

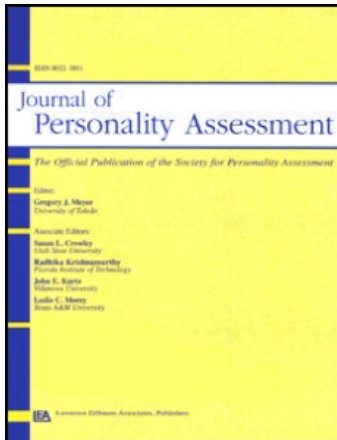
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Sandra L. Horn<sup>a</sup>; Gregory J. Meyer<sup>a</sup>; Joni L. Mihura<sup>a</sup>

<sup>a</sup> Department of Psychology, University of Toledo,

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# Impact of Card Rotation on the Frequency of Rorschach Reflection Responses

SANDRA L. HORN, GREGORY J. MEYER, AND JONI L. MIHURA

*Department of Psychology, University of Toledo*

In this article, we describe the impact of Rorschach (Exner, 2003) card rotation and orientation preference on reflection responses. We anticipated exposure to sideways-orientated cards would facilitate landscape-type reflections, particularly for cards people find appealing to view sideways. When we examined 4 experimental conditions using an undergraduate sample, results in Experiments 1 ( $n = 123$ ) and 2 ( $n = 38$ ) showed that viewing the cards sideways produced a large increase in reflections. In Experiment 3 ( $n = 69$ ), we examined preferences to view each card in a particular orientation. Cards producing higher rates of landscape reflections in the experimental conditions that encouraged turning were strongly correlated with preferences to view those cards sideways. The results imply reflections are in part a function of stimulus properties from viewing the card in a rotated orientation and not just the personal characteristics of the test taker.

Reflection responses are a unique type of Rorschach response that typically consist of a person looking in a mirror or of a landscape scene reflected over water, often with an animal present. They are relatively infrequent responses (Meyer, Erdberg, & Shaffer, 2007) and are thought to indicate personality characteristics of the test taker. Weiner (2003) nicely summarized the traditional perspective: “Reflection responses are associated with marked tendencies to overvalue one’s personal worth and become preoccupied with one’s own needs at the expense of attention to the needs of others” (p. 160). Weiner elaborated that people who give reflection responses tend to be self-centered, self-serving, and arrogant, rarely engaging in self-sacrifice. They deny their own shortcomings and attribute personal failures to external events and the actions of others. They desire recognition and attention, and “they approach life situations with an air of superiority and a sense of entitlement” (Weiner, 2003, p. 161). Rorschach researchers commonly refer to these characteristics as narcissistic-like personality characteristics or features (Blais, Hilsenroth, Castlebury, Fowler, & Baity, 2001; Exner, 2003, Weiner, 2003).

Hilsenroth, Fowler, Padawer, and Handler (1997) demonstrated several relationships between number of reflection responses and narcissistic personality disorder (NPD); the number of reflections differentiated NPD patients from Cluster A, Cluster C, and nonclinical groups as well as from other Cluster B patients. The number of reflections was also moderately related ( $r = .33$ ,  $p < .003$ ) to number of *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association, 1994) NPD criteria met by the patient. Using a cutoff score of reflections  $\geq 1$ , Hilsenroth et al. observed high levels of negative predictive power (NPP) in differentiating NPD from nonclinical (NPP = .91), Cluster A and C (NPP = .83), Cluster B (NPP = .89), and combined total (NPP = .96) groups.

However, positive predictive power (PPP) values for the same group comparisons were more modest (PPP = .44, .67, .40, .24, respectively), indicating that reflection responses perform well in detecting true absence of NPD; but their presence in a protocol should be interpreted with caution, as there is a chance that NPD would be falsely indicated. This leads to the important question of possible sources of error associated with reflection responses.

Rorschach response content is affected by the stimulus features of the inkblots. The stimulus features vary in potency, depending on the card and the orientation of the card. For instance, an animal face is commonly seen when Card I is in the upright orientation but not when the card is inverted. On Card VII, the D2 area is commonly identified as a human or a rabbit, whereas the most common response for that area in the sideways orientation is a dog (Exner, 1996). Thus, according to Exner (1996), altering the orientation of the card alters the critical stimulus bits, which in turn alters the typical response content. *Critical bits* are defined as

potent characteristics of the stimulus field that influence the judgments (identifications) by people concerning a distal object. Stated a bit differently, critical bits are those stimulus features that define or restrict the parameters of judgments or identifications concerning a distal environment. (Exner, 1996, p. 466)

Color, position, contour, and contrast are all examples of stimulus features of the blots that can serve as critical bits. Exner (1996) stated that potency of stimulus features changes with card orientation in at least 9 of the 10 cards, meaning that orientation alters the impact of critical stimulus bits and thus the response content.

In the natural environment, bilateral vertical-axis symmetry is readily evident in many living objects, although it tends to be irregular or approximate (e.g., people with arms and legs, trees with branches, and faces with eyes and ears). Thus, the rough symmetry of the natural environment does not generate a reflection percept unless there is an upright, human-constructed mirror or mirroring surface present for a reflection. In contrast, bilateral horizontal-axis symmetry is typically encountered in one’s natural environment when objects are reflected over still

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Address correspondence to Sandra L. Horn, Department of Psychology, University of Toledo, 2801 West Bancroft, Toledo, OH 43606–3390; Email: shorn@utnet.utoledo.edu

water (e.g., lakes, ponds, rivers, and puddles), and the symmetry is exact or nearly so, meeting criteria for a reflection percept.

Out of the 10 Rorschach cards, Card VIII produces the largest number of reflection responses (Exner & Erdberg, 2005, Tables 23.27, 23.28, pp. 499–500; Gacono & Meloy, 1994, pp. 241–245, Figures 7.1 through 7.7), and virtually all are of a landscape scene with an animal over water with the card turned sideways. However, many people never turn the cards and thus are not exposed to the stimulus bits that allow for or encourage that response. Indeed, given that many people ask the examiner if it is permissible to turn the cards, it is likely that people experience an expectation or set that they are to respond with the card in its presented upright orientation. Although reflections are considered indicators of narcissistic-like characteristics within the Comprehensive System (CS; Exner, 2003), card turning itself is not thought to be prompted by these characteristics (Weiner, 2003). In the upright position, reflections typically consist of human characters reflected in a mirror (e.g., on Card III and VII), whereas in the sideways orientation, reflections typically consist of landscapes and/or animals reflected in water (e.g., on Card II, VI, and VIII). It is unclear how often the latter would occur if people regularly examined the blots in a sideways orientation.

