Situations: Real and Construed

For some the world is a hostile place where men are evil and dangerous; for others it is a stage for fun and frolic. It may appear as a place to do one's duty grimly; or a pasture for cultivating friendship and love.

Gordon Allport (1961, p. 266)

Behavior has strong and wide-ranging ties to personality, but what people do is also greatly influenced by the situation. This fact highlights an important historical imbalance in the basic scientific foundation of psychology. For decades, numerous investigators have focused on conceptualizing and quantifying psychological differences between individuals, and a large research literature offers literally thousands of tools for personality assessment. These tools can, in turn, be used to predict behaviors and important life outcomes (Ozer & Benet-Martínez, 2006; Roberts, Kuncel, Shiner, Caspi & Goldberg, 2007). The assessment of situations has lagged far behind. Even researchers who argue for their central importance often neglect to specify the psychologically active ingredients that give situations their power. Instead, the argument has too often been made by subtraction, assuming that whatever behavioral variance is not accounted for a by a particular personality variable must be due to the situation (Funder & Ozer, 1983). This state of affairs has begun to change only relatively recently, with investigators drawing renewed attention to the importance of conceptualizing situations (Reis, 2008) and beginning to develop tools for situational assessment (Sherman, Nave & Funder, in press).

One reason why research may have historically shied away from investigating situations is that it must confront a difficult conceptual question. Where do situations exist: in the objective world or in the eye of the beholder? On the one hand, the best direct evidence that situations are important consists of experimental social psychology's many demonstrations of properties that affect all people in the same way or, at very least, enough people in the same way as to generate statistically significant findings. Indeed, the assumption that objective aspects of situations yield predictable behavioral results is built into every interpretation of a significant mean difference between an experimental and control condition. On the other hand, every situation is inevitably filtered through the perceptions of each person who experiences it (Reis, 2008). As Mischel (1977, p. 253) observed, "any given, objective stimulus condition may have a variety of effects, depending on how the individual construes and transforms it" and Bem and Allen (1974, p. 518) went so far as to claim that "the classification of situations…will have to be in terms of the individual's phenomenology, not the investigator's." In other words, these comments imply, what matters is not so much the situation, but each individual's construal of it.

While this point of view seems reasonable, it can be taken too far. Not only is it to some degree contradicted by experimental social psychology (where individual construals generally show up as within-cell error variance), it also raises serious conceptual problems. If situations were defined solely in terms of how individuals construe them, their analysis would absorb back into the study of personality. For example, imagine two people playing a game. One person is characteristically competitive and the other is not. The first might construe the game as involving and motivating and respond with a high level of activity and engagement. The second might construe the game as pointless and respond with behavioral and emotional withdrawal. The differences in these individuals' behaviors could be explained on the basis of their different perceptions, but in the course of this analysis the situation itself – the actual game – has disappeared. Its objective properties have ceased to be of concern. Instead, analytical focus has returned to differences between individuals, where standard personality analysis began in the first place. Defining situations in terms of construals also opens the risk of circularity. The first person's competitive behavior might be "explained" on the basis of his or her perception of the situation as competition-evoking – which is not very helpful. Thus, if situations are to be deemed important and worthy of study in their own right, they must be separated from the

perceptions (and personalities) of the people in them (Reis, 2008; Sherman et al., in press).

An objective conceptualization of situations is also necessary to address the two central questions concerning how they are construed: (1) how much and in what ways do two (or more) individuals construe the (objectively) same situation differently? And (2) to what degree and in what ways does an individual's construal of a situation differ from its objective nature? The first question speaks to Allport's (1937, 1961) conceptualization of personality as lying in the different ways individuals perceive and therefore respond to the same situation. The second goes to Henry Murray's (1938) classic distinction between "alpha press," the situation as it is, and "beta press," the situation as it is perceived. Discrepancies between these two within the same individual, he believed, could reflect not just personality but psychological dysfunction.

The proposed research will assess a wide range of objective as well as subjective attributes of situations using the Riverside Situational Q-sort (RSQ; Sherman et al., in press; Wagerman & Funder, 2009), which was recently developed in our lab. While the aim to assess objective aspects of situations might appear daunting, it need not open an unanswerable philosophical conundrum. A sufficient definition of "reality" for purposes of psychological research is, in many but not all cases, the consensual view of multiple observers. This approach is basic to the psychometrics behind the use of multiple raters of performance, creativity, personality, and many other variables assessed by diverse research programs. In the present context, a situation can be assessed by the consensus (average) view of the different individuals who experience it and observe it, and the individuality of a single person's construal lies in its divergence from that common viewpoint. The key requirement is a comprehensive instrument to capture perceived properties of situations; that is what the RSQ aims to provide.

The Situational Construal Model (SCM) that organizes this research is portrayed below.

Figure 1
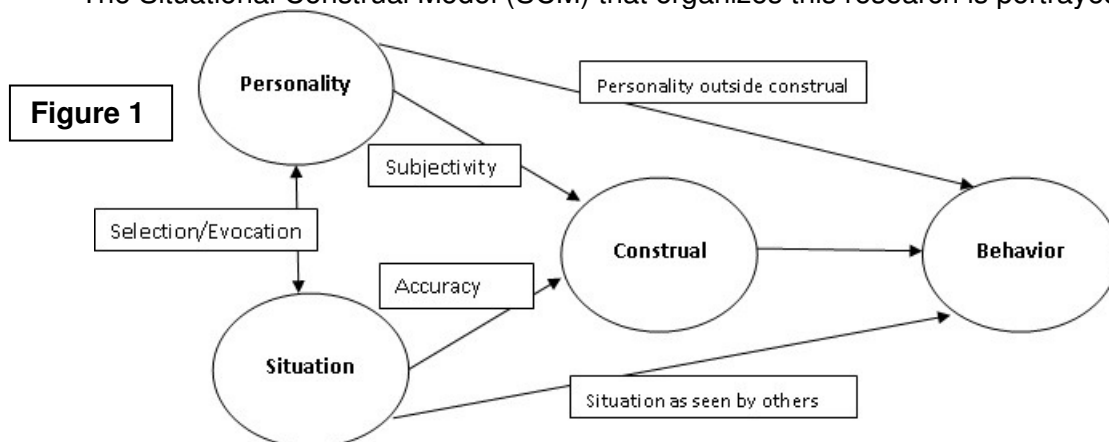
The SCM begins with the observation that personality and situations both have direct effects on behavior. Personality's direct effects stem from factors such as motivation, energy, habit, and ability. The situation's direct effects stem from its objective structure, such as the incentives it contains, some of which may be especially visible to external observers. But over and above these effects, each individual also uniquely construes every situation, and this construal is a joint product of his or her personality as well as the situation's objective nature. This construal has a distinctive impact on what the individual does.

