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Egocentric Perceptions of the Environment in Primary, but not Secondary, Psychopathy

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Abstract

Several theories of psychopathy link it to an egocentric mode of perceiving the world. This explanatory perspective is quite plausible given that psychopaths are viewed as callous, uncaring, and narcissistic. This explanatory perspective, though, has been an insufficient focus of research, particularly in basic cognitive tasks. Building on the work of Wapner and Werner (1957), an implicit measure of cognitive egocentrism was developed. Continuous variations in primary and secondary psychopathy were assessed in a sample of college undergraduates ($N = 80$). Individuals high in primary psychopathy exhibited cognitive egocentrism, whereas individuals low in primary psychopathy did not. On the other hand, variations in secondary psychopathy were non-predictive of performance in the task. Results are discussed in terms of theories of psychopathy, distinctions between its primary and secondary components, and the utility of modeling egocentrism in basic cognitive terms.

Keywords

Primary Psychopathy; Secondary Psychopathy; Egocentrism; Priming; Cognition

Karpman (1941) first suggested that there are at least two forms of antisocial personality. One form, often termed *primary psychopathy*, can be viewed in terms of an apparent deficit in appreciating the needs or wishes of others (Blair, Mitchell, & Blair, 2005). The second form, often termed *secondary psychopathy*, is defined in more behavioral terms. Such individuals are impulsive and get into trouble more frequently, but often because of their emotional reactivity and lack of planning (Millon, Simonsen, Birket-Smith, & Davis, 1998). There is now good support for this distinction in the psychopathy assessment (Benning, Patrick, Hicks, Blonigen, & Krueger, 2003; Lilienfeld & Andrews, 1996) and outcome prediction (Edens & McDermott, 2010; Lee & Salekin, 2010) literatures. We assessed primary and secondary psychopathy in dimensional terms, as increasingly advocated (e.g., Benning, Patrick, Blonigen, Hicks, & Iacono, 2005; Lee & Salekin, 2010). Of more importance, we sought to contribute to this literature by showing that primary, but not secondary, psychopathy is marked by higher levels of a basic form of egocentrism.

Primary Psychopathy as Cognitive Egocentrism

An egocentrism perspective of primary psychopathy has much to recommend it. Cleckley (1976) maintained that the primary psychopath is a person whose self is the center of the psyche. Gough (1948) proposed that the primary psychopath is a person who has

deficiencies in understanding the perspectives of others. In addition, an egocentricity perspective can potentially explain many of the traits ascribed to primary psychopaths such as narcissism, callousness, and self-serving dominance (Benning et al., 2005; Miller, Gaughan, & Pryor, 2008). In all such cases, and others that we could cite, cognitive egocentrism may be a key mechanism.

Thus far, probes of cognitive egocentrism have primarily involved complicated scenarios in which individuals sometimes fail to recognize that another has a very different perspective (Lempers, Flavell, & Flavell, 1977; Wimmer & Perner, 1983). To be sure, individual differences in responding to such “theory of mind” scenarios are sometimes robust (Dehlgren, Sandberg, & Hjelmsquist, 2003) and display sensitivity to clinical conditions such as schizophrenia (Baron-Cohen, Leslie, & Frith, 1985). Nonetheless, we deemed it useful to assess cognitive egocentrism in even more basic terms, as is possible on the basis of the excellent but largely forgotten work of Werner and Wapner in the 1940s and 1950s.

Werner and Wapner (1949), like others in the “New Look” movement (e.g., Bruner, 1951), advanced a theory of perception countering the idea that perceptions tend to be veridical. In several studies, they showed that asymmetric (left versus right) stimulations often biased subsequent visual perceptions, whether due to head tilt, body tilt, or auditory stimulation (e.g., Wapner, Werner, & Chandler, 1951; Werner, Wapner, & Bruell, 1953). Their most cogent statement was made in a 1957 monograph (Wapner & Werner, 1957). Greater susceptibility to such influences, they suggested, reveals a basic form of cognitive egocentrism – i.e., one in which external reality is implicitly assumed to correspond to a primed self-state. They showed that such biases were reliable and decreased with age, as they should from developmental perspectives of cognitive egocentrism (Piaget, 1932). We selected and improved one of their basic cognitive tasks for use in the present investigation. In addition to hypotheses involving primary versus secondary psychopathy, we examined other hypotheses as well.

Hypotheses

In our paradigm, individuals were to determine the point of a line immediately above a small dot presented toward the bottom of the computer screen. There is a general tendency – termed “pseudoneglect” – for individuals to bisect lines to the left of center (Jewell & McCourt, 2000). We hypothesized a similar bias in the present paradigm, which would result in average perceptions leftward of the actual horizontal position of the presented dots.

