R Factor 2 scores, $ps > .12$.

Cue-utilization by Naïve Observers

Naïve observers utilized the frequency of hostile words to inform their ratings of Factor 2 psychopathic traits (see Fig. 2). Observers also relied on the presence of Duchenne smiles and a decreased use of filled pauses to judge offenders' levels of impulsive and antisocial behavior.

Achievement

Achievement (i.e., the correlation between PCL-R Factor 2 scores and naïve observers' Factor 2 ratings) was $r = .26$, $p = .013$.

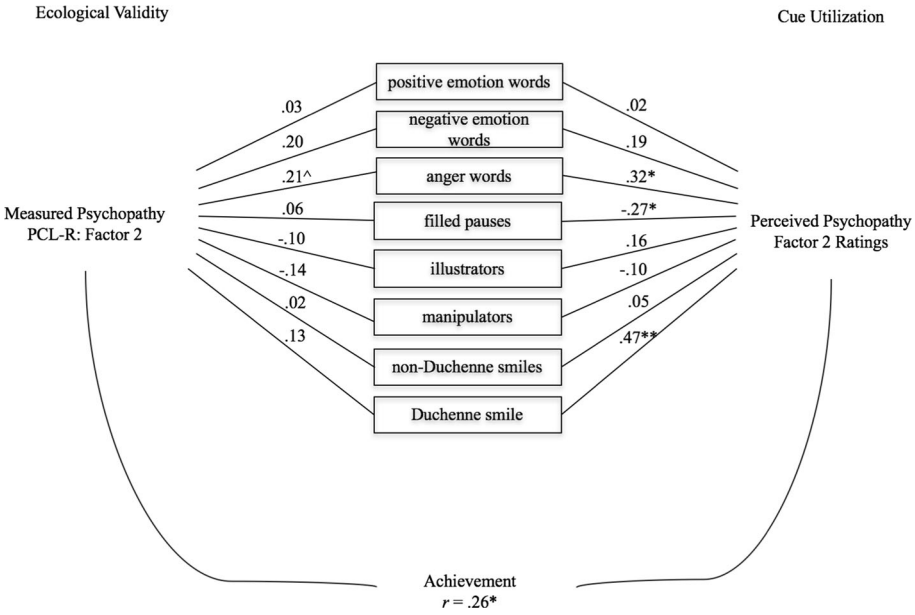

Fig. 2 Brunswikian lens model revealing ecologically valid cues of PCL-R Factor 2 (impulsive/antisocial behavior) scores, and cues that naïve observers utilized to make judgments of the same personality trait. Pearson correlations are presented on each line. $^{\wedge}p < .10$, $*p < .05$, $**p < .01$

Psychopathy: Total

Ecologically Valid Behavioral Cues

Total PCL-R scores were positively correlated with the use of negative emotional words, and the use of angry words, specifically (see Fig. 3).

Cue-utilization by Naïve Observers

Consistent with ecologically valid cues to PCL-R Total scores, naïve observers' ratings of overall psychopathy were positively associated with angry language. Naïve observers also based their ratings of overall psychopathy on the presence of fewer filled pauses, more illustrators, and more Duchenne smiles, $ps < .05$ (see Fig. 3).

Achievement

Achievement (i.e., the correlation between PCL-R Total scores and naïve observers' overall psychopathy ratings) was $r = .23$, $p = .029$.

Incongruent Behavioral Cues

Corresponding with the right side of a Brunswikian lens model, which explores ecological validity, we examined whether psychopathic personality traits (Factor 1, Factor 2, and

