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### **Taxonomy of Situations and Their Measurement**

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### **Abstract and Keywords**

Numerous psychologists across several subdisciplines have argued that the field's ability to understand and predict human behavior is limited by a lack of a universal way of conceptualizing and categorizing situations. Perhaps the primary reason underlying this lack of consensus is the sheer enormity and complexity of creating a taxonomy of an entity as amorphous and multifaceted as "the situation." Despite (or perhaps because of) the depth of this challenge, a number of researchers have put forth diverse attempts to create taxonomies of situations. The present effort examines the critical choices that these researchers have faced along the way and reviews specific examples of the various decisions they ultimately made in developing their final product.

Keywords: situations, situational taxonomy, situational structure, situation perception, situational characteristics, situational classes, situationism, interactionism

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*Ultimately, a taxonomy of situations, if we ever have one, will surely not be the work of any one investigator*

(Frederiksen, 1972; p. 117).

Numerous psychologists across several subdisciplines have argued that the ability to understand and predict human behavior is limited by a lack of a universal way to conceptualize and categorize situations. Perhaps the primary reason underlying this lack of consensus is the sheer enormity and complexity of creating a taxonomizing of an entity as amorphous and multifaceted as "the situation." Assuming that the perspective captured by the introductory quotation from Frederiksen (1972) is correct, it stands to reason that researchers who have attempted to create taxonomies of situations have made a number of critical and informative decisions when considering such an undertaking.

In an effort to pull together relevant considerations, the present article is structured around the following critical questions: (1) is the taxonomy of situations a scientifically important endeavor; (2) should taxonomists focus on objective or subjective components

of situations; (3) would psychology be better off endorsing a universal taxonomy of all possible situations or creating multiple taxonomies of situations within specific domains; (4) is it more prudent to categorize types of situations, the underlying dimensions that define them, or individual situational cues; and (5) are there *best* ways to obtain/create situational stimuli and analyze resultant data, or are ad hoc approaches that draw from diverse methods inevitable? For each of these decision points, existing taxonomies that have selected one option or another are described in order to highlight the great diversity that exists across extant taxonomic efforts, although no claims are made to the comprehensiveness of the present coverage.

Before getting into the focal content of the present article, however, it is important first to take a step back and consider not only the enormity of the tasks associated with situational taxonomy but also the length of time that this question has vexed the field of psychology. Both of these issues are captured in the following quotations, which demonstrate that some of the brightest minds in psychology have lamented the lack of a situational taxonomy for at least a half-century.

*The most obvious need in evaluating the manifold encounter of organism and environment is a more satisfactory and systematic conceptualization of the environment. This implies a taxonomic, dimensional analysis of stimulus variables comparable to the trait systems that have been developed for individual difference variables. While work proceeds actively to extend the exploration of individual differences ... the equally important frontier of situational dimensions is virtually ignored*

*(Sells, 1963, p. 700).*

*... [W]hile methods of assessing dimensions of individual differences across persons abound, equivalently-sophisticated, parallel methods for assessing behaviors or situations are painfully lacking ... no larger scheme organizes the many aspects of situations that have been demonstrated to be important*

*(Funder, 2009, p. 123).*

One of the primary consequences of this lack of consensus is that researchers who are interested in studying the effects of situations are often forced to use ad hoc conceptualizations (Grote & James, 1989). Although this practice has yielded much important information, creating a generalizable knowledge base upon ad hoc conceptualizations may be viewed as a less-than-ideal scientific strategy. One might ask, however, “what benefits might come out of developing a universal taxonomy of situations?” The following section addresses this question directly.

## Why Is the Taxonomy of Situations an Important Scientific Endeavor?

From a basic science perspective, the notion that “the situation” exists as a psycho-socio construct is enough to justify investing the time, effort, money, and other resources to study its nature and structure. That being said, it is also important to point out that the case for its importance is bolstered by claims that it plays an important role in the human experience (Sells, 1963). Here, evidence in support of the practical importance of situations comes from a number of disciplines that have posited (and often found) important direct or indirect effects of situations on human affect, behavior, and/or cognition.