The model is not especially complex. Indeed, a psychologist who looks at it might fairly wonder why it has not been empirically examined many times before. The answer is that such examination requires methods for the commensurate and comprehensive quantitative measurement of all three parts of the personality triad: persons, behaviors, and *situations*. Until very recently comprehensive measurement of behavior was surprisingly rare, and methods for the assessment of situations were simply lacking. The RSQ offers a wide-ranging vocabulary for situational description that begins to fill this void, and the proposed research is designed to take advantage of this methodological advance.

Past Research on Construal and Situational Assessment

Construal. Despite its long-recognized importance (Allport, 1937; Murray, 1938), situational construal has been surprisingly neglected by empirical research. A few groundbreaking studies have examined particular aspects. Research on rejection sensitivity has demonstrated that some individuals are prone to interpret ambiguous behaviors from their romantic partners as signs of impending rejection, often with self-fulfilling effects (Downey & Feldman, 1996; Downey, Freitas, Michaelis & Khouri, 1997). Other studies have examined the propensity of aggressive children to interpret ambiguous stories as including characters with hostile intentions (e.g., Dodge, 1993; Dodge & Frame, 1982). These differences in construal may stem from an increased propensity to organize their memories around hostile themes (Zelli, Cervone & Huesmann, 1996; Zelli, Huesmann & Cervone, 1995). While research like this is valuable, few if any studies have addressed the contrast between the situation as perceived and its actual (as opposed to ambiguous) nature. Similarly, it is difficult to find any research that attempts to assess situational construal across a range of properties (rather than just one), in a variety of situations that individuals have actually experienced. A recent exception is a study from the initial stage of the present research program (Sherman et al., in press), to be described later in this proposal.

Situational Assessment. Compared to research in personality assessment, only a small amount of research has attempted to identify critical types or features of situations (see Ten Berge & De Raad, 1999 for a review and Sherman et al., in press, for an update). Some studies focused on particular domains such as "anxiety-provoking situations" (Endler, Hunt, & Rosenstein, 1962; Krahe 1986) or "academic study situations" (Magnusson, 1971). Furr and Funder (2004) assessed the similarity of six experimental situations in terms of specific overlapping attributes (e.g., the task, the identity of the interaction partner). In a more comprehensive effort, Van Heck (1984) used a lexical approach to identify words that could meaningfully fall into the sentence, "being confronted with a ___ situation." A series of ratings and factor analyses yielded 10 categories: interpersonal conflict, joint working, intimacy and interpersonal relations, recreation, traveling, rituals, sport, excesses, serving, and trading. In a similar vein, Edwards & Templeton (2005) used a dictionary and a separate database to find 1039 words that could complete "that situation was ___" or "that was a ___ situation." These words were reduced through ratings and factor analysis to the four factors called positivity, negativity, productivity, and "ease of negotiation." A particularly interesting study by Yang, Read and Miller (2006) applied the lexical approach to Chinese idioms (e.g. "too late for regrets" and "catching up from behind") and reduced them through ratings and factor analysis to 20 hierarchically structured situational clusters all having to do with means of attaining goals. A more theoretically-based approach uses six dimensions derived from interdependence theory (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959), singly and in combination, to classify situations according to an "atlas" (Kelley, Holmes, Kerr, Reis, Rusbult & van Lange, 2003) that lists the 20 "most common situations encountered in ordinary social life" (Reis, 2008, p. 317).

Several recent research programs have turned to behavioral signature approaches, part of the Cognitive-Affective Processing System (CAPS: Shoda & Mischel, 1995) for understanding how persons and situations jointly predict behavior (e.g. Fournier, Moskowitz, & Zuroff, 2008, 2009; Vansteelandt & Van Mechelen, 2004). Behavioral signatures are relatively stable and discriminative *if…then…* patterns produced by the interaction between characteristics of the person and his or her situations (Shoda, Mischel & Wright, 1994). Research has demonstrated reasonable stability of these profiles using pre-specified behavioral variables across particular situations of interest (e.g. Shoda et al., 1994; Smith, Shoda, Cumming, & Smoll, 2009). However, as Fournier et al. (2008, 2009) pointed out, the CAPS model does little to specify the psychological variables that make one situation different from or similar to another. In response,

they created an 11x11 grid based on the interpersonal circumplex (Leary, 1957) such that the vertical dimension characterizes dominance vs. submissiveness and the horizontal dimension characterizes quarrelsomeness vs. agreeableness. Participants rate each social interaction they experience by marking the behavior of their primary interaction partner on the grid. In another approach stemming from the CAPS model, Van Mechelen (2009) and colleagues employed multidimensional scaling to identify types of persons, or person-behavior profiles, based on behavioral responses to hypothetical situations (see also Bem & Funder, 1978). In an illustrative application, Vansteelandt and Van Mechelen (2004) demonstrated three person profiles for 10 "anger" responses (e.g., slams door, says nasty things, loses temper) in three hypothetical frustration inducing situations (e.g., a fellow student lost your 15 page exam paper and no other copy exists).

While approaches such as those just summarized have promise, taken as a whole they offer a large, even bewildering variety of typologies of situations. Some are of limited range, being restricted to experimental, anxiety-provoking, or interpersonal situations. Others are lexically-based organizations of hypothetical rather than real situations. Almost uniformly, the past literature has fallen short in one important regard. It has failed to provide a method for quantifying a wide range of psychological properties of situations or, as Reis (2008) noted, systematically comparing one situation to another. Yet the challenge for research goes beyond identifying dimensions or types, to developing a generally useful tool for situational assessment.

Results of Prior NSF Support

Overview. This research program has been supported by NSF grant BCS-0642243, "The Psychological Assessment of Situations," total costs $309,209, commencing May 1, 2007, expiring April 30, 2010, with a no-cost extension to April 30, 2011. The project is co-funded by the Social Psychology and the Measurement and Methodology programs. As of this writing (June, 2010), it has yielded 2 empirical journal articles (Sherman & Funder, 2009; Sherman, Nave & Funder, in press), 2 theoretical journal articles (Funder, 2009a, 2009b); 1 handbook chapter (Wagerman & Funder, 2010), and 7 convention presentations. Several other empirical papers are in preparation. Computer programs developed in our lab, including one to enable on-screen Q-sorting and another, written in R, for conducting randomization tests, have been made freely available. These programs and other materials, including updated access to publications as they appear, are available at our lab website (http://rap.ucr.edu).

