Personality and perceptions of situations from the Thematic Apperception Test

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Abstract
Participants (N = 186) viewed three pictures from the Thematic Apperception Test (TAT; Murray, 1938) and rated the situations contained therein using a new measure of situations, the Riverside Situational Q-Sort (RSQ; Wagerman & Funder, 2009). Results support a two-component view of situation perception: an objective component attributable to the situation being perceived and a subjective component attributable to the person doing the perceiving (Murray, 1938; Rauthmann, 2012; Sherman, Nave, & Funder, 2013; Wagerman & Funder, 2009). Further, distinctive perceptions of situations were consistent across pictures and were associated with the Big Five personality traits, particularly Neuroticism and Openness, in a theoretically meaningful manner. These results provide support for perception as a core process for how personality traits work.

Keywords:
Personality
Perceptions
Situations
Construal
Thematic Apperception Test

1. Introduction
Everyday experience suggests that people perceive their surroundings differently from one another. The idiom “Is the glass half-empty or half-full?” is perhaps the most common expression implying such individual differences in perception. One’s response to this question is thought to indicate a dispositionally positive or negative outlook on life. This further suggests that differences in perception like the one just described are related to personality. Studies have shown meaningful relationships between personality and behavior, life-outcomes, and even life expectancy (Friedman et al., 1993; Ozer & Benet-Martínez, 2006; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). Given the breadth of these relationships, it seems likely that personality would also be related to differences in the ways in which people view their surroundings. Indeed, one definition of personality – one’s characteristic patterns of behavior, thought, or emotional experience that exhibit relative consistency across time and situations – makes it quite apparent that subjective interpretations of the world make up who we are (Allport, 1937). Surprisingly, however, the relationship between personality and perceptions of situations has received little empirical attention (cf., Rauthmann 2012; Sherman, Nave, & Funder, 2013). This may be due to the fact that until recently there has been no broadly accepted measure of situations (Wagerman & Funder, 2009). The goal of this study is to examine agreement (i.e., consensus) and individual differences (i.e., construal) in the way people perceive the same situations as well as the relationship between personality and such distinct construals.

2. Situations: objective and subjective properties
Returning to the previously mentioned glass idiom, nearly every person viewing such a glass will agree on several things. First, there is a glass. Second, there is some liquid in the glass, occupying half of the total capacity while the rest of the glass is occupied by a gas. Such readily agreed upon (i.e., consensual, objective) properties are what Murray (1938) called the “alpha press.” However, when answering the question “Is the glass half-full or half-empty?” one must provide his or her own interpretation as to whether the volume of that liquid is a lot or a little. Such subjective interpretations are what Murray called “beta press.” Thus, one’s perception of the glass is made up of both objective properties, or alpha press, and subjective interpretations, or beta press. It stands to reason that the perception of situations may also stem from these two sources: objective characteristics and the subjective interpretation (Sherman et al., 2013). Some empirical evidence supports this view. For example, Sherman and colleagues (2013) found that the average agreement among raters of the same situational stimuli was \( r = .49 \), concluding that “the primary basis of individual perceptions of situations is their objective nature” (p. 5). However, these same researchers also demonstrated that individual differences in perceptions (i.e., subjective interpretations) of situations are both consistent and related to personality.

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1 For our purposes here, we shall dispense with late comedian George Carlin’s observation that the glass is too big.
3. Person perception

Although research on situation perception is relatively scant, decades of research on person perception can be instructive for understanding situation perception. The level of consensus in observer ratings of a target's personality varies with the amount of acquaintance between the rater and the target, but a conservative average consensus is about .20 (Kenny, Alibrand, Malloy, & Kashy, 1994). Such a lack of consensus about targets shows that different observers rate the same person differently. Indeed, a large portion of the variance in person perception is due to the perceiver (Kenny, 1991; Kenny, 2004; Kenny, West, Malloy, & Albright, 2006). Using the Social Relations Model (SRM), Kenny and colleagues partition variance in judgment into four components: Mean, Perceiver, Target, and Perceiver x Target (Kenny et al. 2006). The SRM incorporates both alpha and beta press by considering both Target (objective) and Perceiver (subjective) effects. Kenny (1994) found average Perceiver variance to be about 20%, average Target variance to be about 15%, and average Perceiver x Target variance to be about 20%. While the SRM is typically applied to person perception, others have begun using it in the context of situation perception. One recent study found Perceiver variance between 6% and 9%, Situation (Target) variance between 17% and 27%, and Perceiver by Situation variance, which also includes error using this methodology, between 67% and 74% (Rauthmann, 2012). These variances in situation perception are fairly similar to those found by Kenny (1994) in person perception.

Moreover, perceiver effects in the realm of person perception are related to gender and personality. For example, people tend to rate others' personalities as similar to their own (i.e., assumed similarity; Kenny, 1994; Srivastava, Guglielmo, & Beer, 2010). Perceiver effects are also related to gender with women rating individuals as higher on Agreeableness, Conscientiousness, Extraversion, and Openness and lower on Neuroticism (Srivastava et al., 2010). Another recent study examined the relationships between a tendency to rate friends' personalities in certain ways and dispositional characteristics, including personality (Wood, Harms, & Vazire, 2010). The results indicated that an observer's personality was related to his or her perception of others' personality beyond assumed similarity effects. For instance, agreeable people rated others not only as more agreeable, but also more conscientious, open, and emotionally stable. Because personality is linked to perceptions of people, it seems reasonable to think that personality is also related to perceptions of situations.