For example, environmental psychologists study the effects of physical environments on the human experience and have found significant effects for communities, organizations, and even buildings on outcomes as diverse as stress, attitudes, and replenishment of psychological resources (see Sundstrom, Bell, Busby, & Asmus, 1996 for a review). Further, the notion that situations and/or their defining elements play a central role in human behavior is arguably social psychology’s *raison d’être* (Baumeister & Tice, 1985; Edwards & Templeton, 2005). Lastly, some investigators have even postulated that the ability to discern relevant and insightful information from situations is a characteristic that has been shaped through evolutionary forces and is therefore expressed naturally by the human species (Kelley, Holmes, Kerr, Reis, Rusbult, & Van Lange, 2003).

These diverse lines of reasoning suggest that “situations” are important concepts, but they do not provide an answer as to why a *taxonomy* of situations is important. Here, evidence supporting the taxonomy of situations is contingent not only on finding effects but also on understanding those effects in a way that is both parsimonious and practical—that is, on discerning the nature and structure of this broad category of interrelated entities so as to uncover general scientific laws that help explain how and why various situations affect different types of people in predictably unique ways (Hattrup & Jackson, 1996). Said differently, classification is fundamental to the goals of science in that it provides a universal means of effectively conceptualizing and efficiently communicating information about concepts of interest (Rosch, 1978; Sokal, 1974). When developed with foresight and purpose, then, classification efforts have the potential to be more than mere “catalogues of convenience” (Pervin, 1978, p. 98), by serving as meaningful theories in their own right. Such a standard, however, requires that the constructs of interest be clearly articulated, that the relationships among these constructs be specified, and that the system as a whole can be empirically falsified (Doty & Glick, 1994).

Thus, it is in service of the scientific goals of description, prediction, and explanation that situational taxonomy becomes critical. That is to say, it is not enough to show that a given situation has a particular effect on a specific outcome; it is also necessary to be able to build a case showing *why* the situation has this effect. Said differently, psychology should strive to answer the question “what active ingredients of the situation interacted with specific individual differences to influence a given outcome and what other situations share those same ingredients and therefore might predict similar outcomes?” Perhaps, then, the best evidence for the need of a taxonomy of situations comes from the long list of scholars across psychological subdisciplines who have called for such a taxonomy (a lengthy list of quotations from diverse scholars can be obtained by contacting the author). I argue here that these arguments typically take one of four forms.

First, the classic situationist argument (most common in fields such as sociology and social psychology) posits that situations have important main effects on numerous outcomes of interest; thus, situational variables should be thoroughly organized to better facilitate a full understanding of these influences (Davis-Blake & Pfeffer, 1989; Frederiksen, 1972; Rutter, Pickles, Murray, & Eaves, 2001). Second, the situation-as-context argument (most common in fields such as educational psychology and the organizational sciences) posits that broad environmental forces often influence the expression of one’s personality, but this frequently occurs through means that are unforeseen and/or that operate outside of the theory of interest (Cappelli & Sherer, 1991; Johns, 2001, 2006). Third, the interactionist perspective posits that human behavior is a joint function of individuals and situations; thus, theories that attempt to explain human behavior should explicitly and intentionally account for both of these sources of variability by demonstrating the main effects of each, as well as their interactions (Barrick & Mount, 2005; Cronbach, 1957; Hattrup & Jackson, 1996; Magnusson, 1981; Murtha, Kanfer, & Ackerman, 1996; Tett & Burnett, 2003). Fourth, the trait-based view of situations (primarily found in personality psychology) posits that “only those situation taxonomies that are built as a further specification of trait knowledge are of interest” (Ten Berge & De Raad, 1999, p. 354).

It is important to note here that the aforementioned perspectives are not necessarily at odds with one another; they merely represent different approaches to conceptualizing ways in which situations affect outcomes in the social sciences and would each be furthered by continued efforts to develop a universally accepted taxonomy of situations. Before such a taxonomy will ever be possible, however, several key questions regarding the nature of situations and their classification need to be addressed and, ideally, settled. As such, the following section outlines the many decisions researchers must make when attempting to develop such a system, presented here as a series of questions with at least

two competing options. Wherever possible, existing taxonomies that represent the option in question are reviewed and discussed.