Of more importance, we presented asymmetric auditory input prior to each visual perception trial. Wapner and Werner (1957) showed that asymmetric auditory inputs generally bias subsequent visual perceptions in an assimilation-related manner – that is, visual perceptions are biased leftward following auditory stimulation to the left ear and rightward following auditory stimulation to the right ear. Effects of this type constitute a form of cognitive egocentrism and we hypothesized normative effects of this type – i.e., there should be a main effect of auditory prime side consistent with such assimilation effects.

Of more importance, we hypothesized that such egocentric inputs to perception would be evident among individuals high, but not low, in primary psychopathy, which would result in a primary psychopathy by auditory prime side interaction. On the other hand, we hypothesized no such biases as a function of individual differences in secondary psychopathy (i.e., there should be no secondary psychopathy by auditory prime side interaction), as secondary psychopathy is likely to reflect factors other than cognitive egocentrism (Poythress et al., 2010). Such a dissociation between the two forms of psychopathy would further the idea that primary and secondary psychopathy need to be distinguished from a mechanism-related standpoint.

For orthogonal reasons, we varied the valence of auditory primes. Some of them were unpleasant in nature and some were not. As a question of interest, we deemed it possible that visual perceptions would be biased in a direction opposite unpleasant (relative to neutral or pleasant) primes, much as aversive events often trigger avoidance-related tendencies (Lang, Bradley, & Cuthbert, 1997). Effects involving auditory valence are not central to key hypotheses, though we do discuss effects involving this variable.

Method

Participants and General Procedures

Eighty undergraduates from North Dakota State University (47 female; M age = 20.22; 91% Caucasian in race; all right-handed) received course credit for their psychology classes. Participants arrived in groups of six or less and were generally informed that the study concerned personality and perception, but only vaguely so. They were then assigned to individual personal computers with dividers. Participants first completed the perception task described below (programmed with E-Prime software). Only thereafter did we assess variations in primary and secondary psychopathy (programmed with MediaLab software).

Perception Task

Instructions—Participants were told to don headphones such that the left (right) ear of the headphones was over the left (right) ear and experimenters confirmed such placements. Subsequently, the computer program informed participants that we were interested in their abilities to alternate between two very different (and presumably independent) tasks – attending to sounds and making visual judgments. Instructions further stated that questions concerning the sounds would be presented at a later point in time, though they were not.

Task—The visual perception task was as follows. A small white dot was presented three-fourths (y -axis = 75%) from the top of the computer screen. Its horizontal position was subtly varied across trials, at random, to prelude inattention. A line was then presented one-fourth (y -axis = 25%) from the top of the computer screen. Participants were to indicate the horizontal position along the line exactly above the presented dot. They did so by making a mouse click.

Lateralized Sound Primes—Prior to each visual judgment, we presented auditory primes. The auditory primes were presented only to one ear, auditory side selected at random. Given the randomized nature of such primes, one should not be influenced by them and influences of this type would be consistent with cognitive egocentrism (Wapner & Werner, 1957).

To examine the generality of such effects, three blocks were administered. In all three blocks, the sound terminated immediately prior to the visual perception portion of the trial. The first block presented a non-aversive Windows XP ring tone for 1 second. The second block presented an aversive (Fetterman, Robinson, Gordon, & Elliot, 2011) white noise blast, again for 1 second. Given that the procedures were identical in these first two blocks, aside from sound content, we analyzed results from the first two blocks (60 trials in all) in a common analysis.

In the third block, six-second sound clips from the International Affective Digitized Sounds (IADS) database (Bradley & Lang, 1999) were presented as asymmetric auditory primes. There were 10 pleasant sounds (e.g., a baby laughing) and 10 unpleasant sounds (e.g., an argument). Auditory primes differed systematically in valence, $F > 1500$ (3.22 versus 7.49), but not arousal, $F(1, 18) = 1.29$, $p > .25$ ($M = 6.11$), according to the norms of Bradley and

Lang (1999). There were 60 trials in this block in which both auditory side and sound valence were randomized, in a trial-specific manner, by the computer program.

Dependent Measure—The program recorded the actual x-position of the dot presented for each trial. In addition, it recorded the x-position perceived to be directly above the dot presented. From these two sources of information, a bias difference score was created by subtracting actual position from perceived position. A negative (positive) score thus indicates that the apparent position of the dot was to the left (right) of its actual position along the x-axis.