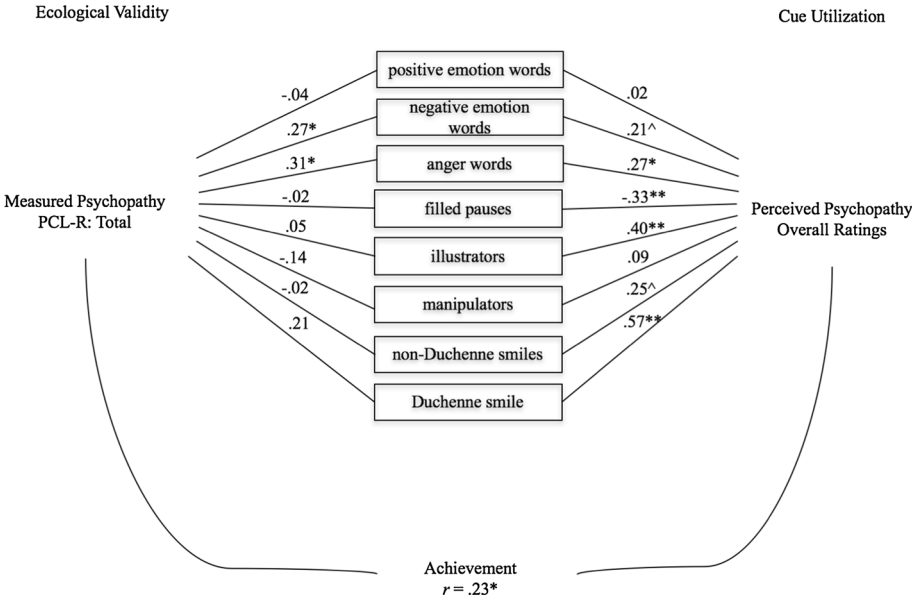

Fig. 3 Brunswikian lens model revealing ecologically valid cues of PCL-R Total scores, and cues that naïve observers utilized to make judgments of the same personality trait. Pearson correlations are presented on each line. $^{\wedge}p < .10$, $*p < .05$, $**p < .01$

Total) predicted incongruent behaviors (i.e., the proportion of angry words used and the presence/absence of Duchenne smiles), using the MODPROBE macro designed by Hayes and Matthes (2009) to conduct moderation analyses. In all analyses, predictor variables were centered prior to analysis; coefficients appear in Table 2. Specifically, PCL-R Factor 1 was entered as the focal predictor, and the presence/absence of Duchenne smiles as the moderator of angry word use, which served as the dependent variable. Results revealed that, as expected, the presence/absence of a Duchenne smile moderated the relationship between PCL-R Factor 1 scores and angry word use, $F(1, 35) = 7.38$, $p = .01$, $R^2_{change} = .134$. Specifically, interpersonal/affective deficits (PCL-R Factor 1 scores)

Table 2 Moderation analyses examining whether PCL-R (Factor 1, Factor 2, or Total) scores interacted with the presence/absence of Duchenne smiles to predict angry word use

	Model 1	Model 2	Model 3
PCL-R Factor 1	0.056 (0.074)		
PCL-R Factor 2		0.066 (0.076)	
PCL-R total			0.032 (0.041)
Duchenne smile	1.189^ (0.631)	1.634* (0.635)	1.328* (0.617)
Interaction	0.409* (0.150)	0.273^ (0.159)	0.173* (0.074)
Constant	0.297 (0.244)	0.405 (0.253)	0.337 (0.243)
N	39	39	39

Standard errors appear in brackets

^ $p < .10$, * $p < .05$

predict the increased use of hostile words in the same brief video clip as a Duchenne smile, $b = .38$, $p = .004$ (see Fig. 4). However, when a Duchenne smile does not occur, there was no association between PCL-R Factor 1 scores and the use of angry words, $b = -.03$, $p = .75$. That is, incongruent messages from different communication channels appear to be associated with PCL-R Factor 1 scores. A similar pattern of results is observed when PCL-R Total scores are entered as the focal predictor (see Table 2 for coefficients). However, analyses did not suggest that the presence/absence of Duchenne smiles moderated the relationship between PCL-R Factor 2 scores and angry word use, $F(1, 35) = 2.94$, $p = .10$, $R^2_{change} = .06$. This result is consistent with our proposition that these incongruent behaviors may reveal (successful) attempts at interpersonal manipulation given that they are more closely linked to psychopathy's interpersonal/affective deficits (i.e., Factor 1 traits) than to impulsive and antisocial behaviors (i.e., Factor 2 traits).