Human Resources Development. Our lab routinely recruits and trains undergraduate research assistants who, in exchange for course credit, work with participants, code video observations, and perform other important tasks. As of this writing the project has employed 49 undergraduate students in this capacity, most for two academic quarters or longer. UCR is an officially designated Minority Serving Institution (MSI) and Hispanic Serving Institution (HSI), and the assistants reflect this diversity. Therefore, the project provides direct and practical research experience for members of underrepresented groups.

Graduate students Seth Wagerman, Ryne Sherman and Chris Nave co-authored major articles as part of their research work. Wagerman earned his Ph.D. in 2007 and Sherman and Nave are on track to complete theirs in 2011. Two new graduate students recently joined the project: Esther Guillaume and Elysia Todd. In addition, Laura Naumann, a postdoctoral scholar supported by an independent NSF Minority Postdoctoral fellowship, joined our lab for the year during 2010. This participation is a further way in which the project contributes to the development of professional scientists from underrepresented groups.

The Riverside Situational Q-sort (RSQ). The central activity of the program so far has been the development and implementation of a new instrument for assessing psychological properties of situations, the Riverside Situational Q-Sort (RSQ). Q-sorts are already available for the describing persons (the California Adult Q-sort or CAQ; Block, 1961, 1978) and behaviors

(the Riverside Behavioral Q-sort or RBQ; Funder, Furr & Colvin, 2000). The development of the RSQ provides a commensurate means for describing the third part of the personality triad.

Unlike some previous efforts, the principal aim of the RSQ was not to identify the essential characteristics of situations, but to develop a generally useful assessment tool. Indeed, rather than seeking to replace the many typologies developed by others in previous research, one important goal of the RSQ is to provide a common currency that could allow different typologies to be compared to each other. For this reason, we did not restrict our conception of a situation to any particular theoretical perspective. Our guiding principles were 1) the instrument should be applicable to as wide a range of situations as possible, 2) the instrument should be able to quantify the degree of similarity or dissimilarity between any two situations across a wide range of psychological properties, and 3) situational properties assessed by the instrument should be related to important outcomes relevant to personality (e.g., behaviors, emotions).

The item content was originally inspired by the long-used and wide-ranging California Adult Q-sort (CAQ) for the description of personality developed more than 50 years ago by Jack Block and his colleagues (Block, 1961, 1978). For each of the personality descriptors in the CAQ, an item was written to describe an aspect of situational context that might evoke the relevant behavioral tendency. For example, the CAQ item referring to talkativeness yielded the RSQ item "Talking is permitted, invited, or conventionally expected."[1] CAQ items pertaining to tendencies to experience anxiety yielded the RSQ item "Context is potentially anxiety-inducing." Additional items described other common aspects of situations. Because of its comprehensive coverage and demonstrated utility for personality assessment, the CAQ provided a useful springboard for the development of situational descriptors. Other foundations for item content are possible and deserve exploration in future research.

The RSQ is a work-in-progress and has undergone two major revisions so far. Pilot work before funding used Version 1.0 (99 items). The subsequent major revision (Version 2.0; 81 items) was the basis of the major article recently accepted by JPSP and other ongoing analyses. Data gathering is currently under way for a study that, among other aims, will compare ratings from a new Version 3.0 (88 items) with situational descriptions derived from the Day Reconstruction Method (DRM; Kahneman, Krueger, Schkade, Schwarz & Stone, 2004), a technique that is becoming widely used in the study of subjective well-being (e.g., Lyubomirsky & Boehm, 2010). RSQ Version 3.0 will be the basis of the proposed research.

Table 1: Partial List of Items of Riverside Situational Q-sort (RSQ), Version 3.0

1. Situation is potentially enjoyable.
3. A job needs to be done.
10. Someone needs help.
20. Things are happening quickly (low placement implies things are happening slowly).
30. Situation entails frustration (e.g., a goal is blocked).
31. Physical attractiveness of P is relevant.
32. It is important for P to make a good impression.
45. A quick decision or quick action is called for.
54. Assertiveness is required to accomplish a goal.
60. Situation is relevant to P's bodily health (e.g., possibility of illness; a medical visit).
70. Situation includes stimuli that could be construed sexually.
72. P is being abused or victimized.
87. Success requires cooperation.

Notes: P refers to the individual of interest. For all 88 items, see http://rap.ucr.edu/qsorter

The Q-sort method requires raters to place each item into a forced, quasi-normal

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[1] Some Q-items include further explanations or examples; the item content cited in this proposal is abbreviated. Complete lists are available at http://rap.ucr.edu/qsorter.

distribution (Block, 1978). This format has some distinct advantages over conventional Likert-style response scales, in that it forces raters to choose only a small subset of the items as highly characteristic or uncharacteristic, with many more being placed in the middle as relatively irrelevant (see Block, 1978; Funder & Colvin, 1991). This method prevents the manifestation of some rater response sets (e.g., acquiescence, extremity), and forces a careful consideration of each item, since each one is, in effect, compared with every other. The end result is a thorough description of the rater's perception. For example, the situation that one participant summarized as "playing games at a friend's apartment" was rated as highly characteristic on items such as "talking is permitted, invited or expected" and "situation is potentially enjoyable," and low on complexity, uncertainty, and containing pressures to conform (Sherman et al., in press)

In a study recently accepted for publication in the *Journal of Personality and Social Psychology*, participants (N = 202, 105 F, 97 M) described their personalities using the CAQ and other instruments and then returned to the lab on four additional occasions over a period of four weeks. At each session, they wrote (on 3 x 5 cards) brief descriptions of a situation they had experienced the previous day and rated its perceived psychological features using the RSQ (V2.0). They also described their behavior in this situation using the RBQ. Findings showed that most persons' behavior was impressively consistent across the four situations, and that individuals experienced situations that were more similar to each other than they were to situations experienced by other people. In addition, people behaved more consistently across situations when the situations were more similar, and some people were more consistent than others, above and beyond the effect of situational similarity. The most behaviorally consistent individuals described themselves as ethically consistent, conservative, calm, relaxed, and emotionally stable (Sherman et al., in press).