Psychopathy Assessment

The psychopathy literature has increasingly advocated dimensional assessments of it (e.g., Edens & McDermott, 2010; Lee & Salekin, 2010). Accordingly, we assessed primary and secondary psychopathy using the well-validated (e.g., Brinkley, Schmitt, Smith, & Newman, 2001) dimensional scales of Levenson, Kiehl, and Fitzpatrick (1995). Its primary psychopathy scale assesses classic features of it such as manipulative tendencies and cynicism (e.g., “In today’s world, I feel justified in doing anything I can get away with to succeed.”). By contrast, secondary psychopathy includes items assessing emotional reactivity and impulsivity (e.g., “I find myself in the same kinds of trouble, time and time again”), all such items rated along a 4-point continuum (1 = strongly disagree; 4 = strongly agree). Both scales were reliable (alphas > .80) and there was a moderate correlation between the scales, $r = .40$, $p < .01$, as is typical.

Results

Pseudoneglect

There is a consistent tendency, among right-handers, to favor the left region of space in visual perception tasks (Jewell & McCourt, 2000). Evidence in favor of the validity of our task would therefore be obtained to the extent that bias scores, irrespective of (and thus collapsing across) lateralized auditory primes, were leftward of veridical dot positions. This was true for the first factorial design, which collapsed across blocks 1 and 2, $t(79) = -7.07$, $p < .01$, $d = -.79$, and for results from the third block as well, $t(79) = -7.23$, $p < .01$, $d = -.81$.

Results Involving One-Second Lateralized Auditory Primes (Blocks 1 and 2)

A lack of self-environment differentiation – or, in other words, an egocentric frame of reference – is revealed to the extent that irrelevant inputs to the self are treated as information concerning the environment (Werner & Wapner, 1949). In the present context, this lack of differentiation would be evident to the extent that visual perceptions are biased toward the side of auditory stimulation. We hypothesized such an effect but one that would be particularly evident at high relative to low levels of primary psychopathy.

In a first General Linear Model (GLM) analysis, we included two within-subject predictors of visual bias scores. The first within-subject predictor was sound type (ding versus white noise) and the second was side of auditory stimulation (left versus right). In addition, z-scored variations in primary psychopathy were entered. The beauty and flexibility of the GLM procedure is that it can simultaneously model discrete within-subject predictors in combination with continuous between-subjects factors, thereby facilitating cognitive approaches to personality assessment (Robinson, 2007).

In this first GLM analysis, the main effect for Primary Psychopathy was not significant, $F < 1$. Thus, primary psychopathy did not predict pseudoneglect. All effects involving Sound

Type were not significant, $F_s < 1$. Thus, for example, it was not the case that visual perceptions were biased in a direction opposite to the aversive auditory primes of block 2 relative to the more neutral auditory primes of block 1. On the other hand, there was a main effect for Auditory Side, $F(1, 77) = 12.98, p < .01$. That is, despite the irrelevant nature of the auditory primes, such lateralized inputs affected subsequent visual perceptions and did so in an assimilation-related manner: Leftward auditory primes biased visual perceptions leftward ($M = -44.04$), whereas rightward auditory primes biased visual perceptions rightward ($M = 23.95$). These results offer striking support for the ideas of Werner and Wapner (1949).

Of most importance, the GLM analysis revealed a significant Primary Psychopathy by Auditory Side interaction, $F(1, 77) = 5.24, p < .05$, that was not modified by Participant Sex, $F < 1$. To understand the pattern of this interaction, we estimated means for it at low (-1 SD) versus high ($+1$ SD) levels of primary psychopathy (Aiken & West, 1991). These estimated means are displayed in Figure 1 and they suggest that irrelevant auditory primes influenced subsequent visual perceptions only at high levels of primary psychopathy.

To better document the nature of the interaction, we created a difference score to reflect the effect of extraneous auditory stimulation (right stimulated perceptual biases minus left-stimulated perceptual biases). We then performed two simple regressions, with the predictor either altered to reflect a low (-1 SD) or high ($+1$ SD) level of primary psychopathy. The intercept – reflecting the effect of irrelevant lateral auditory input – was significant at the high level of primary psychopathy, $t = 4.16, p < .01$, but not the low level, $t = 0.92, p > .35$. Thus, primary psychopathy was an excellent predictor of this form of cognitive egocentrism.

Egocentric perceptual biases were hypothesized vary by primary, but not secondary, psychopathy. We accordingly performed a second GLM analysis in which primary psychopathy scores were replaced by secondary psychopathy scores. There were no effects for secondary psychopathy in this analysis, all $F_s < 1$. Further, a multiple regression indicated that primary, $\beta = .34, t = 2.89, p < .01$, but not secondary, $\beta = -.09, t = -0.72, p > .45$, psychopathy predicted cognitive egocentrism with both predictors simultaneously controlled.