## Key Decision Points for Creating/Evaluating a Taxonomy of Situations

### Objective versus Subjective Situations

Perhaps the first question researchers must answer is whether situations should be defined as clusters of objective stimuli or if the focus should be placed on people's subjective interpretations thereof (Frederikson, 1972). The importance of this decision was first described by Murray (1938), who defined *press* as "a directional tendency in an object or situation" and distinguished between *alpha-press*, defined as "the press that actually exists, as far as scientific inquiry can define it" and *beta-press*, defined as "the subject's own interpretation of the phenomena that he perceives" (p. 122). From Murray's perspective, those aspects of the situation that are considered "press" are those characteristics that can help or harm the person (everything else is considered "inert"), and the process of determining whether something helps or harms is the process of "pressive perception." When pressive perception is particularly inaccurate (i.e., when there is a large gap between the objective positivity or negativity of a situation and one's subjective interpretation of it), it can be said that the individual is experiencing a delusion.

Extending this distinction one step further, Block and Block (1981) argued that situational stimuli can best be divided into three broad categories of perceptual concreteness. First, they argued that there are rarely seen, "perceptually unfiltered and uninterpreted" (p. 86) aspects of situations that are absorbed naturally through the senses, which they referred to as "the physico-biological situation." They also agreed with Murray's concept of "alpha press," while simultaneously recognizing that the extent to which situational stimuli will likely be agreed upon by most individuals who experience the situation in question is an important consideration, which they referred to as "the canonical situation." Lastly, and much like Murray's beta-press, they also recognized that situational stimuli might also be uniquely perceived by each individual, and they called this "the functional situation."

After creating this trifurcated distinction, Block and Block went on to develop a taxonomy of canonical situations of their own, which was based on the responses of 11-year-old

children to 54 diverse situation-relevant items. Briefly, their model builds on the results of previous taxonomies to elucidate 11 defining dimensions (pp. 99–100): structure (the extent to which “goals, tasks, and roles are well-defined”), convergence (the extent to which there is “one correct or acceptable solution”), divergence (the extent to which there is “an open-ended number of alternative solutions”), evaluation (the extent to which “the accuracy, desirability, or appropriateness of behavior is explicitly or implicitly understood to be evaluated”), feedback (the extent to which “information about the effectiveness, appropriateness, or desirability of one’s behavior is explicitly provided by another”), constraints (the extent to which “the defined goal, problem solution, or social interaction is constrained by the presence of a barrier”), impedance (the extent to which the situation requires “a high degree of exertion”), malleability (the extent to which situations “permit locomotion and/or restructuring”), galvanization (the extent to which the situation is “attractively arousing, stimulating, or has incentive value”), familiarity (the extent to which situations are “known to and predictable by the ‘average expectable person’”), and differentiation (the extent to which situations are “highly articulated, with a great number of ‘discriminanda’ or ‘regions’”).

Block and Block’s taxonomy has a number of positive features (1981). First, as is the focus of this section, these authors specifically stated that they are interested only in canonical situations, with the assumption that understanding the ways in which individuals are likely to agree on the nature of the situations they experience is necessary to explain the ways in which situations interact with relevant individual differences to predict human behavior. Second, the authors also acknowledged the importance of distinguishing types of situations versus the dimensions that define them (discussed in greater detail later), although their analyses focused almost exclusively on the latter. Third, their dimensional structure explicitly and intentionally built on the dimensional structures of previous authors. Unfortunately, however, one of the primary limitations of their taxonomy is that it was based on children’s responses, so its comprehensiveness and generalizability to adults remains unknown.

Not surprisingly, other attempts at situational taxonomy have categorized objective components of situations instead of perceptions thereof. A recent and interesting effort in this regard stems from a yet-unpublished manuscript by Pury et al. (2014), who based their taxonomy on “situational affordances,” which can be defined as those aspects of situations that explicitly permit certain types of behaviors to be expressed (Gibson, 1977). This effort explicitly focuses on objective aspects of situations, which Pury et al. argue are independent of personality or individual perception and will therefore prevent perceptual biases that have affected previous studies of situations.