These findings would not have been possible without the availability of a tool to assess psychological situations, and they represent just a first step in a projected wide-ranging research program. Other analyses in progress include identification of the properties of situations that promote personality-behavior congruence, empirically-based based efforts to develop types of situations based on several different methods for cluster analysis, examination of the behavioral implications of types of situations derived from evolutionary theory and self-determination theory, and the preliminary investigation of situational construal described below.

Preliminary Study of Situation Construal. As a first step toward examining situational construal, research assistants read the brief written descriptions provided by the participants and then independently rated the situations using the RSQ. While these descriptions were, of course, already filtered through the participants' own perceptions, in fact they were almost all relatively straightforward reports (e.g., playing softball with friends; making dinner for my boyfriend) that seemed likely to be similar to what almost any observer might provide. Differences in perception emerged, however, when the RSQ ratings were examined. The first analyses were regressions organized around the "Big Five" personality traits as measured via self-report. The self-ratings of each of the RSQ items were predicted by each trait, controlling for the independent ratings of that situational item. The results were meta-analytically combined across the four situations experienced by each participant. The resulting partial correlations can be interpreted as reflecting the association between personality and situational construal.

The results show that people high on neuroticism are especially prone to perceive that they are being criticized and insulted (RSQ V2.0 items 11 and 12) and that the situations they experience are frustrating and adverse (RSQ item 27), and *less* likely to perceive situations as potentially humorous (RSQ item 51). People high on extraversion are especially prone to perceive that they are the focus on attention (item 52) and less likely to see situations as arousing internal conflicts (item 68). People high on agreeableness are unlikely to see themselves as being insulted (item 12) – the opposite finding from what was seen with neuroticism. People high on openness to experience are especially likely to perceive situations as including intellectual and aesthetic stimuli (items 47 and 59). People high on

conscientiousness are especially likely to rate situations as requiring assertiveness (item 48) and cooperation (item 80), and as being potentially relevant to their health (item 54). This last result might conceivably be related to the robust finding that conscientiousness is associated with greater health and longevity (Kern & Friedman, 2008).

Randomization tests confirmed the low chance probability of each correlation and overall pattern of findings (Sherman & Funder, 2009). While the effect sizes might not appear especially large when considered one at a time – the partial *r*'s referred to in the preceding paragraph ranged between .11 and .17 (all $p < .01$) – these partial correlations depend on *differences* between participants and independent raters in their descriptions of the same situations. Of course, the major influence on any (sane) person's perception of a situation will be its objective nature. Of the 81 correlations between independent raters' and self-ratings of the same RSQ items, 75 were significant at $p < .001$ and ranged as high as $r = .55$. Individual differences that emerge over and above this overwhelming influence are likely to be important as well as cumulative in their influence across the many situations encountered in daily life.

Further preliminary analyses examine the effects of construal on behavior. They begin with the 22 "cognate" situational items in RSQ V2.0 that have parallel behavioral items in the RBQ as well as parallel personality items in the CAQ. For example, the RSQ item "talking is permitted, invited or expected" lines up with the RBQ item "Is talkative (in this situation)" and the CAQ item "Is a talkative individual." In 19 of the 22 cases, independent ratings of the RSQ correlated significantly with the associated behavior, a demonstration of the power of the objective situation (the significant *r*'s ranged from .12 to .46). However, in all 22 cases, the self-rating of the RSQ item, controlling for the independent ratings, added predictive power. For example, while independent ratings of the situational item "talking is permitted or expected" correlated $r = .46$ with talking behavior, the self ratings of this item, *controlling for* the independent ratings, correlated $r = .24$ (all p's in this paragraph $< .001$ by randomization tests). In an intriguing exception to the general rule, independent ratings of the RSQ item "situation has the potential to arouse guilt" correlated only $r = .07$ (ns) with the behavior "expresses guilt," but $r = .42$ ($p < .001$) with the self-rating of this property, controlling for the independent ratings. Apparently, the degree to which a situation is guilt-inducing truly lies in the eye of the beholder.

Each of the analyses just summarized examines one part of the Situational Construal Model shown in Figure 1, and only after such examination is it appropriate to move on to more comprehensive techniques such as Structural Equation Modeling (SEM). The use of SEM to operationalize the model is fraught with complexities and there are many ways to proceed. Initial analyses focus on the 22 cognate person-behavior-situation combinations. One such combination is CAQ item 10 ("Anxiety and tension find outlet in bodily symptoms"), RSQ item 60 ("Context is potentially anxiety-inducing"), and RBQ item 22 ("Shows physical signs of tension or anxiety"). The SEM connecting these aspects of the person, situation and behavior is shown in Figure 2.

Figure 2

$p < .05$
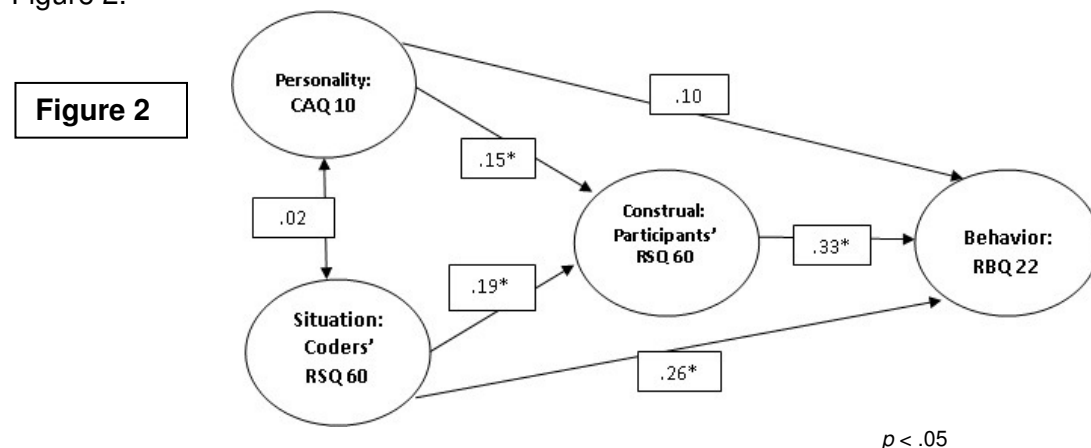
This analysis illustrates how anxiety-related aspects of the person and the situation both contribute to participants' construal of a situation as anxiety-inducing, which in turn has a substantial connection to behavioral manifestations of anxiety. Interestingly, it suggests that in this particular case the strongest path from personality to behavior is via construal.