There is little research available on card turning, but it is a common and interesting occurrence that deserves further exploration. According to Weiner (2003), card turning behaviors can be influenced by characteristics of the test taker that include, but are not limited to, compulsivity, level of interest in the task, hostility, anxiety, emotional response to percepts, defiance, and authoritarianism. Weiner (2003) was careful to point out, however, that such characteristics do not always lead to specific card turning patterns and that one should not assume “the ways in which subjects turn the cards or ask about doing so always identify any specific personality trait or state” (p. 207). Weiner categorized card turning into five types: curious turning, systematic turning, haphazard turning, and oppositional turning, which all occur as a function of searching for percepts; whereas avoidant turning occurs as a function of distress. In a study by Waehler, Tonn, Eisenhauer, and Laux (2008), 46 psychologists indicated in a qualitative questionnaire which personality traits they believed to be related to card turning. The researchers grouped the responses into categories, and the eight most common were creativity, curiosity, defensiveness, flexibility, obsessiveness–compulsiveness, oppositionality, resistance, and suspiciousness. Narcissism did not emerge as a category.

In their 2008 study, Waehler et al. found that card turning occurred in 66% of university student participants, with 180° turning being the most common. Unexpectedly, card turning was not found to be significantly related to oppositionality, three measures of creativity, obsessive–compulsiveness, or defensiveness. However, Waehler et al. did not link differentiated subtypes of card turning behavior to the criterion measures in their analyses. Using a sample of 700 adolescent records with test takers ranging in age from 10 to 16 years, Ames, Métraux, and Walker (1971, pp. 89–90) reported spontaneous card turning of at least one card for 75% of both boys and girls. In a study exploring card turning using a sample of 79 children, O’Neill (1989) found that just 11% of protocols contained at least one response in the rotated position and that turning was not related to reason for referral; learning disabilities; general learning problems; or organic indicators such as seizures, severe perceptual problems, and attention deficit hyperactivity disorder.

In this article, we describe a series of three studies in which we examined the impact of Rorschach card rotation. In the first 2 studies, we focused on how rotation influences response content—specifically, the probability of delivering a reflection response. In the third, we focused on preferences for the cards to be viewed in a particular orientation, which addresses the likelihood that people who rotate the cards for one reason or another will find certain orientations appealing and increase the probability of delivering a response in that orientation. Overall, it is believed that exposure to the cards in a sideways orientation will subject participants to the landscape critical stimulus bits, which will in turn facilitate increased landscape type reflection responding, particularly if people find it appealing to view a particular card in the sideways orientation. Overall, this research has implications as to whether reflection responses should be interpreted partially as a function of viewing the cards in a rotated orientation rather than as just a pure representation of personal characteristics of the test taker.

## EXPERIMENT 1

For this experiment, we hypothesized that the number of reflections would vary by card presentation and instructional set. Specifically, we expected that people who we instructed to look at each card in both the upright and sideways orientation before responding would produce the most reflections of any type because they are exposed to both the mirror and landscape critical bits. We also anticipated that participants who were presented with the cards in a sideways orientation would produce an elevated rate of reflections relative to participants who were given the blots in their traditional upright orientation. With respect to just landscape-type reflections, we expected them to be most prevalent when participants were presented with the cards in a sideways orientation and slightly less common when participants were instructed to view the cards in both orientations before responding. Participants who were given the cards upright with no instructions to turn them were not expected to have elevated levels of landscape-type reflections.

### Method

**Participants.** A total of 123 undergraduate students voluntarily participated and provided protocols suitable for scoring. Most participants ( $M$  age = 19.5 years) self-identified as Euro-American (73.2%) or African American (12.2%), with approximately equal gender proportions (female = 58.5%). The protocols of 2 additional students were excluded from scoring; 1 was nonresponsive to the task, and the other provided a written record in which it was not possible to distinguish comments to the researchers from actual Rorschach responses. Two protocols were scored but dropped from the analyses because number of responses ( $R$ ) < 14, leaving the final  $n = 121$ . There were a total of 2,686 responses within the 121 protocols, for an average protocol length of 22.20 responses ( $SD = 3.06$ ).

**Procedure.** We designed the administration procedures to allow for group administration of the Rorschach while closely following individual administration guidelines of the CS. The methodology accommodated up to 10 participants per session, and each participant sat at a desk, all of which were placed around the periphery of the testing room and facing outward to provide participants with privacy in responding and to prevent

participants from observing how others were maneuvering the cards during the data collection sessions. On each desk was a full set of 10 cards, and each set of cards was placed in either an upright or sideways orientation, depending on the experimental condition. Each card was covered and separated with response forms, preventing participants from seeing each card until they were successively instructed to move the forms, pick up the card, and begin viewing it. Once seated in the testing room, S. L. Horn gave participants an overview of the types of tasks they would be completing as well as a brief description of the Rorschach. There were two phases of administration, as described following, the goal of the methodology being to simulate standard CS individual administration as closely as possible.

*Experimental conditions.* The relationship of reflection responses to card orientation was explored by evaluating the frequency of reflection responses under three card presentation conditions. In the upright condition ( $n = 42$ ), cards were placed on desks in the traditional orientation. In the sideways condition<sup>1</sup> ( $n = 38$ ), cards were presented in a 90° rotated orientation. In the both condition ( $n = 41$ ), cards were presented in the traditional (upright) orientation but subsequent instructions were given to turn the card 90° (sideways) before responding. Participants were assigned to a condition based on the session they chose to enroll in. Sessions were randomly assigned to condition.

*Phase 1.* After participants completed consent forms, S. L. Horn explained to the group that

There is a covered set of 10 Rorschach cards in front of each of you, and the papers are response forms, one set for each card. You will notice that the Response Form is stapled, with a first page [response phase] and a second page [inquiry phase]. At this point, we are only using page 1, which is the top page. Please do not look ahead or turn to the second page until I let you know it's time to do that. When instructed to begin, you will pick up and view the first card. Your task is to use all or part of the inkblot and answer the question "What might this be?" You will have 1½ min to view the card and to write at least two or possibly three responses on the first page of the Response Form. When you are finished recording two or three responses for the first card, please wait for my instructions before moving on to the next card. We will repeat this for all 10 cards; for each, you will fill out a new Response Form.

Instructions were then elaborated based on experimental condition. For the upright and sideways conditions, participants were told the following:

In this task, I want you to look at the card like this [the examiner demonstrated picking up a card in the upright orientation for the upright condition and in the sideways orientation for the sideways condition]. After looking at the card, choose your responses. Ready? Okay, please pick up the first inkblot, look at the image, decide on two or possibly three responses, and then record your responses on page 1 of the Response Form.

For the both condition, participants were told the following:

<sup>1</sup>We use the term *sideways* to describe card orientation during a response (*sideways orientation*) as well as the experimental condition in which cards were initially presented to participants in a sideways orientation (*sideways condition*).

In this task, I want you to first look at the card in its initial position and then turn it 90-degrees like this [the Examiner demonstrated picking up the card in the upright orientation and rotating it 90-degrees] so that it is sideways. After looking at the card both ways, choose responses from either orientation. Ready? Okay, please pick up the first inkblot, look at the image in its initial position and in its sideways position, decide on two or possibly three responses and then record your responses on page 1 of the Response Form.