Corresponding with the left side of a Brunswikian lens model, which explores cue utilization, we examined whether incongruent behaviors predicted observers' ratings of inmates' psychopathic traits. Specifically, the use of angry words served as the focal predictor, and the presence/absence of Duchenne smiles was entered as the moderator of observer ratings (Factor 1, Factor 2, and Overall). As above, predictor variables were centered prior to analysis; coefficients appear in Table 3. However, none of the interactions were significant predictors of observer ratings, suggesting that observers did not utilize combinations of incongruent behaviors to guide their decisions. This analysis is inconsistent with the lens model in Fig. 1, which suggests that participants rely on Duchenne smiles and angry words—at least in isolation from each other—to guide their Factor 1 ratings. These inconsistences in analyses appear to be the result of considerable multicollinearity in the moderation analyses, as Duchenne smiles and angry words were positively correlated ($r = .435$, $p < .01$). Such multicollinearity inflates standard errors, making the coefficients less stable and lowering statistical power. Following recommendations by Kraha et al. (2012), structure coefficients (correlations between the observed predictor variable and the predicted criterion—observer rating scores) were calculated to facilitate interpretation. Structure coefficients revealed that, despite non-significant coefficients in moderation analyses, the interaction terms (presence/absence of Duchenne smiles x angry word use) were positively related to predicted Factor 1 ($r = .525$,

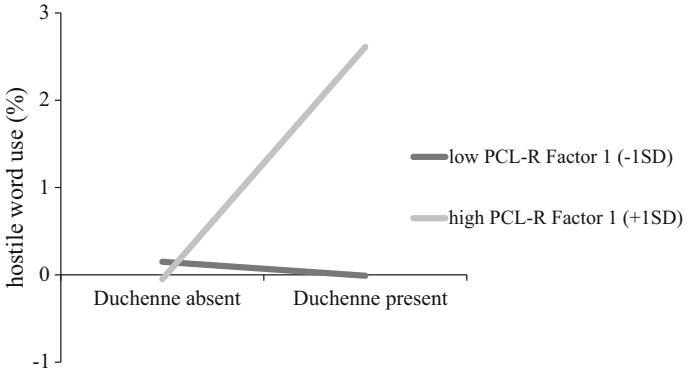

Fig. 4 Offenders with high PCL-R Factor 1 (interpersonal/affective deficits) scores more often express anger in their words when expressing a Duchenne smile, versus offenders with low PCL-R Factor 1 scores. In other words, engaging in incongruent emotional facial and emotional verbal behavior is positively associated with PCL-R Factor 1 scores

Table 3 Moderation analyses examining whether observers' ratings of psychopathy (Factor 1, Factor 2, Overall) are predicted by incongruent behaviors; namely, the interaction between the presence/absence of Duchenne smiles and angry word use

	Dependent variable		
	Factor 1	Factor 2	Overall
Angry words	−0.063 (0.120)	−0.155 (0.151)	−0.086 (0.138)
Duchenne smile	0.089 (0.144)	0.007 (0.182)	0.061 (0.166)
Interaction	0.003 (0.154)	0.156 (0.194)	0.057 (0.166)
Constant	2.817* (0.069)	2.762* (0.087)	2.757* (0.079)
N	39	39	39

Standard errors appear in brackets

^ $p < .10$, * $p < .05$

$p = .001$), Factor 2 ($r = .518$, $p = .001$), and overall psychopathy ratings ($r = .708$, $p < .001$). As such, observers do appear to use incongruent behaviors—Duchenne smiles and angry words—in brief video clips to guide their ratings of psychopathic traits.