The analysis comes with several caveats, however. The most important caution flag stems from limitations in the data. The "situation" term is here defined by the coders' ratings of the participants' own brief written descriptions. Thus, the path from "situation" to "construal" in Figure 2 would probably better be labeled "agreement" than "accuracy," as in Figure 1. A further limitation is that the "behavior" term comes from participant's self reports. In addition, correlations between personality attributes and situational properties (which are surprisingly small in the particular case shown in Figure 2, but may be larger elsewhere) reflect the combined effects of selection (the tendency of certain kinds of individuals to seek out or find themselves in certain kinds of situations) and evocation (the effect an individual and his or her behavior has on the situations he or she inhabits). The two effects cannot be separated because each participant experienced a unique set of situations. For the same reason, it is not possible to compare how different individuals who experience the same situation might construe it differently. Thus, while the data and analyses completed to date shed some interesting light on situational construal, they may do more to point toward the research that needs to be done than to offer any final answers. To fairly examine the full Situational Construal Model portrayed in Figure 1, it is necessary to place research participants in experimental situations in which their behavior and the psychological aspects of the situations themselves can be directly observed and assessed by independent raters. This is the goal of the proposed research.

Publications from Prior Period of NSF Support

Funder, D.C. (2009a). Naïve and obvious questions. *Perspectives on Psychological Science, 4,* 340-344.

Funder, D.C. (2009b). Persons, behaviors and situations: An agenda for personality psychology in the postwar era. *Journal of Research in Personality, 43,* 120-126.

Sherman, R.A., & Funder, D.C. (2009). Evaluating correlations in studies of personality and behavior: Beyond the number of significant findings to be expected by chance. *Journal of Research in Personality, 43,* 1053-1063.

Sherman , R.A., Nave, C.S., & Funder, D.C. (in press). Situational similarity and personality predict behavioral consistency. *Journal of Personality and Social Psychology.*

Wagerman, S.A., & Funder, D.C. (2009). Situations. In P.J. Corr and G. Matthews (Eds.), *Cambridge Handbook of Personality* (pp. 27-42). Cambridge: Cambridge Univ. Press.

Next Steps: Beyond Self-report in the Study of Situations

Situational Experience and Observation. In the relatively small literature on situational assessment, most studies have focused either on hypothetical vignettes or on words and phrases that might fit into descriptive sentences. A relative handful used diary methods or retrospective recall to tap situations participants had actually experienced (e.g., Price & Bouffard, 1974; Forgas, 1976; Pervin, 1976). In our own lab, as summarized above, we asked participants to describe a situation they had experienced at a specified time within the past 24 hours. The proposed research moves beyond these studies by employing experimental methods with three unique advantages: (1) Groups of participants will experience the same situation, allowing their possibly different construals to be compared – getting directly at Allport's definition of personality as lying in these differences. (2) Video recording of the experimental situations will allow independent ratings of situational properties as well as behavioral measurements based on direct observation (see Baumeister, Vohs & Funder, 2008, and Furr, 2009, on the necessity for research that goes beyond self-report). (3) The effect of

evocation will be separated from selection. Personality correlates of properties of situations into which participants are experimentally placed can be interpreted as due to evocation.

We plan to use experimental methods similar in some respects to (but refined beyond) those we have used earlier (e.g., Funder, Furr & Colvin, 2000; Markey, Funder & Ozer, 2003; Furr & Funder, 2004). We will assemble three-person groups to engage in three situations: (1) an unstructured conversation; this situation should afford maximum range for individual construal and exhibition of individual differences (see Letzring et al., 2006); (2) a cooperative interaction, in which the three participants must work together toward a common goal and a shared incentive, and (3) a competitive interaction, in which the participants compete with each other for an incentive that only the "winner" obtains. The three situations are neither exhaustive nor representative of all possible social contexts. However, they provide a range of settings that include one that is neutral, one with a cooperative cast, and one with a competitive cast, depending – interestingly! – on the participants' individual construals. Moreover, beyond its experimentally-determined aspects, each situation will be unique because of the particular combination of people in it and the behavioral results of their interpersonal dynamics.

At its conclusion, participants will describe their impressions of the situation using the RSQ. Later, research assistants will observe video-recordings and provide their own impressions, which will be aggregated across raters. We will also separately obtain information about the personality attributes of our participants both from self-reports and judgments by well-acquainted peers (similar to our past research practice). Finally, we will measure each participant's behavior in each situation, based on direct observation by research assistants and coded using the RBQ.

This method will allow direct, comprehensive, and comparable assessment of all three aspects of the personality triad: persons, situations, and behaviors (Funder, 2006, 2009b). In particular, it will be possible for analyses to address the behavioral implications and personality correlates of situational construal. Each participant's RSQ rating can be compared to two alternative indexes of "reality," the ratings by the other two participants, and the ratings by independent observers who observe the video afterwards. In addition, individual differences among the descriptions by the three participants can be compared. These two aspects of construal – differences between an individual's view and "reality," and differences among individual construals – can then be associated both with the individuals' directly observed behavior in these situations, and their independently-assessed attributes of personality.

For example, individuals high on neuroticism (i.e., low on emotional stability) will be more likely to view situations as anxiety-provoking than objective observers or their less neurotic peers; their associated behavior will betray nervousness and discomfort (for preliminary support for this hypothesis, see Figure 2). Individuals high on agreeableness will view interpersonal situations as unthreatening and their behavior will be relaxed and engaged. Competitive individuals will seize on the adversarial nature of the competitive interaction, rate relevant attributes as more important, and behave accordingly. Depressed individuals will emphasize the negative aspects; narcissists will emphasize those that put them in the most favorable light (Vazire & Funder, 2006). An almost limitless number of sensible hypotheses like these can be advanced, and the complex series of analyses they entail can be organized into full structural equation models such as illustrated in Figure 2.

Is this research potentially transformative? As Gordon Allport observed long ago, people often see the same situation in different ways and, as Henry Murray also observed long ago, these perceptions are sometimes at odds with reality. How are these differences associated with personality? And, how are these differences in construal associated with what people actually do? These extremely basic – and fundamentally important – questions have not often been addressed in prior research because of the rarity of experimental studies in personality that include comprehensive assessments of directly observed behavior and, even more importantly, because of the lack – until very recently – of a device for assessing

perceptions and objective psychological properties of situations. The proposed research, therefore, could be considered not just innovative, but overdue. If successful, it can be expected that other investigators will also turn their attention to situational assessment – perhaps using the RSQ or other instruments of their own devise – and focus on how different people see the same situations differently and how their perceptions differ from reality. If this does indeed happen, a basic area of psychological research will be transformed and an historical imbalance will begin to be remedied as situations – and their construals – finally begin to be taken seriously.