After these instructions, participants were guided through the response phase card by card, eventually picking up and viewing all 10 Rorschach cards and then recording responses in written form.

Participants also were instructed to raise their hands if they had questions, in which case S. L. Horn would come over to them so they could quietly ask without disturbing or influencing other test takers. In the upright and sideways conditions, participants were told "it's up to you" if they asked if they were allowed to turn the cards so as to keep administration procedures aligned with CS guidelines. The administrator and her assistant recorded instances of card turning during each of the sessions using a card turning tracking form that schematically mimicked the set-up of the testing room. Participants also indicated card orientation for each of their responses on the Phase 2 (inquiry) response forms. To remove clues about traditional orientation, Rorschach images with the same dimensions as the actual Rorschach plates were matted to cardstock with no markings to indicate traditional orientation.

*Phase 2.* As with standard CS administration, during Phase 2, the participants' task was to clarify their responses from Phase 1. They were provided with an inquiry phase response form for each card that contained miniature versions of the inkblots on the left-hand side of the page and space for writing on the right-hand side of the page. The miniature versions of the inkblots were provided for participants to indicate the location of the response object within the card. The images were upright, sideways, or mixed, depending on the experimental condition.

While looking at the second page (inquiry phase form) of the Card I response packet, groups were told the following:

As you can see, this page contains miniature versions of the inkblots on the left side of the page and then space for more writing on the right side of the page. The goal now is for you to help me see what you saw because I want to be able to see the things you saw just like you did. We'll go through the responses one at a time. First while looking again at the actual inkblot, you will read what you initially recorded on page 1 of the Response Form. Then you will use the miniature inkblots on the left side of page 2 to indicate where the things you saw were located, and the space on the right hand side to describe in more detail what there is there in the inkblot that makes it look like that to you. Again, I want you to help me see what you saw because I want to be able to see the things you saw just like you did.

Participants received further instructions to label the orientation of the card for each response by writing "top" on the miniature inkblot to indicate which edge of the card was facing up when they saw the response they recorded. During this phase, they were also each given an example response form that was completed using responses to a picture of smokestack emissions that were clearly in the form of pigs and a picture of a fire engine. Neither of the pictures was symmetrical. The example

responses identified the objects as “it looks like two pigs, facing the horizon,” and “it looks like a bright red fire engine speeding down the road.” The example inquiry referenced key features of the pictured objects, and one or the other included mention of Form, Movement, chromatic Color, Shading, and Dimensionality.<sup>2</sup> These examples illustrated the kind of elaboration expected from the participants while limiting the chance of biasing their inquiry responses by asking directly about potential determinants. The idea to use such pictures stemmed from Exner’s (2003, p. 60) suggestion that a toy fire truck could be used as a prop when explaining and practicing inquiry with child clients. After reviewing both examples, participants were given 3 min per card to complete the inquiry page of the response form. They were instructed to wait for the administrator’s prompt before moving on to the next card and corresponding form.<sup>3</sup>

*Coding.* Coded variables included experimental condition, card rotation, and reflection responses. Reflection responses were identified as mirror type, landscape type, or other/ambiguous. The other/ambiguous category included responses that were reflections but did not clearly fit the category of mirror type or landscape type. An example response that was coded as other/ambiguous was a response to Card III, “it looks like a reflection,” and clarified during Phase 2 as “this just looks like ink was spilt and then the paper folded to make the same exact picture on the other side.” To establish interrater reliability, we obtained agreement ratings for 10 protocols coded by S. L. Horn and G. J. Meyer and for 10 protocols coded by S. L. Horn and an independent coder, N. Dumitrascu. Across all 20 protocols, kappa was 0.96 for the presence or absence of a reflection, with just one disagreement that was a reflection missed by the independent coder. Kappa for reflections based on four-category agreement (none/mirror/landscape/other) resulted in a value of 0.79, which indicates good reliability.<sup>4</sup>

<sup>2</sup>Response 1—Form 1: “It looks like two pigs, facing the horizon.”  
Form 2:

They are the shape of pigs; you can see the snout, the ears and the tail—especially of the one on the right. You can also see their legs. The way they are shaped makes it seem like they are facing away, like looking towards the horizon. And you can see the 2nd one is behind the first one. The one that is closer blocks most of the one that is farther so you can’t see it as well. For that one all you can see is his back and his tail and his legs. They also look soft and puffy. The way it’s shaded makes it look soft like that; like a stuffed animal almost.

Response 2—Form 1: “It looks like a bright red fire engine speeding down the road.”

Form 2:

It looks like a fire engine because it is the right shape; you can see the front end, windshield, tires, horns, and some of the back part where the hoses and ladder are. It’s also red like a fire engine is supposed to be. The way the lines are blurry make it looks like it is going very fast.

<sup>3</sup>The full administrator script, example response form, and response form templates are available on request.

<sup>4</sup>Kappa was lowered largely because four disagreements were a product of systemic coding differences between S. L. Horn and the independent coder; these responses contained a reflection of an animal, human, or ship over water, although the location of the water was not specified as being outside versus inside (e.g., in a warehouse). Such responses were coded as “other” by the

TABLE 1.—Reflection responding by condition.

Condition	Fr + rF Total		Any Fr + rF	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
CAIRS (17 countries)	0.41	0.88	0.25	—
Upright ( <i>n</i> = 42)	0.36	0.79	0.24	0.43
Sideways ( <i>n</i> = 38)	1.92	2.12	0.66	0.48
Both ( <i>n</i> = 41)	1.44	1.48	0.71	0.46
Permissive ( <i>n</i> = 38)	0.84	0.86	0.58	0.50
	<i>t</i>	<i>r</i>	<i>t</i>	<i>r</i>
Experiment 1				
3-group focused contrast <sup>a</sup>	4.16**	.35	5.11**	.43
Sideways – upright <sup>b</sup>	4.45**	.45	4.12**	.42
Both – upright <sup>c</sup>	4.16**	.42	4.79**	.47
Both – sideways <sup>d</sup>	–1.18	–.13	0.47	.05
Experiment 2				
Permissive – upright <sup>b</sup>	2.64*	.29	3.27*	.35
Both – permissive <sup>d</sup>	2.17*	.24	1.19	.13

Note. CAIRS = Composite Adult International Reference Values for the Comprehensive System.

<sup>a</sup>*df* = 118. <sup>b</sup>*df* = 78. <sup>c</sup>*df* = 81. <sup>d</sup>*df* = 77.

\**p* < .05. \*\**p* < .001.