Given that the definition of affordances lends itself directly to action, these authors culled verbs from an English language dictionary, reduced them to a list of 100 that represent

those that are likely common in daily life, and asked participants to rate them in terms of similarity. Results suggest that seven dimensions underlie situations: change (the extent to which the situation is dynamic or remains static), ownership (whether one's self has control and responsibility over the situation or someone else has control and responsibility over it), valence (whether the situation encourages approach or avoidance), timing (whether the situation shows little activity or ongoing activity), target (whether the situation is focused on a person or an object), privacy (whether relevant information is kept private or made known to others), and consideration (whether one's focus is on him/herself or on others).

### Situations in General or Specific Domains Thereof

An equally important question that researchers must address when creating a taxonomy of situations pertains to whether their goal is to attempt to classify all possible situations or if they will focus on some subcategory. This distinction is critical because creating a taxonomy of situations does not necessarily imply that the result will represent all possible situations, meaning that taxonomies of specific domains of the universe of possible situations can be well-developed entities that have an important impact on specific areas of study. Thus it is important to state explicitly that taxonomies of situations in general should *not necessarily* be viewed as an inherently more desirable end-state than more focused taxonomies, but simply that the focus and importance of any taxonomy should be made explicit.

Regarding those efforts that have focused on creating taxonomies of situations in general, one example comes from the work of Edwards and Templeton (2005), who attempted to discern all possible attributes (i.e., "dimensions") that underlie situations. The philosophy driving their efforts was that situations, much like people, are perceived as having enduring characteristics that are recognizable by human raters (i.e., that situations have "traits"). In an effort to identify the most parsimonious list of traits used to describe situations, these authors used an unabridged dictionary to identify more than one thousand adjectives, which they argued represent all terms in the English language that can be used to describe situations.

These authors then asked multiple samples of undergraduate students to (a) rate the extent to which a random sample of these adjectives described or did not describe a situation they experienced the day prior, (b) rate a situation they experienced on several predetermined dimensions, or (c) sort situations on the basis of similarity. Based on a combination of factor analyses, multidimensional scaling, regression, and cluster analysis, the authors ultimately concluded that situations contain three foci: valence (positivity versus negativity), productivity (the extent to which a situation is focused on

goal achievement), and ease of negotiation (the extent to which situational constraints are flexible and negotiable). They also argue that the characteristics they identified are not only comprehensive but also reflect the idea that perceptions of situations are ultimately driven by the extent to which they facilitate or hinder goal attainment.

An important caveat to those studies that attempt to assess situations in general, however, is that even they are oftentimes conceptually limited by the nature of their situational sampling strategy and/or they include one or more important distinctions regarding the purpose/generalizability of their taxonomy. For example, the Edwards and Templeton (2005) taxonomy outlined in the previous paragraphs assumes that situational characteristics will only be detectable to individuals to the extent that those characteristics affect some relevant outcome (e.g., a party might be perceived as “boring” because the party elicits a negative emotional state in the perceiver, a battle may be perceived as “destructive” because of damage inflicted on surrounding buildings) and only employed situations experienced by college students. As such, one could interpret these authors’ conclusions not as the dimensions underlying all possible situations but, instead, as the dimensions having “underlying causal powers” (p. 707) that are familiar to college students in a Western, educated, industrialized, rich, and democratic (i.e., WEIRD) cultural context (Henrich, Heine, & Norenzayan, 2010). Furthermore, Price’s empirical work on situational taxonomies (e.g., Price, 1974; Price & Blashfield, 1975; Price & Bouffard, 1974) used undergraduate students and members of a small town in the Midwestern United States, meaning that potentially important categories of situations are likely missing from these analyses. Again, such restrictions should not necessarily be viewed as limitations, but instead as important qualifiers to the generalizability of the proposed taxonomies and to the scope of subsequent inferences.

Given the nearly infinite number and diversity of situations that one might experience and the somewhat focused research interests of many psychologists, it is not surprising that the majority of existing taxonomies focus on subcategories of situations or dimensions thereof. Perhaps not surprisingly, then, these efforts are defined by their diversity, in that situational taxonomies range from those that focus on occupational environments (e.g., Holland, 1959, 1997) to those that focus on situations relevant to elderly individuals (Scheidt & Schaie, 1978). Scheidt and Schaie’s taxonomy is reviewed here because it represents an effort that, on the one hand, is focused on such a specific question that one might assume is only relevant to certain research questions, but that, on the other hand, provides useful insights that might help inform the efforts of anyone who is interested in better understanding the effects of situations on human behavior.