Results Involving Six-Second Lateralized Auditory Primes (Block 3)

The auditory primes of block 3 were longer and more meaningful. Nonetheless, conceptual replication was expected. A first GLM included the within-subject predictors of sound valence (unpleasant versus pleasant) and side of auditory stimulation (left versus right) as well as z-scored variations in primary psychopathy.

In this GLM, the main effect for Primary Psychopathy was marginally significant, $F(1, 77) = 2.80, p < .10$, such that pseudoneglect in this block was more evident at a high (estimated $M = -14.64$) relative to low (estimated $M = -9.39$) level of primary psychopathy. The main effect of Sound Valence was not significant, $F(1, 77) = 2.74, p > .10$, but there was a marginally significant Primary Psychopathy by Sound Valence interaction, $F(1, 77) = 3.46, p < .10$. Leftward visual biases as a function of primary psychopathy were particularly evident following unpleasant (estimated $M_s = -9.14$ & -18.67 at low & high levels of primary psychopathy) relative to pleasant (estimated $M_s = -9.64$ & -10.61) auditory primes. The interaction is orthogonal to our hypotheses, but it is of interest and it is discussed below.

Of perhaps more importance, we again found a significant main effect for Auditory Side, $F(1, 77) = 7.37, p < .01$, that was qualified by a significant Primary Psychopathy by Auditory Side interaction, $F(1, 77) = 5.33, p < .05$, which in turn was not modified by Participant Sex, $F(1, 76) = 1.46, p > .20$. Remaining interactions were not significant, $F_s < 1$. Estimated

means for the interaction are reported in Figure 2. Follow-up testing established that the effect of lateral auditory primes on perception (i.e., cognitive egocentrism) was evident at high (+1 *SD*), $t = 3.55$, $p < .01$, but not low (−1 *SD*), $t = 0.28$, $p > .75$, levels of primary psychopathy.

A second GLM analysis for this third block replaced primary psychopathy scores with secondary psychopathy scores. The main effect for Secondary Psychopathy was significant, $F(1, 77) = 5.75$, $p < .05$, but was qualified by a Secondary Psychopathy by Sound Valence interaction, $F(1, 77) = 3.99$, $p < .05$. Estimated means for the latter interaction were comparable following pleasant primes (estimated $M_s = -8.72$ & -11.53 at low & high levels of secondary psychopathy), but quite discrepant following unpleasant primes (estimated $M_s = -7.92$ & -19.89). Thus, there was a general pattern in which unpleasant primes, at least of the stronger and more meaningful block 3 type, biased attention leftward at high levels of psychopathy.

In this second GLM analysis, there was again a main effect for Auditory Side, $F(1, 77) = 6.92$, $p < .05$, but it did not interact with levels of secondary psychopathy, $F < 1$. Other interactions were not significant, $F_s < 1$. Thus, a dissociation involving the moderating effects of primary and secondary psychopathy was again obtained. This conclusion was reinforced in a multiple regression. When controlling for the overlapping variance of primary and secondary psychopathy, assimilation-related priming effects were predicted by primary psychopathy, $\beta = .28$, $t = 2.30$, $p < .05$, but not secondary psychopathy, $\beta = -.06$, $t = -0.49$, $p > .60$.

Discussion

We hypothesized that individuals high in primary, but not secondary, psychopathy would exhibit biased perceptions of an egocentric type. The results were supportive of such hypotheses. Individuals high in primary psychopathy were influenced by irrelevant auditory inputs – i.e., they saw the subsequent perceptual world in a manner consistent with the self's activated lateralized state. On the other hand, individuals low in primary psychopathy did not exhibit such biases and secondary psychopathy did not moderate the magnitude of such effects. In the Discussion, we focus on task-related considerations, additional findings and non-findings, and future directions.

Task-Related Considerations

Wapner and Werner (1957) developed a variety of tasks to assess cognitive egocentrism in perceptual terms. Most such paradigms, though, produced complicated results that required some post-hoc assumptions. For example, individuals asked to tilt their heads in one direction typically adjusted a vertical rod in an *opposite* direction, results inferred to reflect unmeasured homeostatic processes (Wapner & Werner, 1952). In our opinion, such paradigms should be disfavored relative to those that typically result in assimilation-related effects.

Wapner and Werner (1957) presented several tasks producing assimilation-related effects, but some of them were potentially flawed. For example, one paradigm manipulated the starting position of a rod (which was initially tilted to the left versus right) and asked individuals to move the rod such that it was vertical. These adjustments were rarely sufficient, but could reflect the easiest course of action (i.e., insufficient adjustment) rather than cognitive egocentrism. The bottom line is that our task was carefully designed and we recommend it in future studies seeking to assess cognitive egocentrism in basic terms.