Within each protocol, the reflection responses were used to compute two sum variables; Fr + rF total refers to the sum of all reflections regardless of type; Fr + rF landscape total refers to the sum of all reflections coded as landscape type. We also created a dichotomous variable indicating the presence or absence of a reflection response (any Fr + rF, any landscape Fr + rF). We completed all analyses using the original variables and also log transformed scores of the sum variables (Fr + rF total, Fr + rF landscape total) to adjust for skew in the original variables. Log transformations were not necessary for the presence or absence variables (any Fr + rF, any landscape Fr + rF) because skew for each was less than 0.16. Results were equivalent for the original and log transformed variables in terms of statistical significance except in one instance, which is noted in a footnote. Effect sizes using the log transformed variables were slightly more pronounced (larger when expecting an effect, smaller when not expecting an effect) than when using the original variables. All findings are reported using only the original variables for the sake of simplicity. All pairwise differences were evaluated using Holm’s multistage test to adjust for multiple comparisons (Howell, 2007, pp. 359–360).

**Results**

*Total reflections.* As described earlier, it was expected that the both condition (exposure to mirror and landscape critical bits) would produce the most reflections, closely followed by the sideways condition (exposure to the more commonly reported landscape critical bits) and that the upright condition (exposure to the less often described mirror critical bits) would result in far fewer reflections. These expectations were the basis for our contrast weights, which we describe shortly.

Descriptive statistics by condition are provided in Table 1, which also provides data from the Composite Adult

independent coder but were coded as “landscape” by S. L. Horn and were included in analyses as “landscape.”

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International Reference Values for the CS (CAIRS) based on data from 17 countries (Meyer et al., 2007). (For ease of presentation, Table 1 also includes a permissive condition from Experiment 2, which we describe following.) In the CAIRS, there is an average of 0.41 reflections per protocol, with 25% of protocols containing a reflection. These statistics are comparable to those of the upright condition from this study in which there was an average of 0.36 reflections per protocol, with 24% of protocols containing a reflection. However, the sideways and both conditions produced many more reflections, with means of 1.92 and 1.44 reflections per protocol and with 66% and 71% of protocols containing at least one reflection. The average number of responses (R) per protocol were comparable across the reference sample (22.51,  $SD = 8.01$ ) and the upright, sideways, and both conditions (22.33,  $SD = 3.47$ ; 22.76,  $SD = 3.22$ ; 21.54,  $SD = 2.32$ , respectively), so R was not a confound in the analyses.

An analysis of variance (ANOVA) with a focused contrast<sup>5</sup> was used to test for differences between groups, with contrast weights assigned as follows: both condition = 2, sideways condition = 1, and upright condition = -3. The focused contrast ANOVA weights allowed us to test a specific hypothesis (unlike simple ANOVA); and in this study, the weights represented hypothesized means of approximately equal value for the sideways and both conditions, both of which were significantly larger than the anticipated value for the upright condition. Significant differences between groups emerged for total number of reflections as well as the presence or absence of a reflection, producing medium to large effect sizes as reported in Table 1. We anticipated the both condition would produce slightly more reflections of all types than the sideways condition, but this pattern did not reach statistical significance (and was in the direction opposite of what we predicted).

**Reflections by type.** As noted before, for these analyses, we hypothesized that the sideways condition (exposure to the landscape critical bits) would produce the most landscape-type reflection responses, closely followed by the both condition (exposure to the landscape and mirror critical bits) and that the upright condition (exposure to the mirror critical bits) would result in far fewer landscape-type reflections. In the both conditions, participants are exposed to both types of critical bits, leading us to believe that some participants may respond with a pair or a mirror reflection in the upright orientation as opposed to a landscape reflection in the sideways orientation. However, as landscape reflections are more common than mirror reflections, we did not expect that the difference between the sideways and the both conditions will be large.

An ANOVA with a focused contrast was used to test for differences between groups, with contrast weights assigned as follows: sideways condition = 2, both condition = 1, and upright

<sup>5</sup>Focused contrast ANOVA is a type of trend analysis; polynomial contrasts (which can be user defined) are used in assigning contrast weights to the groups included in the analyses. The resulting ANOVA is a test of the expected pattern (defined by the weights) against the null (groups are not significantly different), whereas simple ANOVA is a test of any pattern (in any direction) against the null. We used focused contrasts because we conducted the research to test specific a priori hypotheses, making focused contrast ANOVA a more appropriate test than simple ANOVA due to increased power to detect a true effect (Rosenthal, Rosnow, & Rubin, 2000; Rosnow & Rosenthal, 1996; Rosnow, Rosenthal, & Rubin, 2000). Simple ANOVA was not used at any time with these data.

TABLE 2.—Landscape reflection responding by condition.

Condition	Fr + rF Landscape Total		Any Landscape Fr + rF	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Upright ( <i>n</i> = 42)	0.21	0.52	0.17	0.38
Sideways ( <i>n</i> = 38)	1.92	2.12	0.66	0.48
Both ( <i>n</i> = 41)	1.20	1.25	0.66	0.48
Permissive ( <i>n</i> = 38)	0.50	0.69	0.39	0.50
	<i>t</i>	<i>r</i>	<i>t</i>	<i>r</i>
Experiment 1				
3-group focused contrast <sup>a</sup>	5.25**	.43	5.62**	.46
Sideways – upright <sup>b</sup>	5.05**	.50	5.11**	.50
Both – upright <sup>c</sup>	4.70**	.46	5.20**	.50
Sideways – both <sup>d</sup>	1.87*	.21	-0.01	.00
Experiment 2				
Permissive – upright <sup>b</sup>	2.11*	.23	2.33*	.26
Both – permissive <sup>d</sup>	3.03*	.33	2.40*	.26

<sup>a</sup>*df* = 118. <sup>b</sup>*df* = 78. <sup>c</sup>*df* = 81. <sup>d</sup>*df* = 77.

\**p* < .05. \*\**p* < .001.

condition = -3. In this analysis, the weights represented hypothesized means of approximately equal value for the sideways and the both conditions, which were significantly larger than the anticipated value for the upright condition. Once again, significant differences between groups emerged, producing large effect sizes as reported in Table 2.<sup>6</sup>

There were very few mirror-type reflections, with a mean of 0.12 ( $SD = 0.50$ ) per protocol in the upright condition, none in the sideways condition, and a mean of 0.20 ( $SD = 0.46$ ) per protocol in the both condition. There were also very few other-type reflections, with a mean of 0.02 ( $SD = 0.15$ ) per protocol in the upright condition, none in the sideways condition, and a mean of 0.05 ( $SD = 0.22$ ) per protocol in the both condition. We did not complete formal analyses for the categories of mirror- and other-type reflections due to the rarity of these responses, although the responses were included in the previously examined total reflections category. As expected, Table 2 shows the majority of reflections were landscape-type reflections, and the distribution was consistent with the hypothesis that the sideways condition would produce the most, followed closely by the both condition, with far fewer in the upright condition.

**Response orientation.** We anticipated that participants in the upright condition would deliver responses to the cards in an upright orientation much more frequently than in a sideways orientation, as they were not prompted to turn the cards, in accordance with traditional CS guidelines. In the sideways and the both conditions, it was expected that the number of sideways-oriented responses would be elevated, as participants were exposed to that orientation through the methodology of the study, with participants in the sideways condition delivering the most sideways-oriented responses because they did not receive instructions to view the card in the upright orientation. However, we anticipated card turning in this condition, as the cards were designed and artistically modified by Rorschach to be viewed in the upright orientation.