These authors approached the question of whether to focus on a general or specific domain from a cognitive developmental perspective, in that their goal was to identify ecologically valid ways in which the competencies of elderly individuals interacted with



situational characteristics in order to predict the effectiveness of intellectual functioning. To accomplish that goal, the authors used more than 300 situational stimuli developed on the basis of interviews and self-reported situations among their target population and applied a combination of sorting techniques and tetrachoric correlations to conclude that three critical dimensions explained the class of situations they were most interested in: ease/adequacy of coping, subjective ratings of pleasure/aversion, and frequency of occurrence. They then tested (a) the extent to which these dimensions interacted with one another and (b) whether relevant individual differences influenced the extent to which participants perceived themselves as able to manage the situations in question. Although the authors specifically stated that theirs was a rather small first step toward their broader scientific goals, the dimensions they identified represent an important contribution to the cumulative knowledge about those dimensions that may best define situations and, at a minimum, could be used to help inform future interpretations of subsequent taxonomies.

### **Situational Cues, Characteristics, or Classes**

Although several of the taxonomies described thus far have focused on determining the underlying dimensional structure of situations, it is important to point out that others have focused on identifiable types of situations (also known as “nominal situations”), whereas others have focused on specific pieces that define the composition of the situation. Indeed, the specific terms that can be used to *refer* to these aspects of situations are not consistent. That being said, an active group of situational researchers have recently argued that the following terms should be adopted (Rauthmann, Sherman, & Funder, 2015): *Cues* should be used to describe the physical or objective pieces (or “elements”) of compositional information that make up situations (e.g., the presence of other people, the presence of formal authority conveyed to the actor[s] within the situation), *Characteristics* should be used to define the dimensions that describe/underlie situations (e.g., whether the situation is, on par, positively or negatively valenced), and *classes* should be used to describe the broad categories that individual situations can be categorized into (e.g., social situations, work situations). Given the soundness of this recommendation and the recognized need for consistent situational language, I adopt their nomenclature throughout the remainder of this article.

Taxonomies that focus on classes have as their unit of analysis broad categories of situations, but they remain agnostic to the myriad potential ways in which these situations may be similar to or different from one another. The emphasis is merely on the notion that the situations show cross-category heterogeneity and a reasonable amount of within-class homogeneity. In contrast, characteristic-based solutions have as their unit of

analysis the finite number of ingredients/dimensions that can be used to differentially define diverse situations. These dimensions are typically viewed as orthogonal continua and are generally discovered empirically, although several extant efforts have drawn from previous solutions in an effort to connect contemporary findings with past research.

Importantly, efforts in both of these camps have produced useful results. For example, some of the most highly cited taxonomies of situations (for example, those of Jones & James, 1979, and Karasek, 1979) focus solely on the characteristics that underlie situations, whereas other highly cited taxonomies (for example, that of Amabile, Conti, Coon, Lazenby, & Herron, 1996) focus on a specific situational class. Furthermore, neither approach is inherently superior to the other, although several authors have made reasonably convincing arguments that characteristic-based solutions are more conducive to achieving many modern social science goals (Block & Block 1981; Edwards & Templeton, 2005; Frederiksen, 1972; Magnusson, 1971; Rauthmann, Sherman, and Funder, 2015). Because several characteristic-based taxonomies were outlined previously in this article, no additional dimensional solutions will be reviewed here.

As an example of a class-based solution, Baumeister and Tice (1985) argued that a reasonable way to identify all possible categories of situations would be to examine the nature of the independent variables used in the *Journal of Personality and Social Psychology*. Their argument was that one of the primary goals of the field of social psychology is to understand the ways in which situations influence human affect and behavior, and for that reason, sampling randomly from the stimuli used in one of social psychology's primary journals should yield a nearly comprehensive list of those aspects of situations that have an impact on human affect, behavior, and/or cognition.