4. Relationships between personality and construals

4.1. Construal research

Previous research has demonstrated that individual differences are related to distinct perceptions of social environments. For example, some people are more likely to expect rejection in relationships (Downey & Feldman, 1996; Downey, Freitas, Michaels, & Khouri, 1998). In turn, these people are more likely to perceive intentional rejection in the ambiguous behavior of a partner; essentially, they perceive the same behavior differently from people who score lower on rejection sensitivity. Similarly, aggressiveness also appears to influence perception of situations. Aggressive boys attribute hostile intentions to others more than nonaggressive boys (Dodge & Frame, 1982). Relatedly, aggressive individuals tend to spontaneously infer hostile traits to an actor (Zell, Huesmann, & Cervone, 1995). This research shows compelling relationships between personality traits and construal. However, rejection sensitivity and aggressiveness are very specific traits, and, respectively, perceiving intentional rejection and inferring hostile traits are very specific construals. Therefore, a more comprehensive description of the relationship between personality and perceptions of situations is necessary.

4.2. Big Five traits and situations

One recent study found relationships between broad personality traits (i.e., the Big Five) and perceptions of situations (Rauthmann, 2012). Specifically, individuals scoring high on Neuroticism rated neurotic situations as occurring more frequently, having higher activation, and stronger negative valence. This trend was found for each of the Big Five traits with their respective situation analogues.

However, there are a few limitations to Rauthmann’s (2012) research that warrant a closer examination of the topic. First, the “Big Five Situations” used as situational stimuli were simply items describing the properties of situations (e.g., “Others react negatively toward me” or “Stressful time”). Because participants rated such items and not situations with settings, participants, or activities (for a description of the features of a situation; see Rauthmann, 2012), the applicability of such results to the perception of actual situations is limited. Also, participants only rated each situation item on three properties: frequency, valence, and activation.

There is substantial research aimed at identifying the taxonomy of situations, and there is little consensus (Edwards & Templeton, 2005; Kelley et al., 2003; Sherman, Nave, & Funder, 2010; Yang, Read, & Miller, 2006), indicating situations are difficult to adequately describe and unlikely to be understood fully based on three ratings. Therefore, a more comprehensive description of these situations is necessary to fully understand differences in perception. Thus, while Rauthmann’s (2012) demonstrates that personality is related to the ways in which people perceive situations, these limitations warrant further research.

4.3. Comprehensive situational assessment and perception

Before one can examine the relationship between personality and situation perception (in a broad sense), it is first necessary to have some method for evaluating the psychological properties of situations. Indeed, the lack of such a measure has been a pervasive issue in personality and social psychology for some time (Frederiksen, 1972; Hogan, 2009; Reis, 2008). One tool aimed at quantifying a broad array of psychological properties of situations was recently developed. The Riverside Situational Q-Sort (RSQ v3.15; Wageman & Funder, 2009) contains 89 items describing the psychological properties of situations (e.g., “Talking is permitted,” “Context is potentially anxiety inducing”). The RSQ has been used in studies linking situational similarity with behavioral consistency (Sherman et al., 2010) and examining situational influences on the degree to which one’s behavior matches his or her personality (Sherman, Nave, & Funder, 2012).

More recently, one study used the RSQ to examine perceptions of a broad range of situations and scores on a variety of personality measures (Sherman et al., 2013). In this study participants came to the lab for five sessions. During the first session, they completed a battery of personality measures. At each subsequent session, participants wrote a short description of what they were doing the day before at a given time. Participants then rated this situation using the RSQ. Next, consensus ratings of the descriptions written by participants were gathered from four research assistants who independently read and rated each description. These ratings were then used to partial out (i.e., remove) the consensual (objective) portion of the original participants’ ratings of the situation with the RSQ, leaving only distinct construals of situations. Analyses of these distinct construals showed that participants’ construals were consistent across the four situations. In other words, the “beta
press” that an individual brings to one situation is similar to that to which he or she brings to the next situation.

Sherman and colleagues (2013) also found relationships between personality scores and these situation construals. For instance, Openness was related to construal of the RSQ items “Includes aesthetic stimuli” ($r = .21$) and “Includes intellectual stimuli” ($r = .20$). Also, Negative Trait Affect (a combination of depression and Neuroticism) was related to “Is being criticized” ($r = .21$) and “Frustrating or Adverse” ($r = .17$). This demonstrates that personality is related to a propensity to interpret real-world situations in a certain way. To date, this appears to be the only study that has assessed a broad range of perceptions in addition to a comprehensive battery of personality measures.

However, this study was not without limitations; the consensual ratings were derived using research assistants’ ratings of the participants’ written descriptions of the situation. Only the participant actually experienced the original situation. That is, the research assistants read descriptions of real situations provided by the participants written on 3 x 5 (in.) notecards and then rated what they thought those situations were like, never actually seeing or experiencing the situation the participant experienced. This raises at least two possible methodological problems.

The first problem is that the situation written on the card had already been filtered through the eyes of the participant. Essentially, it is possible that these descriptions were already construed (Sherman et al., 2013). Perhaps two individuals in the same situation would write different descriptions, because beta press influences such descriptions. In this case, the differences in the description, which would be part of the actual differences in construal and therefore the variable of interest, would not be fully detectable using this methodology. Such a problem, if true, would serve to reduce the size of distinctive perceptions (construals) and thereby reduce their consistency and attenuate their associations with personality.

On the other hand, using written descriptions is also problematic because the participants and research assistants may not have been rating the same situation. Take for instance the description of “I was watching TV.” Different people may imagine, and therefore rate, different situations while reading this description (e.g., a drama vs. a sitcom). A rater may have a different situation in mind than the participant who wrote this, meaning that they are effectively rating different situations. Such a problem, if true, would serve to artificially increase the size of distinctive perceptions. This could influence the consistency of construals and the relationship with personality. This study seeks to address these two, potentially counter-acting, concerns by having all participants view the same stimuli.