<sup>6</sup>The pairwise difference between the sideways and the both conditions was nonsignificant using the log transformed scores of the summation variable (Fr + rF landscape total).

TABLE 3.—Sideways responding by condition.

Condition	Sideways Responses per Protocol	
	<i>M</i>	<i>SD</i>
Upright ( <i>n</i> = 42)	0.52	1.23
Sideways ( <i>n</i> = 38)	7.87	6.48
Both ( <i>n</i> = 41)	4.51	3.16
Permissive ( <i>n</i> = 38)	1.68	2.00
	<i>t</i>	<i>r</i>
Experiment 1		
3-group focused contrast <sup>a</sup>	7.71**	.57
Sideways – upright <sup>b</sup>	7.21**	.63
Both – upright <sup>c</sup>	7.62**	.65
Sideways – both <sup>d</sup>	2.96*	.32
Experiment 2		
Permissive – upright <sup>b</sup>	3.15*	.34
Both – permissive <sup>d</sup>	4.71*	.47

<sup>a</sup>*df* = 118. <sup>b</sup>*df* = 78. <sup>c</sup>*df* = 81. <sup>d</sup>*df* = 77.

\**p* < .05. \*\**p* < .001.

To test for differences in sideways orientation responding, an ANOVA with a focused contrast was used, with contrast weights assigned as follows: sideways condition = 2, both condition = 1, and upright condition = –3, which again indicated we hypothesized means to be of approximately equal value for the sideways and the both conditions but for both to be significantly larger than for the upright condition. Significant differences between groups emerged in the predicted pattern, producing moderate to large effect sizes as reported in Table 3. It is notable, however, that even in the sideways condition, most responses were delivered with the card in the vertical orientation.

### Discussion

Data from Experiment 1 supported the hypothesis that viewing cards in the sideways orientation facilitates reflection responding, as participants are exposed to the critical stimulus bits that facilitate landscape-type reflections. However, it was surprising that the sideways and the both conditions produced such a large increase in reflection responding, which led us to question whether the results might have been influenced by unexpected demand characteristics in the experimental conditions that would limit our ability to generalize to clinical practice. For instance, it is possible that participants in the sideways condition felt obligated to deliver responses with the card in the sideways orientation, and that some participants in the both condition thought they were supposed to deliver one response in both the upright and sideways orientation. If this were the case, participants may have responded with increased reflections as a product of deliberately and conscientiously searching for responses in the sideways orientation even though they did not prefer viewing the blots in that nonstandard position. These considerations prompted two new but related studies; one to help evaluate potential demand characteristics and one to evaluate the preferences for cards to be viewed in particular orientation.

At the outset, we created the both condition of Experiment 1 as a “permissive” condition in which participants were to be exposed to both the upright and sideways orientation, with the freedom to respond as they desired. However, it is important to rule out the possibility that an inadvertent demand characteristic may have led some participants to respond in a manner that they thought was desired, that is, with one sideways and one upright

response. Thus, in Experiment 2, we wanted to ensure demand characteristics were not operative by more thoroughly and explicitly creating a permissive condition. The goal of adding the permissive condition was to provide the participants with overt freedom to turn the cards if they desired, thus removing any potential ambiguity as to what was acceptable behavior.

In classical mythology, Narcissus falls in love with his own image. When reflections are produced in the upright orientation, it is likely that they capture this phenomenology, as the stimulus qualities of bilaterally paired objects on each side can also be construed as the image of a single object looking at itself in the mirror (e.g., for the Popular human images on Card III or VII). It is less obvious, however, whether landscape reflections will have similar phenomenology, as at least some landscape scenes can be generated quite readily without any human or animal objects present (e.g., Card VI or IX). Thus, in an effort to gather initial data on the extent to which responses parallel the initial myth of Narcissus, across conditions, we explored how often mirror and landscape reflection responses contained human or animal objects and how often these objects were actually looking at their reflections.

Another question is whether people who were responding to the card in the sideways orientation were using the cards in a manner that was unappealing for them. Because the cards were designed and artistically modified by Rorschach to be viewed in the upright orientation (Exner, 2003), it is not known whether people may find the sideways orientation less attractive. Would participants who turn the cards sideways in a clinical setting tend to return fairly quickly to a more appealing upright orientation? Do people have a preference for viewing the cards in the upright orientation, with the left–right symmetry that is more common for single living objects in nature, rather than in the sideways orientation, with the top–bottom symmetry that in the human experience of nature is only encountered when objects are reflected over water or some other shiny surface on the ground? In an effort to better understand participants’ preferences for viewing the cards, we devised Experiment 3 to explore participant preference for card orientation.

To the extent that participants prefer to view each card in the upright orientation, the act of rotating the cards should have minimal impact on the production of sideways-oriented responses and the landscape type reflection responses that can be seen in that orientation. However, to the extent that people like viewing some of the cards in a sideways orientation, then people who rotate those cards (for whatever reason) should be prone to generate an increased frequency of landscape reflections on them. Indeed, it may be that people tend to prefer a sideways orientation for some cards precisely because there is a relatively potent set of critical bits that foster an identifiable reflected landscape scene. Thus, in a final set of analyses in Experiment 3, we examine the association between preferences for each card to be viewed in the sideways orientation and the rate of landscape reflections for each card.

## EXPERIMENT 2

### Method

**Participants.** A total of 38 undergraduate students voluntarily participated, and we placed them in the new condition. The mean age was 19.0, and most self-identified as Euro-American (73.7%) or African American (18.4%), with approximately

equal gender proportions (female = 54.1%). No protocols were excluded from analysis for low *R* or other complications.

**Procedure.** In Experiment 2, we employed the same methodology and materials as Experiment 1. In the permissive condition, cards were presented in the traditional (upright) orientation. During Phase 1 instructions, participants were told “you may turn the card sideways or upside down if you would like. After looking at the card, choose responses from any orientation.” As in Experiment 1, the administrator(s) recorded card turning during each of the sessions, and participants also indicated card orientation for each response on the Phase 2 response forms. There were a total of 816 coded responses, for an average protocol length of 21.47 responses (*SD* = 3.51), which is comparable to length in the other conditions.

### Results

We used the permissive condition in an exploratory manner to assess differences from Experiment 1. Because our primary concern is how permission to turn the card might influence responses in practice, we focused on the permissive condition compared with the upright and both conditions, as participants in these conditions initially picked up the cards in their traditional orientation. We did not make comparisons with the sideways condition because the cards would not be presented sideways in typical clinical practice. As a first step, we examined how often participants in the permissive condition generated a response in the sideways orientation. Descriptive statistics and *t*-test results are provided in Table 3 and show that the average number of sideways-oriented responses per protocol in the permissive condition fell between that of the both and the upright conditions. This supports the notion that at least some participants from the both condition in our previous study felt an unintended demand to provide a response in the sideways orientation. It also indicates that at least some people in the upright condition felt an expectation to give responses in the upright orientation. In turn, the latter suggests that under standard administration, people feel an implicit demand to use the card in the manner it was given.