The original effort by these authors to identify the stimuli used to develop this structure yielded 1,622 stimuli; they then used an intuitive sorting strategy to arrange those stimuli into 51 classes. The 51 classes were then further subdivided into five classes, which Baumeister and Tice argued represent the basic structure of situations. Briefly, these classes are *the stimulus environment* (i.e., "its physical, spatial, and temporal structure, as well as any social structure that is external to the individual" p. 152), *characteristics of subject* (i.e., aspects of the participant him/herself, though the authors acknowledged that some users may wish to eliminate this category), *cognitive and affective dynamics* (i.e., induced states experienced by the individual), *relationship background* (i.e., "the actual or perceived genesis of the subject's relation to the other person[s] in the situation" p. 159), and *matrix of possibilities* (i.e., "the range of alternatives available to the subject for behavioral response and the potential consequences, outcomes, and implications of the various alternatives" p. 162). Unfortunately, however, this final structure (a) contains

many non-situational characteristics and (b) did not yield an instrument that could be used to analyze situations. As such, this taxonomy is of limited use and generalizability.

Finally, it is important to point out that a few studies have attempted to simultaneously create a taxonomy of both classes and characteristics or to focus on one en route to a deeper understanding of the other. For example, Magnusson and Ekehammar (1973) argued that five dimensions (positive, negative, passive, social, and ambitious) and six or seven types (depending on the analytic strategy used) can be used to describe situations in general. Although the purely empirical nature of this solution prevented the creation of a more logically consistent structure (e.g., by combining positivity and negativity into a single bipolar dimension), these authors should be commended for attempting to understand situational characteristics, as well as classes thereof. Furthermore, although the Block and Block (1981) taxonomy outlined earlier focuses primarily on characteristics of situations, these authors also briefly demonstrated how these characteristics might be able to be combined to form types of situations. For example, they argue that “tough situations” lack structure, offer energetic impedance, are evaluative in nature, feel unfamiliar to the experiencer, are constraining, and are not malleable.

## Methodological and Statistical Issues

Once the questions pertaining to the nature of the desired taxonomy have been addressed, it becomes necessary to determine which empirical procedures are to be used to develop that taxonomy. Here again, there are no inherently correct approaches, but some options are more or less appropriate depending on the nature of the desired taxonomy and its uses. The following subsections outline each of the major issues to be addressed and the available options for each.

### Determining the Fidelity of Stimuli

Any empirically verified taxonomy of situations will necessarily be based on assessments of relevant stimuli—that is, the situations that participants assess to provide the data that the researcher will use to derive the ultimate taxonomy. An important methodological question, however, focuses on determining how much information will be conveyed in each stimulus. I argue here that stimuli come in two general forms: “componential” and “holistic,” though much variability exists within and between these two general categories. Specifically, componential stimuli represent relatively context-free aspects of situations represented by a single part of speech. Holistic stimuli, in contrast, are larger combinations of terms, and they typically contain substantial contextual detail (e.g., about

the who, what, when, where, why, and how of the situation—Johns, 2006). The merits and demerits of these two approaches are discussed below.

When developing arguments for using a componential perspective, a given author typically posits that a certain part of speech (e.g., verb, adjective) can be used to adequately describe the function of the situations that the authors view as most critical. For example, Pury et al. argued that verbs are a useful focus of attention because one of the primary functions that situations fulfill is that of affordances, so understanding what people *do* in situations permits fuller knowledge of the most important features of these situations. Again, no claim is made here that the Pury et al. approach is correct (*per se*), it simply represents a well-articulated, theoretically grounded rationale for the authors' choice, which is an important first step in this process.

Regardless of which part of speech is selected, authors who take a componential perspective typically use one or, at a maximum, a combination of a few words as their stimuli. This approach, however, is limited by the fact that situations are typically best described as multifaceted entities, meaning that they involve one or more actors, an action, and some description of surrounding conditions. Single-term lexical approaches, however, focus exclusively on a single part of speech. The net result of this limited focus is that information about who is engaging in the action in question, as well as why, etc. is missing from the stimulus set, thereby potentially limiting the representativeness of the taxonomy itself and, therefore, the inferences made on the basis of that taxonomy.