5. The current research

The goal of this study is to examine the relationship between personality and perceptions of situations. This study expands on prior research in this area in several ways. First, this study improves upon the methodology of Rauthmann (2012) by using a comprehensive measure of situations, the RSQ. Second, this study also resolves the situational stimuli issues associated with the written descriptions used by Sherman and colleagues (2013) and the situational items used by Rauthmann (2012). This is accomplished through the use of pictures as situational stimuli. While pictures are not real world situations, they do provide a type of standardized situational stimuli in which differences in perception can be measured. They allow each participant to interpret the situation depicted in each picture in his or her own way, ensuring no situations have been previously construed, as opposed to written descriptions that may have already been construed. (e.g., Two people in the same situation may have written two different descriptions.) The use of pictures also assures that all participants rate the same stimulus, as opposed to written descriptions that may be imagined differently by two different people (e.g., two people reading one description may think of two different situations). Therefore, pictures were chosen as stimuli, because they capture many of the properties of real world situations, while retaining the desired level of stimulus control.

The pictures chosen as stimuli for this study come from the Thematic Apperception Test (TAT; Murray 1943). For a number of reasons, the pictures from the TAT provide an ideal set of stimuli for studies examining situation perception. First, these pictures contain many of the relevant features of situations (e.g., clearly identifiable locations, persons, and objects). Second, the TAT pictures were designed to be ambiguous and open to interpretation. Indeed, it is not coincidental that Murray, the same researcher who partitions situation perception into alpha and beta press, designed the TAT. Lastly, the TAT has a rich psychological tradition and is a well-known and widely used measure (Cramer, 2004; Rossini & Moretti, 1997; Watkins, Campbell, Nieberding, & Hallmark, 1995).

This study also examines personality pathology directly, expanding on the current body of research. Prior research has not examined the relationships between personality pathology and distinct construals. Sherman and colleagues (2013) assessed Psychological Well-Being, Depression, and Narcissism, but other personality pathologies (i.e., those identified by the DSM-IV; American Psychiatric Association, 2000) were not assessed.

5.1. Hypotheses

This study has three hypotheses. The first hypothesis is consensus; people will agree with each other about the psychological properties of the situations depicted in the TAT pictures. Consensus is expected for two reasons. First, Sherman and colleagues (2013) showed that there is generally agreement in the way people perceive situations, and this finding is expected to replicate here. Beyond this, it is difficult to imagine a world in which people do not largely agree about the features (e.g., rules, norms, expectations) of the immediately present context. That is, it would be nearly impossible for small groups and large societies to function at all if, at least to some degree, people did not generally agree about what was in front of them.

However, people do not fully agree about everything. Thus, while consensus is expected, it is also anticipated that individuals will vary in their perceptions of the situation depicted in the TAT cards. The second hypothesis is that individual differences in perceptions (distinct construals) will be consistent across the three situations depicted in the TAT cards that participants view.

Lastly, the third hypothesis is that personality will be correlated with such distinct construals. In particular, it is expected that this study will find patterns of trait and construal relationships that are similar to those found by Sherman and colleagues (2013). For instance, Neuroticism should be related to the distinct use of the RSQ items that suggest anxiety and fear: “Is being criticized,” “Is being insulted,” “Frustrating or adverse,” and “Can arouse feelings of self-pity.” Similar theoretically meaningful patterns are expected for the other Big Five traits as well. Extraverted individuals should see more opportunity for interaction with others. Individuals high on Openness should perceive more intellectual and aesthetic stimuli. Agreeable individuals should perceive less interpersonal conflict in situations. Conscientious individuals should perceive more focus on achievement and a greater need for action.

* These pathologies are subclinical traits measured on a continuum. No diagnoses were made, and this study uses a nonclinical college student sample.
Beyond the Big Five personality traits, this study also examines the relationship between personality pathology and distinctive construals. The Diagnostic and Statistical Manual of Mental Disorders outlines characteristics and diagnostic criteria for 10 personality disorders (4th ed., text rev.; DSM-IV-TR; American Psychiatric Association, 2000), and the pattern of construals associated with each of these pathologies should reflect these characteristics. For example, Narcissists should report a lack of concern for others in a situation, because this disorder is characterized by excessive feelings of self-importance and a lack of empathy. Similarly, other personality pathologies should show construal patterns consistent with their respective characterizations and diagnostic criteria.

6. Method

6.1. Participants

A total of 186 (99 female, 87 male) undergraduates from the Florida Atlantic University subject pool served as the participants for this study. Participants were compensated with partial course credit. The Ethnic breakdown of participants was 20% African American, 4% Asian, 45% Caucasian, 18% Hispanic, 10% Other, and 3% No Response.

6.2. Measures

6.2.1. California adult Q-Sort

The California Adult Q-Sort (CAQ: Bem & Funder 1978; Block, 1978) is a comprehensive personality measure that consists of 100 statements that can be used to describe a person (e.g., “Tends to be self-defensive”; “Is thin skinned”). This is administered using a Q-Sort procedure in which people are required to sort these statements into one of nine categories from 1 (extremely uncharacteristic) to 9 (extremely characteristic). The CAQ uses a forced-choice procedure in which only a certain number of descriptions may be placed into each category, resulting in a quasi-normal distribution. Participants used a computer program to facilitate this procedure.

6.2.2. The Big Five inventory

The Big Five Inventory (BFI; John & Srivastava, 1999) is a 44-item personality survey designed to measure the five factors of personality as derived from repeated lexical analyses. The Big Five taxonomy provides a summarizing view of personality (McCrae & Costa, 2008), and scores are computed for each dimension: Neuroticism, Extraversion, Conscientiousness, Agreeableness, and Openness. Items are rated on a 5-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). Table 1 shows the reliabilities and relevant descriptive statistics for the BFI scores.