Tables 1 and 2 provide descriptive data and *t*-test results for all reflections and for landscape-type reflections, respectively. The results indicate that across all scores, the permissive condition produced about twice as many reflections as the upright condition. Relative to the both condition, the permissive condition generated fewer reflections on three of the four measures (i.e., *M* of total reflections, *M* of landscape reflections, and percent of people giving at least one landscape reflection but not the percent of people giving any type of reflection).

To address classic narcissistic phenomenology across all conditions, we classified reflections into three categories: (a) no aware object present in the reflection (NAO; e.g., “a ship and here is its reflection”), (b) an aware object not looking at its own reflection (ANL; e.g., “someone standing in front of a mirror and here is his reflection”), and (c) an aware object looking at its own reflection (A&L; e.g., “someone staring at himself in the mirror”). Across the four experimental conditions, there were just 24 mirror reflections; they were classified as follows: NAO = 16.7%, ANL = 45.8%, and A&L = 37.5%. Thus, most of these responses contained an aware object (83.3%); and in about half of these responses (9 of 20), the object was gazing at its reflection. Most of the latter (6 of 9) occurred on Card

VII. Among the 150 landscape reflections, the frequencies were NAO = 34.7%, ANL = 56.0%, and A&L = 9.3%. Compared to mirror reflections, the landscape reflection responses tended to less often have had an aware object (65.3% vs. 83.3%) and more often have had no object present (34.7% vs. 16.7%);  $\chi^2(1, N = 174) = 3.07, p = .079, \phi = .13$ . The cards that most often pulled for landscape reflections with NAO present were Cards VI and IV (with 23 and 11 of the 52 landscape NAO responses, respectively). The cards that most often pulled for landscape reflections with an aware object present were Card VIII (44 of 98 ANL and A&L responses) followed distantly by Card II (14 of 98 responses). Although aware objects remained fairly common among landscape reflection responses (65.3%), in contrast to the mirror reflections, these objects were rarely described as looking at or recognizing their own reflection (just 14 of 98 responses). The relative proportion of objects looking at themselves in the mirror (45.0%) and in landscape (14.3%) responses differed significantly,  $\chi^2(1, N = 118) = 9.985, p = .0016, \phi = .29$ .

### Discussion

When collapsing across conditions, the last set of findings revealed a tendency for landscape-type reflection responses to less often have a human or animal present than mirror-type reflection responses. Furthermore, when a human or animal was present in a landscape-type reflection, it was less likely to be looking at itself. These findings indicate that landscape-type reflections in general are not prototypical of the Narcissus myth. Landscape reflection responses on Cards VI and IV regularly have no aware object present at all and when an object is present in a landscape reflection (typically an animal on Card VIII and to a lesser extent Card II), it is rarely described as looking at itself.

With respect to the new experimental condition, the results of Experiment 2 indicate that giving nondirective permission to view the cards in any orientation elicits an increased number of responses in the sideways orientation as well as an increased number of reflections, as participants in the permissive condition differed from those in the upright condition on both dimensions (e.g., 58% rather than 24% of participants gave at least one reflection). The results also suggest that the initial instructions for the both condition probably left some participants thinking they were expected to generate a response in the upright orientation and also in the sideways orientation. Compared to the both condition, the instructions in the permissive condition produced fewer responses in the sideways orientation and correspondingly fewer landscape reflections and fewer people giving at least one landscape reflection (39% vs. 66%).

Participants who viewed the cards in the sideways orientation, whether in the both or the permissive conditions, were exposed to the landscape-type reflection critical stimulus bits and thus had increased probability of delivering a reflection relative to the upright condition. However, multiple reflections within a protocol were more limited in the permissive condition compared to the both condition, suggesting these participants may have felt less pressure to search for responses in the sideways orientation, limiting such responses to instances in which they felt internally compelled to answer in such a manner. It may be that they delivered some of the more obvious sideways orientation responses, including landscape-type reflections, and then



instead of actively searching for more responses in the sideways orientation, they reverted to the upright orientation for the remainder of their responses. An issue that remains unclear is the extent to which people prefer to view each card in the upright or sideways orientation. This was the topic of our final study.

EXPERIMENT 3

Method

**Participants.** A total of 69 undergraduate students voluntarily participated, and we assigned them to one of four conditions containing 18, 17, 18, and 16 participants, respectively. The majority of participants (*M* age = 19.7 years) self-identified as Euro-American (66.7%) or African American (18.8%), with approximately equal gender proportions (female = 55.1%). No participants delivered incomplete or otherwise unusable data.

**Procedure.** As in the previous experiments, our methodology accommodated up to 10 participants per session, with each participant sitting at a desk facing the periphery of the room. On each desk was a full set of 10 cards, and four preference conditions were constructed in which the cards were placed on the desks in one of the four orientations (upright, right-up, bottom-up, and left-up), depending on the experimental condition. Conditions were used to control for possible effects of orientation exposure order on preference, although no differences between conditions were expected. Each set of cards was covered with a response form.

After participants completed consent forms, the administrator explained to the group that they would each be viewing a full set of 10 Rorschach cards, picking up and looking at each card in all four possible orientations before deciding “which orientation you like the best,” and that after viewing each card, they would use the response form to indicate which card orientation they most preferred. Participants picked up each card in its initial position, with the orientation determined by their assigned conditions. Participants were given 10 s per orientation to look at the card before rotating it to the next orientation, with verbal prompts to rotate provided by S. L. Horn after 10 s expired. After viewing each card, participants indicated their card orientation preference on the response form, which contained four miniature reproductions of each inkblot. For each card, the four miniature inkblots were used to represent the four orientation options. The order of the orientation for the four miniature inkblots alternated by card to minimize any potential order effects (i.e., the sequence for Card I was upright, right-up, bottom-up, and left-up; for Card II it was right-up, bottom-up, left-up, and upright, etc.). We instructed the participants to circle the orientation that they liked the most, and we also gave them an opportunity to record comments to the researchers.