Methods

Participants. Participants will be 180 undergraduates from the University of California, Riverside (90 F and 90 M), along with 360 of their close acquaintances (to provide peer-report personality judgments). Because of the multi-ethnic nature of the student body – UCR is an officially certified Minority Serving Institution (MSI) and Hispanic Serving Institution (HSI) – we will recruit far from the usual student sample. In our most recent project (Sherman et al., in press), the participant sample was 37% Asian, 27% Hispanic/Latino, 13% Caucasian, 13% other (e.g., Pacific Islander), and 9% African-American. (Note: Because of the nature of our participant sample, routine practice in our lab – and other labs at UCR – is to conduct internal analyses checking for differences in findings across ethnic groups.) To make the necessary repeated appearances in our lab attractive, participants will be compensated at $15.00 per hour. Because of the necessity for repeated appearances and for the recruitment of well-acquainted informants, the use of the free undergraduate subject pool is not feasible.

Personality Data: Self-report. Information about the personalities of the participants will be sought via both self-report and informant-report. Self-report data will include:

- The California Adult Q-sort (CAQ, Block, 1978) as modified by Bem & Funder (1978). This wide-ranging instrument presents 100 descriptive phrases (e.g., "Is critical, skeptical, not easily impressed," "Has a wide range of interests," "Is a genuinely dependable and responsible person.") which are arranged into a quasi-normal forced choice distribution ranging from "highly uncharacteristic" (category 1) to "highly characteristic (category 9). This method removes various response sets such as acquiescence and extremity, and also can mitigate concerns about social desirability that arise in self-reports and ratings by friends (Leising, Erbs & Fritz, 2010) because not all desirable items can fit in category 9; neither do all undesirable items fit in category 1. Thus, the method forces difficult choices. The traditional technique using paper cards sorted on a table can be slow, unwieldy and error-prone; our lab has developed and made freely available a program for efficient and accurate Q-sorting on a computer screen (http://rap.ucr.edu/qsorter).
- The Big Five Inventory (BFI, John, Donahue & Kentle, 1991), an excellent 44-item measure of five major factors of personality. Inclusion of this measure will allow the present research to be integrated into the vast research literature using these factors.
- Schedule of Nonadaptive and and Adaptive Personality (SNAP, Clark, 1993). This 375-item inventory is focused on personality (Axis II) disorders, with 12 primary trait scales, 3 affective temperament scales, 6 validity scales, and 13 scales for DSM-III-R diagnoses. It has been used in patient and nonpatient samples in relation to a wide range of self-report and clinician-rated measures including interview-based ratings of personality disorders (Clark, Livesay, Schroeder & Irish, 1996). The mental health problems it indexes can be expected to be associated with and exacerbated by the particular ways individuals construe the situations they encounter.
- Ego Resiliency: (ER, Block & Kremen, 1996; Letzring, Block & Funder, 2005). This quick (14-item), subtle self-report scale has been shown to correlate with observer-based indices of "ego resiliency" and general mental health.
- Social Phobia and Anxiety (SPAI; Turner, Beidel, Dancu & Stanley, 1989). This 45-item

scale assesses social phobia across somatic, cognitive, and behavioral dimensions. This is a mental health-relevant measure that is particularly relevant to distortions of interpersonal situations.

■ Beck Depression Inventory (BDI; Beck, Ward, Mendelsohn, Mock & Erbaugh, 1961). This is a 21-item inventory widely used for assessing depression, and that has been shown to yield meaningful variation in subjective well-being in college populations (Furr & Funder, 1998).

■ Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979; Raskin & Terry, 1988). The NPI is the most widely used and thoroughly researched measure of narcissism. A 33-item short form for the 80-item full scale has been shown to have adequate reliability and concurrent validity, and to be predictive of self-enhancing distortion in the estimation of one's own contribution to group processes (John & Robins, 1994).

■ Note: Time allotted for these measures is as follows: 30 min for the Q-sort, 5 min each for the BFI, ER and BDI, 10 min each for the NP and SPAI; 40 min for the SNAP. Thus, gathering these measures, along with informant recruitment, requires a 2-hour session.

Personality Data: Peer report. While the use of self-report has a venerable and generally successful history in personality psychology, the self is not always the best source of information and the perspectives of others may be importantly different (e.g., Spain, Eaton & Funder, 2000; Kolar, Funder & Colvin, 1996). Past research in our lab has on several occasions used the personality judgments of close acquaintances, which have the additional advantage of providing a window into reputation, how the participants are perceived by those who share their everyday world (see Fast & Funder, 2008, 2010 for recent examples; for an insightful discussion of the importance of reputation, see Craik, 2009). For ethical (see below) and practical reasons, we ask participants to recruit their own informants. We have found it is not feasible to require that they be of a certain gender or degree of acquaintance; such efforts in the past have simply led to our successfully recruiting many fewer informants. Our plan therefore is to recruit the most knowledgeable informants we can; our reasoning is that the resulting information about how participants are perceived by people who know them well is far better than none at all. Two informants will be recruited for each target participant; this number is minimally essential to allow averaging to partially correct for idiosyncratic perceptions; more would be somewhat better but again issues of cost and feasibility intrude. They will complete the CAQ about their target participant as well as the peer-report form of the BFI; for most analyses, descriptions will be averaged across the two acquaintances.

Experimental Procedures. Participants will come to lab on three occasions for 1 hour each, in addition to the initial 2-hour session at which they will complete the self reports described above. They will be scheduled in previously-unacquainted groups of three. We will continue a practice developed in past research in which the first member of a planned group is photographed on arrival. The second prospective member is then shown this photograph; if he or she does not recognize the person then he or she is scheduled into that session. If the person is recognized; then he or she is scheduled into a different session. The second member is also photographed and the two photos are then shown to the third prospective member of the group, and the same procedure followed. Three possible gender combinations are possible; each participant will experience each of the three across the three sessions, with the orders determined quasi-randomly and distributed evenly across participants. The situations will be experienced 1-2 weeks apart. They are modeled after – and refined from – ones used in our previous research, which were found to evoke meaningful individual differences in behavior associated with personality as assessed outside the laboratory and other outcomes (e.g., Funder, Furr & Colvin, 2000; Markey, Funder & Ozer, 2003; Furr & Funder, 2004).