6.2.3. Multi source assessment of personality pathology

The Multi Source Assessment of Personality Pathology (MAPP; Okada & Oltmanns, 2009) is an 80-item questionnaire designed to assess ten personality disorders defined by the DSM-IV-TR (e.g., Obsessive–Compulsive Personality Disorder, Avoidant Personality Disorder, etc.). The MAPP has been used to predict outcomes such as maladjustment to military life and early separation from the military (Oltmanns & Turkheimer, 2009). Items are rated on a 5-point Likert-type scale from 0 (strongly disagree) to 4 (strongly agree). Table 1 shows the reliabilities and relevant descriptive statistics for the MAPP scores.

6.2.4. Riverside situational Q-Sort

The Riverside Situational Q-Sort (RSQ v3.15; Sherman et al., 2010; Wagerman & Funder, 2009) is an 89-item measure designed to capture the psychological properties of situations. The RSQ consists of 89 statements that can be used to describe a situation (e.g., “Frustrating or adverse,” “Physical attractiveness is salient”). Participants use a computerized Q-Sorting program to sort these 89 items into 9 categories from 1 (extremely uncharacteristic) to 9 (extremely characteristic), using a forced-choice procedure resulting in a quasi-normal distribution.

6.3. Stimulus material

6.3.1. Thematic Apperception Test

The Thematic Apperception Test (TAT; Murray, 1943) is one of the most commonly used projective measures of personality for clinical purposes (Rossini & Moretti, 1997; Watkins et al., 1995). The TAT consists of a set of 20 black and white pictures depicting relatively ambiguous situations. In a typical TAT study, participants are asked to construct stories about these pictures, and these stories would be scored for several underlying themes (e.g., affiliation, aggression; Murray, 1943). In this study, three TAT cards were used as stimuli rather than the full set of 20 pictures. This reduction was made in an effort to reduce fatigue effects from repeated use of the RSQ. The three pictures used in this study, TAT cards 2 (Field), 6B (Man and Woman), 14 (Window) were selected because they depict clear situations and everyday activities. The Field card depicts a two women and a man in a field with one woman holding books, the Man and Woman card depicts two people standing near each other, and the Window card shows the silhouette of a person standing near a window.

6.4. Procedure

The study was conducted in two sessions with each session lasting one and a half hours. The study was divided into two sessions in order to reduce participant fatigue, as each Q-Sort requires about 30 min to complete. Participants were free to schedule their own Session 2; therefore, the time between sessions varied, depending on the subjects’ preferences. The mean time between

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Descriptive statistics and reliability estimates of personality measures.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trait</td>
<td>Mean</td>
</tr>
<tr>
<td>BFI</td>
<td></td>
</tr>
<tr>
<td>Agreeableness</td>
<td>3.82</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>3.48</td>
</tr>
<tr>
<td>Extraversion</td>
<td>3.35</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>2.70</td>
</tr>
<tr>
<td>Openness</td>
<td>3.59</td>
</tr>
<tr>
<td>MAPP</td>
<td></td>
</tr>
<tr>
<td>Anti-social</td>
<td>2.37</td>
</tr>
<tr>
<td>Avoidant</td>
<td>2.24</td>
</tr>
<tr>
<td>Borderline</td>
<td>2.22</td>
</tr>
<tr>
<td>Dependent</td>
<td>1.81</td>
</tr>
<tr>
<td>Histrionic</td>
<td>2.63</td>
</tr>
<tr>
<td>Narcissistic</td>
<td>2.52</td>
</tr>
<tr>
<td>Obsessive-compulsive</td>
<td>2.98</td>
</tr>
<tr>
<td>Paranoid</td>
<td>2.73</td>
</tr>
<tr>
<td>Schizoid</td>
<td>2.22</td>
</tr>
<tr>
<td>Schizotypal</td>
<td>2.33</td>
</tr>
</tbody>
</table>

3 A 0–4 scale was used by Okada and Oltmanns (2009), so it was used again here for consistency. However, after completion of data collection, one point was added to the responses to put the measure on a 1–5 scale.

4 The names in parentheses are provided as an easy way to identify cards. These shorthand names are not in the original TAT documentation, and they are used solely for ease of communication in this report. BM means that this card was intended for males in the standard TAT procedure, however, this card was presented to all participants in this study.
sessions was about 4 days, and the median time between sessions was 2 days. Approximately 20% of participants completed both sessions the same day; conversely, one student took 35 days to return for the second session.

In the first session, participants came to the laboratory, and completed the three aforementioned personality measures using a computer-testing format. Participants were then asked to look at one TAT card. The sequence of pictures shown was counterbalanced to reduce order effects. Participants then wrote a brief paragraph describing the situation depicted in the TAT card based on the following instructions:

“These pictures are meant to be ambiguous, so it is up to you to determine what you think is happening. Please write a description of what you think is happening. Describe what is happening at the moment, what the characters are feeling and thinking.”

These instructions were derived from Murray’s (1938) TAT Manual, although they were slightly modified. The average length of these brief paragraphs was 98.34 (SD = 57.84) words. After completing their description of the situation, participants rated the situation using the RSQ. Once this was completed, participants were dismissed until Session 2. In the second session, participants completed the same procedure that they completed for the first picture in Session 1, but this time for two additional pictures. After completing Session 2, participants were thanked and dismissed.