Results

The four initial card orientation conditions were a methodological control to counter potential primacy or recency effects, so we present results with conditions combined. Across all 10 cards, the upright orientation was most preferred (41.7%), closely followed by the upside-down orientation (38.4%), with far fewer preferences for the right-side-up (9.7%) or left-side-up (10.1%) orientations. However, notable differences emerged when orientation preferences were broken down by card, as demonstrated in Figure 1 and Table 4. Participants clearly pre-

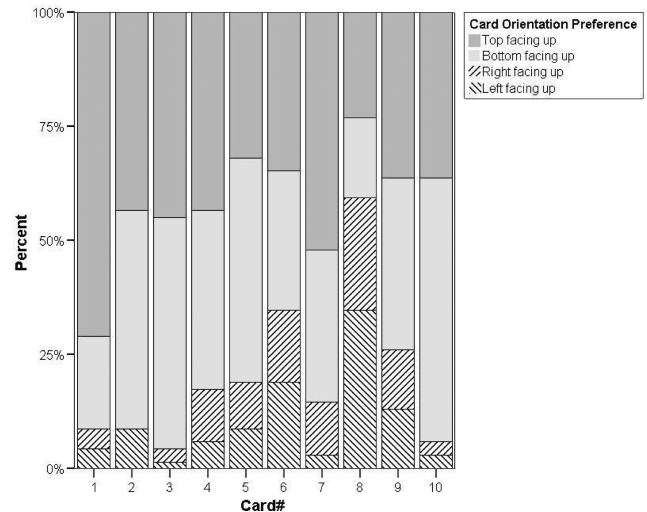


FIGURE 1.—Orientation preference by card.

ferred viewing Card VIII sideways as opposed to upright or upside down, and preference was almost evenly split between the three categories for Card VI. Participants least preferred Cards III and X in a sideways orientation.

We next correlated the mean rate of landscape reflections per card from the both and the permissive conditions in Experiments 1 and 2 (i.e., the 8th and 9th column in Table 5), with the percent of people preferring the sideways orientation for each card in Experiment 3 (i.e., the final column of Table 4). These analyses produced large effect sizes for the both and the permissive conditions ( $r = .88, p = .001; r = .86, p = .001$ , respectively;  $n = 10$  for both). Thus, sideways orientation preference results from this experiment coincide with landscape reflection responding in the both and the permissive conditions of the previous experiments. Although there is variability across conditions, the most landscape reflections were obtained on Cards VIII and VI, with Cards III and X producing the least.

We anticipated an association between landscape reflections and sideways orientation preferences for the conditions in which participants were encouraged to view the cards from more than one angle. For the remaining conditions, there was an association of similar magnitude for the sideways condition ( $r = .87, p = .001; n = 10$ ), although not for the upright condition

TABLE 4.—Orientation preferences (percent) by card.

Card	Upright	Upside Down	Sideways
I	71.0	20.3	8.7
II	43.5	47.8	8.7
III	44.9	50.7	4.4
IV	43.5	39.1	17.4
V	31.9	49.3	18.8
VI	34.8	30.4	34.8
VII	52.2	33.3	14.5
VIII	23.2	17.4	59.4
IX	36.2	37.7	26.1
X	36.2	58.0	5.8
Total	41.7	38.4	19.9

TABLE 5.—Reflection rates (means) by card.

Card	All Types				Landscape				Mirror			
	U	S	B	P	U	S	B	P	U	S	B	P
I	0.02	0.05	0.05	0.11	0.02	0.05	0.02	0.05	0.00	0.00	0.02	0.05
II	0.05	0.16	0.15	0.08	0.02	0.16	0.15	0.05	0.02	0.00	0.00	0.03
III	0.05	0.03	0.10	0.05	0.02	0.03	0.05	0.03	0.00	0.00	0.05	0.03
IV	0.00	0.26	0.20	0.03	0.00	0.26	0.15	0.03	0.00	0.00	0.02	0.00
V	0.02	0.13	0.07	0.03	0.00	0.13	0.05	0.03	0.02	0.00	0.00	0.00
VI	0.02	0.45	0.17	0.13	0.02	0.45	0.15	0.08	0.00	0.00	0.02	0.00
VII	0.07	0.05	0.12	0.08	0.00	0.05	0.07	0.00	0.07	0.00	0.05	0.08
VIII	0.07	0.47	0.41	0.21	0.07	0.47	0.41	0.21	0.00	0.00	0.00	0.00
IX	0.00	0.18	0.10	0.08	0.00	0.18	0.10	0.03	0.00	0.00	0.00	0.05
X	0.05	0.13	0.07	0.05	0.05	0.13	0.05	0.00	0.00	0.00	0.02	0.05
Total	0.36	1.92	1.44	0.84	0.21	1.92	1.20	0.50	0.12	0.00	0.20	0.29

Note. Lettered columns indicate condition: U = Upright; S = Sideways; B = Both; P = Permissive. Means were derived from Experiments 1 and 2.

( $r = .45$ ,  $p = .193$ ;  $n = 10$ ) in which an expectation to respond vertically may have interfered with the pattern seen otherwise.<sup>7</sup>

### Discussion

Our preference results indicate that it is dependent on the card whether people prefer viewing it in a vertical orientation, with the left–right symmetry that is more commonly seen in the natural environment within a single living object or with pairs of objects, versus in a sideways orientation, with the top–bottom symmetry that is more suggestive of a landscape type of reflection in the natural environment. People who were responding to the card in the sideways orientation under permissive instructions were seemingly using the cards in a manner that was comfortable and natural for them, as cards that produced reflections in the experimental conditions that instructed or verbally included permission to turn the cards were the same cards that later participants preferred to view in the sideways orientation; cards that produced few landscape-type reflections were not as preferable in the sideways orientation. If participants turned Card I sideways, for example, we would expect that they would then rotate back out of the sideways orientation because it is not very appealing. On the other hand, if Cards VIII and VI are turned sideways, participants would be more likely to stay in the sideways orientation because it is pleasing to many people. The pleasantness of the sideways orientation on these cards may increase the probability of remaining in this orientation and eventually producing a reflection response, although it may also be that these cards are preferred in the sideways orientation because of the salience of the landscape reflection.

The structural relationship between preference for a card to be viewed in the sideways orientation and the rate of landscape reflections for a card supports the idea that people evaluated in a clinical setting will likely give a reflection if certain cards are viewed sideways. It also may be that some people who prefer the sideways orientation use landscape-type reflections as a way to make sense of the stimulus material. This supposition is supported by Experiment 1 and 2 findings, as some participants

seemed to lock into a mental set of reflection responding and delivered multiple reflections (i.e., five or more across the cards).

### GENERAL DISCUSSION

Both the mean number of reflections per protocol and the percentage of protocols containing a reflection more than doubled in the sideways, both, and permissive conditions as compared to the upright condition. Across all conditions, most of the reflection responses were of the landscape type. These findings support the hypothesis that card orientation affects the number of reflections. The sideways, both, and permissive conditions produced more reflections than the upright condition because participants were exposed to critical stimulus bits when the cards were sideways oriented that promote landscape-type reflections. Across reference and clinical samples (e.g., Exner, 2003), when cards are upright, symmetry is left to right, and it tends to produce a pair response (e.g., two people) with greater frequency than a reflection (e.g., a person looking in the mirror). However, when the cards are sideways oriented, the symmetry is top to bottom, which rarely occurs in the natural environment except when objects are reflected over water. Thus, in this position, reflected landscape seems to be an available and fairly potent response because it aligns with the imagery of the natural environment.