Indeed, Johns (2006) made a convincing case for the idea that successfully conceptualizing organizational context (which is related to the concept of situations, albeit substantially broader in scope) requires information about *who* is involved, *what* is happening, *when* they are doing it, *where* it is occurring, *why* it is occurring, and *how* it is being done. From this perspective, then, situational stimuli can be represented by full sentences (or even brief vignettes) that contain information about each of these considerations. An example of a study in which more holistic stimuli were used is a recent publication by Rauthmann et al. (2014). Their samples A through G were developed by asking participants to write a brief description of a situation they encountered during the previous day. That situation was subsequently used by the participants as their reference point when they completed a situational Q-sort activity. The Rauthmann et al. study will be described in greater detail later in this article.

## Creating a Stimulus Set

Given the nearly infinite number of situations that humans can potentially experience, it is not surprising that studies in the extant literature have come up with several different

methods of developing a subset of stimuli for study. Each such subset, however, has important limitations, suggesting that a comprehensive taxonomy of situations (if one ever exists) will likely have employed multiple stimulus creation methods, some of which may not appear in the following discussion.

First (and consistent with efforts in personality psychology that ultimately resulted in the Five Factor model of personality), some researchers have employed the Lexical Hypothesis, which posits that important concepts will exist in common language. Here, several specific approaches, all of which are based in some degree on the Lexical Hypothesis, have been employed. The most straightforward approach (and that which is most consistent with the efforts resulting in the Big Five) is to cull from an unabridged dictionary single terms that represent and/or describe situations. As outlined previously, Pury et al. employed the lexical approach to find situationally relevant verbs that were used as stimuli in subsequent analyses (2014). This approach was consistent with these authors' goals because they were focused on situational affordances, which inherently enable actions, but their stimuli (and, therefore, their ultimate conclusions) may lack additional contextual information.

An interesting and novel way in which researchers have capitalized on the general idea underlying the Lexical Hypothesis is by using more context-rich linguistic manifestations of situational information. Perhaps the most comprehensive example of such an approach was published by Yang, Read, and Miller (2006), who used Chinese idioms as their stimulus set. These authors argued that Chinese idioms are an especially rich source of situationally relevant information because of cultural tendencies that put a strong emphasis on context. Furthermore, Chinese idioms are of a standardized (i.e., four-character) format and cover a large number of situations due to their importance in Chinese language and culture. Lastly, these authors' efforts suggest that Chinese idioms are easily translated into English, without losing important information or meaning.

Given the many benefits of Chinese idioms as potential situational stimuli, Yang et al., asked participants to engage in a sorting activity in which they categorized lists of idioms as a function of perceived similarity. This approach allowed the authors to create an  $N \times N$  matrix wherein cell values reflect the number of participants who classified any two idioms into the same category. These matrices were then cluster analyzed (a process described in greater detail below) to form a hierarchical, 17-cluster solution. At the broadest level of abstraction, the authors argued that most of the situations in their sample could be described by the extent to which they facilitate versus hinder goal achievement (or, conversely, whether the situation is generally viewed positively or negatively). One way in which this study was limited by its stimulus source lies in the fact that idioms are typically written to support a point and are not used to describe mundane situations. Thus, the fact that the ultimate solution pointed toward goal attainment as a

critical underlying factor may say more about the purpose of idioms than about the actual structure of situations. It is therefore important to investigate other ways of creating situational stimuli.

A second method for deriving situational stimuli involves participants keeping a daily diary for the express purpose of documenting psychologically salient situations, situations of a particular type (e.g., situations that enable creativity—Amabile, Conti, Coon, Lazenby, & Herron, 1996), and/or specific details about situations. One of the best-known situational taxonomies that used this stimulus-generation approach is Battistich and Thompson's (1980) analysis of the college milieu. These authors asked 37 undergraduates to keep a written record of the situations they experienced for a period of two days. Participants then reviewed their lists and added to them any situations they had experienced frequently over the course of the previous year. The 30 most frequently mentioned situations (across participants) were then selected by the authors to be rated by an independent sample of student raters. Regardless of the specific details of the approach employed, the underlying goal is the same: namely, to obtain a stimulus set representing situations that people report having actually experienced.