Discussion

Psychopathic individuals are prolific and skilled manipulators, often charming and fooling others around them, from intimates to seasoned legal professionals (Book et al. 2015). Fowler et al. (2009) showed that observers were somewhat accurate at spotting psychopathic traits with extremely brief exposure to targets, but additional analyses raised the tentative possibility that this ability may dissipate with extended exposure. Hence, psychopaths may appear "less psychopathic" over time, perhaps undermining the validity of observers' initial impressions in some way through nonverbal and/or verbal behavior. Our study examined the facial expressions, body language, and linguistic patterns associated with psychopathy, how these behaviors combine, and the manner in which they may reveal psychopathic personalities, or allow them to evade detection.

The first major finding here was that higher psychopathy scores were associated with a distinctive communication style. As predicted, scores on the interpersonal/affective dimension (PCL-R Factor 1) of psychopathy were associated with the increased expression of Duchenne smiles. Duchenne smiles include activation of the orbicularis occuli, creating crow's feet around the eyes, and is thought to be associated with genuine happiness (Ekman et al. 1990). However, recent research suggests that this activation may be easily faked; approximately 71% of people can produce this expression in the absence of genuine happiness (Gunnery et al. 2013). Given that psychopaths are adept at faking emotions (Book et al. 2015; Porter et al. 2012), it is likely that they are producing these smiles voluntarily, in an attempt at impression management. The production of Duchenne smiles in this context is consistent with skilled interpersonal manipulation, facilitating psychopaths' apparent charm and likability. For example, observers evaluate individuals displaying Duchenne smiles more positively than those displaying non-enjoyment smiles and show higher rates of cooperation with such individuals (Johnston et al. 2010). That said, research and theory suggest that psychopaths are largely fearless and immune to distress (for reviews, see Patrick and Bernat 2009; Lilienfeld et al. 2012; but see Lynam and Miller 2012, for a different view). As such, these expressions may reflect genuine happiness and a relatively relaxed approach to what may be experienced as a stressful

clinical interview by less psychopathic individuals. Other related possibilities are that these Duchenne smiles signal duping delight (Ekman 1992), or that these expressions are used by more psychopathic inmates to increase their status or power, since such smiles by males can trigger perceptions of social dominance by observers (Ekman 1992; Schmid Mast and Hall 2004). In this case, and for the other behaviors that are associated with psychopathic personality traits, future research should seek to understand the source, as well as the outcomes, of these behavioral patterns.

Secondly, while work conducted prior to the development of the PCL-R (Gillstrom and Hare 1988; Rimé et al. 1978) suggested that psychopathy in general was associated with the use of more hand gestures, we found that Factor 1 traits specifically were associated with increased illustrator use. This finding is consistent with the notion that psychopaths are animated speakers and may use their hands as a communication tool with which to control and dominate conversations (Carney et al. 2005), distract attention from their (often deceptive) verbal messages (Klaver et al. 2007), or both.

In terms of verbal behavior, psychopathy was associated with the use of negative emotion words, particularly, more hostile, angry language (e.g., angry, hate, pissed, liar)—as a function of both Factors 1 and 2, as we hypothesized. The use of hostile language may reflect psychopaths' aggressive and antisocial behavioral tendencies, as well as their propensity to externalize blame, and/or may be intended to establish social dominance over the listener (Lilienfeld and Andrews 1996). More generally, such language could reflect a cynical or pessimistic worldview. For example, Black et al. (2014) found that the Dark Triad (of which psychopathy is a component) was associated with a cynical perspective and a tendency to view others as weak and vulnerable to victimization. Psychopathy is also associated with a tendency to enjoy seeing others experience psychological distress (Porter et al. 2014), which could be the intended outcome of using hostile language. Although we had hypothesized that psychopathy would be associated with a reduced use of filled pauses in this context, no such association was found.

Psychopathic traits were associated with an intriguing constellation of verbal and nonverbal behaviors, some of which seem contradictory. In particular, why would PCL-R scores be associated with Duchenne smiles as well as negative and hostile verbal language? As we speculated earlier, this incongruent verbal and nonverbal behavior may reflect the psychopath's prodigious use of deception or reflect the presence of duping delight. This research is the first to examine interactions across behavioral channels, and suggests that this approach may be fruitful in understanding the communication styles of psychopathic individuals.