7. Results

7.1. Hypothesis 1

7.1.1. Consensus

The first hypothesis was that participants would agree about the situations depicted in the TAT cards. To assess agreement, first, a consensus RSQ profile of each picture was estimated by calculating the mean RSQ profile on that picture. Next, profile correlations were computed between the consensus profiles and each participant’s rating of the TAT card. The average profile correlation was $r = .40$ (SD = .20) for the Field picture, $r = .57$ (SD = .22) for the Man and Woman picture, and $r = .46$ (SD = .24) for the Window picture. However, due to the fact that such profile correlations confound distinctiveness with normativeness (i.e., the fact that, most situations are not hostile or threatening; see Furr, 2008), a baseline for comparison needs to be established (Furr, 2008; Sherman et al., 2012). This baseline was computed by correlating each participant’s ratings of each TAT card with the consensus ratings of the other two other pictures. The baseline agreements for the three pictures are $r = .24$ for the Field picture, $r = .34$ for the Man and Woman picture, and $r = .23$ for the Window picture.

Three Student’s one-sample t-tests, after applying Fisher’s r-to-Z transformations, were then used to test the hypothesis that the average agreement within situations was greater than the average agreement between situations (i.e., the baseline agreements). The results were statistically significant for all three TAT cards: $t(185) = 11.89, p < 2.2 \times 10^{-16}$ for the Field picture, $t(185) = 17.59, p < 2.2 \times 10^{-16}$ for the Man and Woman picture, and $t(185) = 15.00, p < 2.2 \times 10^{-16}$ for the Window picture. In each case there was greater agreement within each situation depicted by the TAT cards than across situations. Thus, the consensus hypothesis was supported.

7.2. Hypothesis 2

The second hypothesis was that distinct construals would be consistent within participants across situations. If participants exhibit consistent construct patterns (i.e., distinct perceptions), this suggests that a portion of the participant’s interpretation of the situations depicted in the TAT cards is due to something about the participant.

7.2.1. Measuring construal

Following a procedure adapted from Sherman and colleagues (2013), a linear regression was used to predict the participants’ actual RSQ profile from the consensus profiles. The residuals were retained as distinct perceptions, or construals. This procedure for calculating distinctive perceptions was repeated for each of the three pictures for each participant. Therefore, each participant had a profile of 89 distinct construals corresponding to each of the three pictures for each participant. Therefore, each participant had a profile of 89 distinct construals corresponding to each of the 89 RSQ items for each picture. This method of calculating distinct construals is conceptually similar to simply calculating the arithmetic difference between participant RSQ profiles and the consensus RSQ profiles. Often, both methods yield similar results, but they are not exactly the same. In fact, Sherman and colleagues (2013) concluded that the, “regression analysis yields a more sensitive and appropriate measure of situational construal” (p. 5) for these kinds of data.

7.2.2. Within person consistency of construals

A profile correlation of the distinct construals for each participant between different TAT cards was calculated for each pair of the three pictures. The average profile correlation of distinct construals between each pair of situations depicted in the TAT cards was $r = .10$ (SD = .16) for the Field and Man and Woman pictures, $r = .11$ (SD = .20) for the Field and Window pictures, and $r = .11$ (SD = .16) for the Man and Woman and Window pictures. Three Student’s one-sample t-tests, after applying Fisher’s r-to-Z transformations, were used to test the hypothesis that the profile correlations of residuals for each participant were greater than zero. The results were statistically significant for all pairs of TAT cards, $t(185) = 8.73, p = 7.406 \times 10^{-16}$ for the Field and Man and Woman pictures, $t(185) = 7.59, p = 7.527 \times 10^{-13}$ for the Field and Window pictures, and $t(185) = 9.32, p < 2.2 \times 10^{-16}$ for the Man and Woman and Window pictures. The results show there is within-person consistency of distinctive construals between the situations depicted in these TAT cards, thus hypothesis 2 is supported.

7.3. Hypothesis 3

The third hypothesis was that personality is related to the ways in which people differentially perceive situations. This hypothesis is first examined in a general fashion, using the CAQ. Then, patterns of distinct perceptions characteristic of individual traits are examined at the level of the individual situation (TAT picture) and aggregated across all three situations. Lastly, evidence for replication of previous research (Sherman et al., 2013) is considered.

7.3.1. Creating composite construals

Because participants showed consistency in their distinct construals across situations, construal composites were created by averaging the construals for each RSQ item across situations for each participant, leaving each participant with one 89 item composite construal profile. The average within-person profile...
Table 2
Construal correlates with neuroticism.

<table>
<thead>
<tr>
<th>#</th>
<th>RSQ item</th>
<th>Single situation $r$</th>
<th>Aggregate $r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>P is being criticized</td>
<td>.11**</td>
<td>.18**</td>
</tr>
<tr>
<td>11</td>
<td>Details are important</td>
<td>.11**</td>
<td>.17**</td>
</tr>
<tr>
<td>33</td>
<td>Tense or upsetting</td>
<td>.10*</td>
<td>.17**</td>
</tr>
<tr>
<td>05</td>
<td>Someone is trying to convince P of something</td>
<td>.11**</td>
<td>.17**</td>
</tr>
<tr>
<td>26</td>
<td>Situation calls for self-restraint</td>
<td>.10*</td>
<td>.14**</td>
</tr>
<tr>
<td>02</td>
<td>Situation is complex</td>
<td>.08</td>
<td>.14**</td>
</tr>
<tr>
<td>21</td>
<td>Someone is unhappy or suffering</td>
<td>.08**</td>
<td>.13**</td>
</tr>
<tr>
<td>15</td>
<td>Another person is under threat</td>
<td>.09**</td>
<td>.13**</td>
</tr>
<tr>
<td>40</td>
<td>People are disagreeing</td>
<td>.07</td>
<td>.13**</td>
</tr>
<tr>
<td>30</td>
<td>Situation entails frustration</td>
<td>.07</td>
<td>.12*</td>
</tr>
</tbody>
</table>

Note: RSQ item content abbreviated.