The first (unstructured) situation is a conversation. Participants will simply be seated and then allowed to chat for 15 minutes. In the second (cooperative) situation, they will be presented with a complex Tinker Toy model which they must work together to duplicate within 15 minutes. They will be paid an extra $5 each if successful. The third (competitive) situation will be the

sound-repetition game "Simon," played for about a dozen trials for a total of 15 minutes. The overall winner will receive an extra $15. The situations will be experienced in this order both for reasons of operational feasibility and to begin with an ambiguous situation followed by two much more structured settings where opportunities to converse about the nature of the experiment itself will be minimized. Of course, some participants will react differently to these situations than others; that is precisely the point. At the conclusion of each session, participants will describe the situation, as they perceived it, using the RSQ.

Post-experimental Ratings. Two independent groups of research assistants will rate video recordings of these sessions. Because of the large number of sessions recorded, four assistants will be drawn at random from a larger pool to rate each session.

Following past research practice, the four research assistants will rate the behavior of each participant, directly observed in the video recordings, using the Riverside Behavioral Q-sort (RBQ; for a detailed description including reliability data see Funder et al., 2000). The 67 items describe specific, easily observed aspects of behavior such as "dominates the interaction" and "is talkative"; among the quality control measures is a requirement of a minimal degree of agreement of each rater with the composite of the other three; in case of discrepancy a re-rating is requested (without specifying the nature of the discrepancy).

A separate group of four research assistants (from the pool) will rate each situation viewed on video using the RSQ. This procedure will allow analyses aimed at the distinction between beta and alpha press, as it allows comparisons between the situations as described by their participants and by separate, uninvolved observers.

Ethical Considerations. While generally similar procedures have been conducted in our lab in the past without apparent ill effect, two ethical issues do arise. One is privacy. We gather personality judgments of each of our participants from two of their close acquaintances. This practice could be seen as raising privacy issues; for this reason we ask each participant to actively recruit his or her own informants. This removes all possibility of deception or misunderstanding; each participant not only consents to this information being obtained but actively assists us in gathering it. While a reasonable argument could be that participants should not choose their own informants (Leising, Erbs & Fritz, 2010), our lab has concluded that obtaining acquaintance judgments without the participants' participation raises privacy concerns that are too serious to justify the procedure, especially given that past research by our lab and others has shown that data from participant-chosen informants can yield valid data (e.g., Funder & Colvin, 1991; Fast & Funder, 2008, 2010). It also should be noted that, with participants' prior consent, we do not share the informants' descriptions with their targets. In past research, the obvious necessity of this practice has been readily accepted by research participants.

The second ethical issue raised by this research is confidentiality. Our data will include personality and behavioral information on our participants that is important to keep confidential. We carefully instruct our research assistants on this issue, keep our data in secure, password-protected data files and locked cabinets, and do not report personally identifiable information in presentations or publications.

Analyses

Strategy. Analyses will be guided by the simple but surprisingly underexplored general hypothesis, outlined by the SCM, that individual construals of situations are joint products of the individual's personality and the situation's objective properties, and that these construals are, in turn, associated with how they behave (see Figure 1). More specifically, certain traits can be expected to be associated with construal or behavior in particular ways. For example, we have already seen from our preliminary analyses that people high on neuroticism may be especially likely to construe the actions of others as insulting and critical, even though independent observers do not agree. Numerous parallel hypotheses can easily be generated that, for example, extraverts' construals of situations will exaggerate opportunities for social contact;

conscientious people will focus on what needs to get done; and people who are open to experience will be extra sensitive to aesthetic and intellectual aspects of situations. Moreover, the data will include measures of aspects of mental (ill) health including depression, narcissism, anxiety and other psychological problems that would appear to be associated with situational misconstrual. So little prior empirical work has been done on the topic of situational construal, or even situational assessment, that almost every analysis will advance into previously unexplored territory.

Randomization and Replication. In this kind of wide-ranging research, it is important to be wary of the dangers of capitalizing on chance. Accordingly, we have recently refined a long-recognized but underused technique, randomization analysis, which allows assessment of the chance probability of any result or any set of results (Sherman & Funder, 2009). While early work on this technique was published decades ago (e.g., Block, 1960), it never became widely used in personality and social psychology, probably in part because the computing power required has become routinely available only within the past few years, and software to make its employment feasible has been developed even more recently. The technique is simple, in principle. Once a key result of interest has been obtained, associated independent and dependent variables are detached from each other and randomly reassigned (without replacement). The result is calculated again. Repeating this procedure a large number of times – routinely 10,000 – yields a chance distribution to which the obtained result or set of results can be compared. For example, Sherman et al. (in press) reported that 11 CAQ items were correlated with behavioral consistency at $p < .05$. According to a randomization test, the probability of obtaining this many (or more) significant correlates by chance, in this data set, is $p = .035$. The technique is completely general and makes no assumptions about data distributions or the covariance structure of the variables. We have begun to employ it routinely for the research we submit for publication. The computer program we developed is also freely available to others, through our website.

Of course, the best way to assure the reliability of results is through replication, both through internal analyses and across independent samples. The proposed project offers opportunities to replicate central findings from our previous research, and replication is an ongoing activity of this program.

Nomothetic and Idiographic Analyses. Q-sort data can be analyzed nomothetically (by item) and idiographically (by profile), and each type of analysis has advantages and pitfalls (Block, 1978; Funder, 1980). While item analyses are simpler and more conventional, profile analyses allow scores to be generated for each participant's entire pattern of personality (using the CAQ), behavior (using the RBQ), and situation (using the RSQ). Scores are derived by correlating each profile with empirically or theoretically derived templates (Block, 1978). Profile analysis also allows individuals, behavioral patterns, and situations to be compared with each other (e.g., Sherman et al., in press). Statistical artifacts in profile analysis such as the potential confound with "stereotype accuracy" (Cronbach, 1955) can be avoided through careful statistical or, in some cases, experimental control (Funder, 1980, 1999). Overall, item analyses are better for comparing variables, and profile analyses are better for comparing individuals – whether individual personalities or situations. Our lab has considerable experience with both methods, and will employ both in the proposed research.