Observers relied on a variety cues with diagnostic validity in identifying psychopathy, namely offenders': (a) negative and angry language, (b) illustrators, (c) and Duchenne smiles (Factor 1). Further, observers appear to use combinations of behavior related to PCL-R Factor 1 scores, specifically Duchenne smiles in quick succession with angry language, to guide their ratings of Factor 1 psychopathic traits. Results suggest that, even without clinical training, people naturally utilize valid nonverbal behaviors to make assessments of personality, perhaps using some of the same behavioral information that diagnosticians relied upon to support their PCL-R scoring. However, observers also perceived PCL-R Factor 1 scores as associated with decreased filled pauses (i.e., one element of a 'smooth' verbal style)—an erroneous cue, at least in this sample, which may have diminished observers' ability to detect these manipulative individuals.

The mixed use of valid and erroneous cues by observers may help to explain the findings by Fowler et al. (2009) that psychopaths were most accurately detected when observers saw a shorter (versus longer) thin-slice of behavior. Although Fowler et al.'s

findings (2009) should be treated as provisional, it could be that smiling, dominant seeming individuals are more persuasive or seemingly credible with extended viewing time. Or, there may be behaviors that we did not examine that led to observer perceptions, perhaps relating to superficial charm. Future researchers should further examine how the initial and accurate evaluation of psychopathy is eroded over time, and the specific behaviors that cloud our judgment.

Limitations and Future Directions

This study was the broadest examination of the communication styles associated with psychopathy to date; it also provides clues to the roots of observer impressions of psychopathy. However, some limitations of the study should be noted. The videos were not standardized in quality of frame of view, making some individuals impossible to code on various behaviors. Further, we have too few videos available to separately examine the impact of behavior on observer judgments in 5- 10- and 20-s thin-slices. In addition, we did not examine lengthier interactions between the offenders and interviewers. It is possible that psychopathic individuals adapt their behavior in relation to particular interviewers or lines of questioning. Additionally, to extend this work, it would be useful to examine observers' psychological and neural responses to thin and extended slices of psychopaths. Just as untrustworthy-looking faces tend to activate the amygdala and right insula, so too might the first glance of a psychopathic individual at least until this accurate threat response is negated by psychopaths' impression management skill (Winston et al. 2002). Further evidence of the most powerful verbal and nonverbal cues utilized by observers to make their ratings might come from modality studies that manipulate which cues are available; although we have too few stimuli to run sufficiently powered lens models of audio-only, video-only, and audio–video stimuli separately, we encourage future researchers to take this approach in larger samples. Finally, it should be noted that the two-factor model of psychopathy, as defined by the PCL-R, is not the only proposed structure of this personality disorder. Future research might examine the behavioral cues associated with self-reported scores and naïve observer perceptions of a triarchic model of psychopathy—including disinhibition, boldness (or fearlessness/dominance), and meanness (Lilienfeld et al. 2015; Patrick et al. 2009).

Conclusion

Studies investigating perceptions of psychopathy are crucial because they afford insight into the basic communication styles of and the strategies that psychopaths use to manipulate others. Armed with a better understanding of the impression management strategies of psychopaths, accurate first impressions may be harnessed to encourage better decision-making in legal settings and personal interactions.

Appendix

Definitions of Factor 1, Factor 2, and Overall Psychopathy, provided to naïve raters:

Factor 1—People high in Factor 1 psychopathy tend to have an inflated sense of self-importance, to be "smooth talkers" and to lie and manipulate others without feeling

guilty. They lack empathy for other people, and rarely accept responsibility for the things they do wrong.

Factor 2—People high in Factor 2 psychopathy have a long history of behavior problems, beginning with juvenile delinquency. They are impulsive, frequently seek stimulation because of boredom, lack realistic long-term goals of their own, and often find ways to live off the support of parents, friends, and sexual partners.

Overall—Psychopaths tend to be charming and engaging on the surface, but often manipulate, lie to, and exploit others to get what they want, without guilt or empathy. They tend to be irresponsible and to lack impulse control.

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