$p$-Values for Single Situation column determined via randomization tests to account for non-independence. $N = 186$.

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

7 In this method, independent variables (e.g., personality profiles) from each participant are randomly assigned to other participants. Then the average absolute $r$ between the randomly assigned profiles and the dependent measures is calculated. This procedure is repeated 1000 times, to form a sampling distribution for the observed average absolute correlation. The observed average absolute correlation is compared to this sampling distribution to calculate a $p$-value (e.g., If 45 out of the 1000 random samples have an average absolute correlation higher than the observed, then $p = .045$).

7.3.3. Individual trait relationships

Results of the aforementioned randomization tests suggest that the relationships found between personality, as measured by the CAQ and distinct construals are greater than those expected due to chance. Thus, it makes sense to explore some specific relationships between personality and construal. As indicated previously, these relationships are examined at the level of the individual situation (picture) and at the aggregate level across all three situations. The single situation analysis was conducted by first correlating the personality trait of interest with the distinct construals for each situation separately and then averaging, using Fisher’s Z-to-t transformations, the correlations across stimuli. Such effect sizes represent the average relationship between the trait and construal at the level of a single situation. The aggregate level analysis was conducted by simply correlating the personality trait of interest with the aforementioned construal composites. Such effect sizes represent the relationship between the trait and construal at a composite level across three situations (pictures).

Table 2 displays the pattern of correlations between Neuroticism and distinctive perceptions of the three TAT cards. Neurotic individuals were more likely to perceive criticism, that “Minor details are important,” that “The situation would make some people tense or upset,” and that someone is trying to convince someone else of something. They were also less likely to find situations as an opportunity to express femininity, as evoking compassion or other positive correlates.

8 Of note, the $p$-values for the correlations in individual-level analysis were computed using a randomization test to account for non-independence in the combining of the effect sizes (i.e., the fact that the same subjects were used for all three pictures; see Sherman et al., 2013, p. 6 for more details on this calculation).

9 Only those correlations reaching $p < .10$ for Aggregated or Disaggregated results are displayed. This cutoff is used to make the relevant findings apparent to the reader, and this is a common practice when examining correlations with Q-Sorts (Block, 1978). This display rule is used for all tables in this article, but full Tables of correlations are available as Supplemental materials. Tables showing Aggregated correlations reaching $p < .05$ for each gender are available in the Supplemental materials.
warmth, humorous, or enjoyable. They were less likely to perceive someone as being the center of attention or as being complemented or praised. These relationships are consistent with theoretical considerations, as Neuroticism is defined by emotionality and anxiety.

Table 3 shows the pattern of relationships between Openness and distinctive perceptions. Individuals high on Openness tended to view situations as humorous, intellectually stimulating, and raising issues of morality. They were also less likely to perceive someone trying to impress someone else, someone requesting advice, someone controlling resources, or an opportunity to do things to make someone liked or accepted. This pattern of relationships is consistent with the theoretical definition of Openness, which includes intellectual and imaginative components.

Table 4 shows the pattern of relationships between Agreeableness and distinct construals. Persons high in Agreeableness tended to see situations as an opportunity to express femininity. It is of note this relationship was found for both female and male subjects. They were also more likely to perceive a reassuring other person present. They saw situations as less complex, anxiety inducing, and threatening. The relationships found are consistent with the theory regarding Agreeableness, which is defined by warmth and friendliness.

Table 5 shows the pattern of relationships between Extraversion and distinct construals of the three TAT pictures. People scoring higher on Extraversion were more likely to perceive someone being counted on to do something, and someone attempting to boss someone else. They were also less likely to perceive that success requires self-insight, that there is an opportunity to express masculinity, that introspection is possible, or that esthetic stimuli are present. This pattern of correlations does not appear to be particularly consistent with the theoretical underpinnings of Extraversion.
Table 6 shows the pattern of correlations between Conscientiousness and distinct perceptions. Individuals high on Conscientiousness perceived situations as an opportunity for someone to do something to become liked by others, as raising moral dilemmas, and as potentially enjoyable. Conscientious people were also less likely to perceive behavioral limits. This pattern of correlations does not appear to be particularly consistent with the theoretical underpinnings of Conscientiousness.

7.4. Replication of construal patterns

Are the correlations between construal and personality identified in this study similar to those found by Sherman and colleagues (2013)? Such replication, if found would strengthen both the results shown here and those found by Sherman and colleagues. However, the differences in study designs make perfect agreement between personality–construal relationships unlikely. Nonetheless, the results for these two studies should at the very least be moderately related.

As previously stated, each Big Five trait measured has a profile of 89 distinct construal correlations, which are partially shown in Tables 2–6. The study conducted by Sherman and colleagues (2013) provided similar tables.

Note: RSQ item content abbreviated.

Table 5
Construal correlates with extraversion.

<table>
<thead>
<tr>
<th>RSQ item</th>
<th>Single situation r</th>
<th>Aggregate r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive correlates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>P is counted on to do something</td>
<td>.11*</td>
</tr>
<tr>
<td>17</td>
<td>Someone is trying to dominate or boss P</td>
<td>.10*</td>
</tr>
<tr>
<td>10</td>
<td>Someone needs help</td>
<td>.09*</td>
</tr>
<tr>
<td>2</td>
<td>Situation is complex</td>
<td>.08*</td>
</tr>
<tr>
<td>Negative correlates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>Success in this situation requires self-insight</td>
<td>-.14**</td>
</tr>
<tr>
<td>80</td>
<td>Opportunity to express masculinity</td>
<td>-.10*</td>
</tr>
<tr>
<td>19</td>
<td>Introspection is possible</td>
<td>-.10*</td>
</tr>
<tr>
<td>01</td>
<td>Situation is potentially enjoyable</td>
<td>-.09*</td>
</tr>
<tr>
<td>11</td>
<td>Minor details are important</td>
<td>-.09*</td>
</tr>
<tr>
<td>49</td>
<td>Opportunity to daydream or fantasize</td>
<td>-.07*</td>
</tr>
</tbody>
</table>

Note: p-Values for single situation column determined via randomization tests to account for non-independence. N = 186.