Statistical Power. Analyses of "statistical power," long traditional in psychological research, are fading from centrality as modern developments in data analysis move away from null hypothesis testing towards a focus on effect size (e.g., Cohen, 1994; Wilkinson et al., 1999). However, it can be noted that an N of 180 gives a relationship with effect size $r = .30$ a 99% probability of attaining statistical significance at the .05 level, two–tailed; power to detect an effect size $r = .20$ is almost 80% (.783).

Persons, Situations, and Behaviors. Correlations between the personality variables such as the B5, CAQ, and other variables, and the 67 RBQ behavioral variables will add to

psychology's still too-thin catalog of verified relationships between personality and directly observed behavior (Funder, 2001). Correlations between situational variables – as assessed by others in the same situation, independent observers, or the participant himself or herself – and behavior will also emerge, and add to the small literature that connects general properties of situations with their behavioral consequences. Further analyses can address person-situation interactions in a unique manner, by combining a wide range of personality and situational variables in behavioral prediction. These analyses will extend and in some cases replicate earlier findings in our ongoing research.

Construal. For the present project, the most critical analyses will address situational construal. The first, easy pass will simply correlate each of the RSQ items with the directly observed behaviors assessed with the RBQ. Analyses will compare the correlations obtained when the source of the RSQ rating is the participant, the others in the same situation, and independent raters. We can anticipate that the participants' own ratings will have the closest ties to their behavior (Sherman et al., in press), but it will be intriguing to explore how others' perceptions of situations may relate differently. Another simple set of analyses will assess the agreement among the RSQ ratings by the three participants in each interaction and among the RSQ ratings by the four research assistants. Past experience leads to an expectation that the inter-judge profile agreement (approximately .40) will be sufficient for a composite RSQ description with adequate reliability (approximately .73).

Further analyses will become progressively more complex. As was demonstrated in the preliminary study of situational construal described earlier, many of them will be based on the logic of multiple regression. Analyses will focus on zero-order and partial correlations within each of the three experimental settings, meta-analytically combined across them (Rosenthal & Rosnow, 2008), and SEM analyses will be used to organize these relationships into coherent and comprehensive models. Particularly interesting analyses will be afforded by the range of mental-health related individual difference measures included in this study. How do depressed, narcissistic, or anxious individuals perceive situations differently than those not so afflicted? Past research, supporting a continuous rather than discrete categorical view of mental illness (Clark & Watson, 1999), has shown that undergraduate student samples manifest sufficient range in variables such as these to generate meaningful findings (Furr & Funder, 1998).

Multivariate Analyses. A unique aspect of this research is that it aims to include *comprehensive* measures of all three aspects of the personality triad: persons, behaviors, and situations, through the availability of a Q-set for each. The number of variables thus entailed – 100 personality items, 67 behavioral items, 88 situational items – is formidable, and can lead to an urge to reduce them, somehow, to a smaller number. However, data reductive techniques such as factor analysis, principal components analysis, and cluster analysis are not without risk (Woods, Nye & Saucier, 2010). Factors and clusters are by definition summaries and like all summaries lose information as they sacrifice specificity in the search for generality and (perhaps) greater reliability. As any experienced data analyst knows, labeling is a difficult task and in several well-known cases has become controversial. Sometimes the result can be a strange-sounding composite label; sometimes the analyst may be left with the uneasy feeling that the essence of the construct is not captured by its name. Accordingly, the first wave of analyses will focus on particular measures of individual differences, behaviors, and situational properties, along with the sets of coordinating (cognate) individual items from the three Q-sets such as the analysis shown in Figure 2. The randomization method described earlier (Sherman & Funder, 2009) will be routinely employed to protect against capitalizing on chance.

As analysis proceeds, multivariate methods will become increasingly important. As illustration, the first major paper to emerge from our work with the RSQ included a cluster analysis to explore the basic types of situations members of our undergraduate sample reported experiencing the previous day. Using a direct obliman rotation with a step-up approach, we examined solutions for 1-8 possible rotated components and examined the component loadings

and scoring coefficients for clarity. Ultimately, we settled on a 7 cluster solution that accounted for 77% of the variance. These were provisionally labeled "social situations," "school work with others," "school work alone," "recreating," "getting ready," "work," and "unpleasant situations." However, we do not claim these are in any sense the ultimate set of situations, even for undergraduates, and would resist attempts to reduce the 81 items of RSQ V2.0 to these 7 types. We plan to continue to use multivariate analyses – such as the newly refined technique for profile factor analysis (cluster analysis) of Q-sorts proposed by Browne and Liang (2010) – in our continued research, to yield manageable types of persons (based on the CAQ), behaviors (based on the RBQ) as well as situations (based on the RSQ). As robust and replicable clusters emerge from these analyses, they can become the basis of further analyses using SEM and other tools. For example, the SEM in Figure 2 could be recalculated based on relevant clusters of personality, situational and behavioral items, allowing a latent variable model to be constructed that adjusts for differing reliabilities, and provides more precisely estimated and robust path estimates.

Timeline. The procedure requires 180 participants (90F, 90M) to each come to the lab four times, once to complete self-report measures and provide information for recruiting informants, and then three more times to engage in the three, three-person interactions, for a total of 900 experimental hours. In addition, two informants will be recruited to provide personality judgments of each participant, for a total of 360 1-hour sessions. From past experience, we project that it is feasible to complete all four sessions for 30 participants and 60 informants per 10-week academic quarter. At the end of the first quarter separate groups of research assistants can begin to code behavior and situational properties from the video recordings using the RBQ and RSQ. This will be an ongoing activity over the length of the project; past experience has shown that video coding is at least as labor-intensive and time-consuming as recruiting participants and conducting the experimental sessions. Collection of data from participants is projected to be completed by the end of the second year of the project and video coding by the end of the third year.

Broader Impacts

Understanding the ways that different people may construe and respond to the same situation is fundamental to understanding individual differences in personality (Allport, 1961); thus the present research has the potential to make a broad impact on personality research. The difference between situations as they really are and how they are perceived – Murray's (1938) alpha and beta press – is a central concern for psychopathology. Thus, the present research also has a potential to impact basic theory in clinical psychology.

As outlined in the section describing the results of prior NSF report, the project is closely involved with the education of undergraduate, graduate, and postdoctoral students. Because UCR is an officially designated Minority Serving Institution (MSI) and Hispanic Serving Institution (HSI), this involvement directly supports the professional scientific development of members of underrepresented groups.

For outreach, the research findings are disseminated through major journal publications, convention presentations, and our project website (http://rap.ucr.edu). Computer programs for computerized Q-sorting and for randomization tests are also freely available on this website.