On the other hand, there would seem to be further opportunities to conceptually replicate the present findings. Perspective-taking, according to Galinsky, Magee, Inesi, and Gruenfeld (2006), can be examined in a simple task. Individuals are asked to draw an “E” on their foreheads. Some individuals do so by drawing it such that the E is consistent with the self’s perspective, whereas others do so by drawing it such that the E is consistent with the perspective of another person viewing the self. On the basis of the present findings, those high in primary psychopathy should draw this letter in a manner favoring the self’s egocentric perspective. Further, tasks used in the “theory of mind” literature (Frith, 2007) may be used in the psychopathy literature as well. If we are correct, higher levels of primary, but not secondary, psychopathy should predict deficient perspective-taking in such theory of mind tasks.

Additional Findings and non-Findings

On the basis of some theories of motivation (e.g., Lewin, 1932), we thought it possible that visual perceptions would be biased in a direction opposite to aversive sources of stimulation. We did not observe effects of this type, likely for two reasons. Irrespective of the valence of auditory inputs, robust assimilation-related effects were obtained and they may have overwhelmed any potential influences of auditory valence. In addition, Lang et al. (1997) make the point that human beings, relative to lower animals, are much less susceptible to approach-avoidance perceptions or behaviors, particularly in tasks of a cognitive type. Accordingly, what we emphasize is that our results were robust across manipulations of auditory valence.

The right hemisphere is dominant in spatial perception tasks, resulting in robust tendencies toward pseudoneglect (Jewell & McCourt, 2000). Although our task was novel to this literature, we found that tendencies toward pseudoneglect were generally pronounced. However, we found that rightward auditory primes eliminated and in fact reversed such tendencies toward pseudoneglect. Accordingly, our findings contribute to an attention-related perspective of this phenomenon (e.g., Bultitude & David, 2006).

The unpleasant primes of block 3 biased visual perceptions leftward at high levels psychopathy. In understanding such effects, we draw upon Heller’s (e.g., Heller, Nitschke, Etienne, & Miller, 1997) influential framework. To the extent that individuals are emotionally aroused by stimuli, there should be a leftward bias in visual perception (Robinson & Compton, 2006). Our findings therefore suggest that long-duration unpleasant (relative to pleasant) primes may be differentially arousing at high levels of psychopathy. Such effects need to be replicated, but they are consistent with the idea that psychopaths view unpleasant events as unexpected and unwarranted (Blair et al., 2005; Millon et al., 1998; Paulhus & Williams, 2002).

Further Directions of Research in the Psychopathy Realm

Our results may possess value in understanding some of the traits ascribed to those high in primary psychopathy such as narcissism, callousness, and a lack of empathy for others. It is also intuitive that individual differences in cognitive egocentrism, as we assessed it, may in part explain some of the other correlates of primary psychopathy such as higher levels of approach motivation (Corr, 2010), deficient fear responses (Patrick, Bradley, & Lang, 1993), and difficulties regulating dominant responses once activated (Newman & Lorenz, 2003). In all such cases, the phenomena may be exacerbated by cognitive egocentrism. Future research is necessary to gain a more nuanced perspective of the correlates of cognitive egocentrism, however.

We adopted a dimensional perspective of psychopathy in the present investigation, but our results might prove to be of value to clinical researchers and clinicians. First and foremost, cognitive egocentrism was unique to primary relative to secondary psychopathy. For this reason, implicit assessments of the present type may prove useful in case conceptualization as different treatments have been advocated for these two forms of psychopathy (e.g., Millon et al., 1998). Second, implicit probes of the present type may track therapeutic progress among psychopaths, much as implicit probes of anxiety and depression have proven their worth in tracking therapeutic progress among mood-disordered patients (Mathews & MacLeod, 2005). Third, it is possible that high levels of cognitive egocentrism can be retrained to therapeutic benefit, as cognitive retraining manipulations in other psychopathology realms have exhibited a great deal of promise (MacLeod, Koster, & Fox, 2009). We have recently developed procedures for retraining cognitive egocentrism and hope to document the benefits of doing so in future reports.

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Figure 1.
The Effects of One-Second Lateralized Auditory Primes on Visual Perception Biases at Low versus High Levels of Primary Psychopathy

Figure 2.
The Effects of Six-Second Lateralized Auditory Primes on Visual Perception Biases at Low versus High Levels of Primary Psychopathy