** p < .01.
* p < .05.
+ p < .10.

Table 6
Construal correlates with conscientiousness.

<table>
<thead>
<tr>
<th>RSQ item</th>
<th>Single situation r</th>
<th>Aggregate r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive correlates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Opportunity to make P liked or accepted</td>
<td>.11*</td>
</tr>
<tr>
<td>44</td>
<td>Situation raises moral or ethical issues</td>
<td>.12*</td>
</tr>
<tr>
<td>01</td>
<td>Situation is potentially enjoyable</td>
<td>.09*</td>
</tr>
<tr>
<td>13</td>
<td>Opportunity to show intellectual capacity</td>
<td>.09*</td>
</tr>
<tr>
<td>12</td>
<td>Evoke values concerning lifestyles or politics</td>
<td>.08*</td>
</tr>
<tr>
<td>25</td>
<td>Rational thinking is called for</td>
<td>.08</td>
</tr>
<tr>
<td>89</td>
<td>Affords an opportunity to express femininity</td>
<td>.08</td>
</tr>
<tr>
<td>68</td>
<td>Opportunity to demonstrate ambition</td>
<td>.07*</td>
</tr>
<tr>
<td>Negative correlates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>Situation includes behavioral limits</td>
<td>-.14**</td>
</tr>
<tr>
<td>26</td>
<td>Situation calls for self-restraint</td>
<td>-.09*</td>
</tr>
<tr>
<td>14</td>
<td>Situation is uncertain</td>
<td>-.08*</td>
</tr>
</tbody>
</table>

Note: p-Values for single situation column determined via randomization tests to account for non-independence. N = 186.

** p < .01.
* p < .05.
+ p < .10.

10 This replication analysis is conducted using the Aggregate construal patterns from both studies.
These patterns of correlations between each Big Five trait and each of the 79 RSQ distinct construals from this study were correlated with the patterns found for those same 79 items by Sherman and colleagues (2013). The agreements between construal patterns for each trait are Agreeableness \( r = .16 \), Conscientiousness \( r = .18 \), Extraversion \( r = .09 \), Neuroticism \( r = .43 \), and Openness \( r = .27 \). This indicates that the findings from this study were at least somewhat consistent (i.e., all were in the positive direction) with those reported by Sherman and colleagues for each of the Big Five traits. However, the strongest evidence of replication was clearly for Openness and Neuroticism.

7.4.1. Personality pathology

Each of the ten MAPP traits was correlated with the average distinctive construals across the three TAT cards. Examination of the patterns of correlations for the MAPP traits suggested that they were not easily interpretable or theoretically consistent; thus, we do not present them here. However, tables displaying patterns of correlations for all 10 MAPP traits are available in the Supplemental materials. These trends and the lack of theoretically interpretable associations between construal and the MAPP are addressed in Section 8.

8. Discussion

This study has several key findings. First, it demonstrated that people’s perceptions about situations, even situations that are as ambiguous as the TAT cards, which were designed to be open to interpretation, are largely in agreement. This is consistent with the findings and conclusions of Sherman and colleagues (2013). Despite high agreement about situations, individuals also reliably varied in their perceptions of the TAT pictures. This is consistent with Murray’s (1938) notion that both alpha and beta press contribute to the perception of situations. Lastly, this study supports the view that situation perception is influenced by both the objective properties of situations (i.e., the features in the TAT cards) and the personalities of the individual’s doing the perceiving.

This study demonstrates and describes relationships between personality and perceptions of situations using standardized stimuli in a laboratory setting. This level of control is important, because it assures that the results are due to the hypothesized mechanism, namely that it is something about the participant and not something about the stimuli that yields differential perceptions. Participants rated the exact same stimuli reliably differently. Thus, the only difference here was the participants themselves. In this sense, this study reifies the findings of Sherman and colleagues (2013) and provides evidence that their findings can be extended beyond the specific circumstances (e.g., time, location, sample) in which they were found. Given recent concerns about the replicability of research findings in psychology, such a replication is crucially important (Asendorpf et al., 2013).

In recent years, there has been a movement toward process-based psychology, where the mechanisms underlying psychological phenomena are the focus of attention (Benet-Martínez et al., in press). This study provides a step toward a processed based understanding of personality. It shows that perception is one of the key components making up the personality system (i.e., traits) and provides initial evidence for the role of personality as a mediator for situation–behavior relationships (Mischel & Shoda, 1995). The following hypothetical example may help illustrate this point. This study has shown that neurotic individuals, as opposed to less neurotic individuals, are more likely to perceive criticism (\( r = .18 \) at the aggregate level) and to perceive tension (\( r = .17 \) at the aggregate level) in situations. If we consider two persons, one high on Neuroticism and the other relatively low on Neuroticism, interacting with a romantic partner, the neurotic individual’s tendency to feel tense and to perceive criticism will likely impact his or her response to the romantic partner. This could increase the likelihood of a negative interaction (e.g., an argument) for the neurotic individual. The less neurotic individual, on the other hand, will be less likely to perceive criticism, respond in a negative way, and have such a negative interaction. This line of reasoning is not only supported by research demonstrating that Neuroticism is associated with negative interactions amongst couples (Donnellan, Conger, & Bryant, 2004) and relationship dissolution (Karney & Bradbury, 1995), but it also provides deeper insight into the relationships between personality, behavior, and life outcomes.