Our findings are somewhat limited by methodology, as the Rorschach was self-administered in a group setting. Although the administration and inquiry was highly structured, without an examiner to ask follow-up questions, at times some response information remained unclear. Although this kind of ambiguity could be more troublesome with other variables (e.g., Shading Determinants), it appeared to have a limited impact on reflection scores, which were readily described by participants, reliably coded, and produced values in the traditional upright condition that matched international norms. In addition, although there is some variability across studies in which cards produce the fewest reflections, undoubtedly due to their very low base rate on these cards, samples described by other researchers have followed a pattern similar to our upright condition, with Cards VIII and VII producing the most reflections (Exner & Erdberg, 2005, Tables 23.27, 23.28, pp. 499–500; Gacono & Meloy, 1994, pp. 241–245, Figures 7.1 through 7.7). Thus, it seems the reflection findings obtained using this methodology should generalize to what is observed with individual administration.

<sup>7</sup>We did not include mirror reflections in the analyses due to the rarity of occurrence. However, Table 5 includes rate of mirror reflections organized by condition and card.

Another limitation is that we did not collect any criterion data concerning participant personality characteristics. Thus, it was not possible to determine whether the people who produced many reflections or preferred the sideways orientation on certain cards were individuals with narcissistic-like characteristics. However, the findings indicate that rate of reflection responses more than doubles as a function of permission to turn the card (i.e., from 24% of participants producing at least one to between 58% and 71%). This shift appears to be better accounted for as a product of the critical stimulus features related to the card's orientation, independent from narcissistic-like characteristics of the individual. Reflection responses are relatively rare in traditional administrations of the Rorschach, and most are landscape-type reflections that occur on Card VIII when it has been rotated sideways. If prompted by card turning itself, which is thought to be independent of narcissistic-like characteristics, then our decision to interpret such responses as indicative of personality characteristics should be reconsidered.

Although reflection responses have shown replicated associations with relevant criteria, the overall literature is mixed (see Langer, 2004, for a succinct and balanced overview). Some of the inconsistent findings may be a function of previously unappreciated variability in card rotation that contributes to measurement error. In a related way, some of the inconsistencies may be due to differences in the types of reflection responses that are quantified from one study to the next.

It may be that reflection responses are most readily interpretable as indicating narcissistic-like qualities when the imagery in the coded percept is aligned with the phenomenology thought to be associated with narcissistic-like qualities. Following the original myth of Narcissus, these kinds of responses would include percepts in a vertical orientation when an object (human or animal) is looking at him or herself in a human-constructed mirroring surface (e.g., mirror, window) or percepts in the sideways orientation when an object is looking at his or her image in a reflective fluid or a mirroring material on the ground. Thus, there may be qualitative differences that are clinically important when contrasting responses such as "a man lifting weights looking at himself in the mirror" (given to Card III in the upright orientation) and "a lake with trees on the horizon off in the distance; you can see the trees and dark clouds reflected in it" (given to Card VI in the sideways orientation). Issues of potency, self-presentation, and implied narcissism are represented in a more isomorphic manner in the former than in the isolative and somewhat foreboding imagery of the latter.

Data are sparse for evaluating the distinction between types of reflection responses. However, Jacques (1991) found that images of a person looking at himself or herself in a mirroring surface were linked to the use of personal pronouns in narrative material and clinical ratings of self-focus, although the sum of undifferentiated reflection responses was not. More research using behavioral criteria of narcissistic-like qualities, grandiosity, or insecure preoccupations with one's worth and importance are needed to evaluate the potential value of distinguishing types of reflections and to support the traditional inferences that have been linked with reflection scores. At present, however, because narcissistic-like qualities have never been linked to card turning, but card turning is clearly related to landscape type reflection responses, until more validity data have been gathered to suggest otherwise, it would be prudent in clinical practice to limit tradi-

tional interpretive inferences to reflection responses in which the phenomenology of the response is consistent with the inference (i.e., looking at oneself in a reflective surface) and avoid the traditional inferences for landscape reflections in the sideways orientation that lack a reflected human or animal figure.

Because there are many factors thought to be associated with card turning, including simple curiosity, creativity, flexibility, compulsiveness, defiance or oppositionality, avoidance of a disquieting percept, or distancing from the task more generally (see Waehler et al., 2008; Weiner, 2003), based on our findings, we question whether the thought to turn should be left to the client. In 1969, Exner summarized the five primary systems that were being used in the United States for Rorschach administration, scoring, and interpretation. Exner (1969) noted that when introducing the test, Piotrowski gave verbal permission for subjects to turn the cards, adding the phrase "You may turn it around any way you like" to the basic prompt of "What might this be?" (p. 124; quoting Piotrowski, 1950, p. 544). In addition, Exner (1969) noted that Hertz's highly structured introduction to the Rorschach task informed participants that they would take each card in hand, look at it carefully, and say what it looks like, which was followed by the instruction "You may hold the card any way you wish" (p. 158; quoting Hertz, 1936, p. 247). However, the Klopfer methodology was selected for the CS instructions, and it avoided mention of card turning (Exner, 1974, pp. 27–30).

Exner (1974) decided that card turning should not be mentioned in the CS instructions because he believed doing so would "breach the necessary goal of using a 'reasonably standardized' set" (p. 30). However, Exner's (1974) decision was made early on, before he conducted systematic research into the critical bits of the stimulus field that constrain response options and pull for one type of response over another. Although Exner's (1996) research on critical bits did not address reflections, the data we presented here indicates that the top-to-bottom symmetry found when the cards are in a sideways orientation constrains the stimulus field in important ways and exerts a strong pull for reflection responses on particular cards. Examples can be found on Cards VIII and VI using our sample in which 51.7% and 37.0% of total responses given to those cards in the sideways orientation were reflections, respectively. Given the diverse factors that can result in someone happening to look at the card in a sideways orientation, failing to mention that card turning is permitted when introducing the test may actually breach the goal of administering the task under a reasonably standard set—at least with respect to reflections responses.

To more adequately differentiate those who will produce a reflection response from those who will not, we think it would be wise to reconsider Exner's (1974) early decision. One approach would be to restrict responses to the upright orientation, which would simplify both administration and the Form Quality tables by eliminating about 15% of the entries. This could be done tactfully and without discouraging the client (e.g., when presenting the first card, the examiner could say, "I'd like you to look at these cards in the position I hand them to you, OK? What might this be?"). However, this approach would be a significant departure from tradition. Another possible approach is to differentially weight reflections based on which card produced the response; reflections given to cards that more commonly result in such a response (e.g., Cards VIII and VII) would theoretically hold less interpretive significance than reflections given to cards

that do not typically produce reflections because of the differing critical bits that pull for a reflection. A final alternative is to follow Piotrowski and Hertz to include an administration guideline that explicitly mentions card turning is permitted. This would level the playing field in terms of what critical stimulus bits clients are exposed to by chance. Although our findings should be verified using individual administrations with a nonpatient sample, the data suggest that if this guideline was adopted, at least one reflection would occur in about 60% of records rather than in about 25%.

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