8.1. Effect sizes and importance

Although the effect sizes reported herein are smaller than the typical findings reported in personality psychology, in the range of \( r < .20 \), the differences in distinct construals and their respective relationships to personality cannot be dismissed as unimportant (for a discussion on the importance of small effects; see Abelson, 1985). Over the course of many situations (e.g., a day, a month, a year, a lifetime) perceptual differences can accumulate and have important impacts on life outcomes (Sherman et al., 2013). This is illustrated by the larger effect sizes found for the aggregated construal patterns compared to the single situation results.

8.2. Limitations and future research

A common criticism of the TAT and other projective measures of personality is the subjectivity of the scoring procedures that are commonly used (Lilienfeld & Wood, 2001). While there are rigorous standardized scoring procedures available (see Leigh, Weston, Barends, Mendel, & Byers, 1992; Murray, 1938), most psychologists rely on an intuitive approach (Lilienfeld et al., 2001). As this research demonstrates, the RSQ is a potentially fruitful method for scoring the TAT. As shown, after removing consensus ratings, distinctive construals can be used to infer personality traits. Further investigation of this notion is required, but it may prove to be a novel, useful approach to personality assessment using the TAT.

Future research should further examine the relationship between personality pathologies and perceptions of situations. There are several possible explanations for the lack of theoretically interpretable associations between the MAPP traits and distinctive situation perceptions in this study. One is that personality pathology is simply unrelated to situation perception. However, given the relationships found between the Big Five Traits and construals, the possibility that personality pathologies are not related to distinct construals is unlikely. We found that mean scores on all the MAPP traits were lower than the mean scores for the Big Five traits. This could mean that we did not adequately capture personality pathology, although given the arbitrariness of the metrics used it is difficult to say (Blanton & Jaccard, 2006). There is, however, the possibility that the self-report administration of the MAPP did not yield valid estimates of personality pathology. Oltmanns and Turkheimer (2009) found that peer-reports on the MAPP better predicted separations from military service than self-reports. Based on the results of their study, it is possible that informant reports would be more closely linked to construals. Also, it is possible that the college student sample did not have a large enough distribution of personality pathologies for this analysis. Perhaps, a sample more representative of an adult population, such as the sample used by Oltmanns and Turkheimer (2009), would be better suited for identifying these relationships. Either of these issues could have influenced the low mean levels of the MAPP traits reported and
the lack of theoretically consistent associations found between the MAPP traits and distinct perceptions of situations. There are several more exciting directions possible for situation perception researchers. Future research on situation perception may benefit from the use of videos as stimuli. Videos may provide a better alternative to static stimuli (e.g., pictures, TAT cards). For one, life is a dynamic process, not static, and videos would be more representative of reality. Videos also contain more information than pictures. This could have two possible effects on the results found in this study: the increased information provided by the video might increase agreement and decrease the size of unique construals, or the increased information might reduce ambiguity and allow true perceptual differences to be observed more clearly. Both of these options are possible, but the change from static stimuli to videos would be progress toward generalizability to real world. However, given the results from Sherman and colleagues (2013), which mirror the results here, this may not be imminently necessary.

Another direction for future research in situation perception is the development of a comprehensive situation taxonomy. This study shows distinct construals in three situations derived from TAT cards, but this is still not a comprehensive description of situations experienced in reality. These three cards were not selected to be representative of all situations a person regularly encounters. Rather, they were chosen because they were standardized stimuli with a clear setting and clear characters for participants to examine. A step towards a greater understanding of the relationship between construals and personality would be to use a theoretically or empirically derived representative set of situations as stimuli. In fact, taken in conjunction with the work of Sherman and colleagues (2013), these two studies capture many of the relevant issues in situation perception. Sherman and colleagues (2013) showed differences in perception of situations actually experienced by participants (although not research assistants), and this study showed the same phenomena in a standardized setting, thereby ensuring that the hypothesized mechanisms were indeed present.

This study also lays the groundwork for studying the mechanisms underlying the relationship between personality and situation perception. This study has shown that, as suggested by Allport (1937), perception is an important part of the personality system. However, it has yet to be established exactly how individual differences in situation perception unfold. The answer to this question likely lies in cognitive and perceptual processes such as attention, memory, and interpretation. For example, it is possible that neurotic individuals attend more to threatening stimuli, remember more readily the consequences of threats, and/or simply interpret stimuli as more threatening than non-neurotic persons. We suspect that connecting the cognitive/perceptual mechanisms underlying individual differences in personality will be a fruitful endeavor in the future.

Finally, this study does not offer much in terms of causal mechanisms for the existence of such individual differences in situation perception. The question remains: where do such individual differences in situation perception come from? Like most individual differences, we suspect that both biological and environmental factors play a role. For example, it is possible that low serotonin levels may affect perceptual processes such that individuals attend to more negative aspects of stimuli. Or, perhaps, individuals who have experienced numerous negative situations in life are more likely to recall negative images when exposed to new stimuli. Both of these examples are quite speculative at this point and are only meant to highlight possible pathways from which differences in perception may emerge. We suspect that it may take numerous research efforts to disentangle “how” the personality system yields such differences in perceptions and “why” such differences exist in the first place.

Appendix A. Supplementary material

All statistical analyses were conducted using R (Core Development Team, 2013). Supplemental materials, including data and analytic scripts for reproducing the results presented herein are available at http://psy2.fau.edu/~sherman/TATSupplemental.zip. Supplementary data associated with this article can be found in the online version, at http://dx.doi.org/10.1016/j.jrp.2013.06.007.

References