A fundamentally different approach is to develop situational stimuli by asking subject matter experts (SMEs; usually PhD psychologists or psychology graduate students) to inductively develop lists of situations that particular individuals (or people in general) might experience under various circumstances. This approach has the potential to be incomplete because of limitations of the SMEs' particular experiences and/or limitations of the human imagination. Thus, although some studies have used this approach in the past (e.g., Mehrabian & Russell, 1974), this method seems to have fallen out of favor.

Perhaps the most common way of developing a set of situational stimuli involves collecting participants' descriptions of actual situations they have experienced. I refer to these as "post-hoc methods" because they involve asking participants to provide retroactive self-reports. As mentioned previously, Rauthmann et al. (2014) asked several samples of participants to describe the situations they experienced at various points in the previous day (e.g., at 11:00 a.m., 7:00 p.m., 24 hours prior) whereas Sherman, Nave, and Funder (2013) allowed participants to choose from four preselected times (i.e., 10:00 a.m., 2:00, 5:00, or 9:00 p.m.). Although this approach is likely to yield rich descriptions of actual situations, its primary limitation is that the use of fixed time frames may limit the diversity of situations because certain settings/activities may be excluded. Thus, if this approach is used, this limitation should be addressed by including a diverse array of times to select from and/or asking participants to describe the situation they were experiencing up to 24 hours prior (for example) or at some randomly selected time.

Lastly, what I call “combinative” methods are those that involve using several relevant terms to form stimuli. For example, Meyer (2009) used a random sentence generator that combined several parts of speech into fairly rich descriptions of work situations (e.g., “discussing problems with direct reports as part of a team-building activity,” “socializing with a coworker outside my office”), which were subsequently compared in a pairwise fashion on the basis of similarity. The main benefit of combinative methods is that they yield rich stimuli that are relatively consistent in terms of phrasing. The main drawbacks of such approaches, however, are that (a) one still needs to determine a method for populating each of the fields, typically using one of the methods outlined previously and (b) this system yields a large number of nonsensical stimuli that need to be removed (requiring the intervention of human judgment) before the ultimate stimulus set is ready for use. That being said, if these drawbacks can be overcome, combinative methods have the potential to yield useful, high-fidelity stimuli.

### Data Collection Methods

After a stimulus set has been developed it is next necessary to collect data pertaining to the nature of stimuli provided. If there is an a priori reason to believe that the situations will best be defined by specific underlying characteristics or fall into one of multiple specific classes, then participants would simply read each stimulus and assess the extent to which a given dimension defines it or place it in the most relevant category. Most taxonomies, however, are more exploratory than confirmatory, meaning that the researcher does not have a strong reason to believe that a given stimulus set will be defined by a finite set of underlying characteristics or will best be categorized into a finite set of classes. For this reason, researchers typically need to gather data in a way that permits characteristic-based and/or class-based information to be gleaned from participant responses.

Perhaps the most common way to obtain such data is through pairwise analyses (Bijmolt & Wedel, 1995). With this approach, participants simply read two stimuli and assess the extent to which they are similar to or different from each other (in doing so, they might use a 1 to 7 scale where 1 = very dissimilar and 7 = very similar). The greatest limitation of this system is that the number of possible pairwise comparisons grows quickly as the number of stimuli increases. Specifically, the formula for calculating the number of possible pairwise comparisons is  $N(N - 1)/2$ , which means that the number of comparisons for which a given respondent is responsible begins to become unruly at around 25, which yields 300 possible comparisons. A slight (albeit rarer) variation on this procedure is to employ “triadic comparisons.” With this approach, participants are exposed to three stimuli and asked to form (a) the most similar pair and (b) the least similar pair. As with pairwise comparisons, however, the burden placed on participants

increases greatly as the number of stimuli to be compared increases (Bijmolt & Wedel, 1995).

Another alternative that can be employed when one does not have a priori dimensional information is to ask participants to sort stimuli into groups on the basis of their perceived similarity. Typically, this process is completed by asking participants to form as many or as few categories as necessary to represent the stimulus set in question. The end result is an  $N \times N$  matrix in which the number in each cell represents the number of participants who put two stimuli into the same category. Fortunately, several Web-based programs are available for randomizing the presentation of stimuli and populating the  $N \times N$  matrix based on participants' responses.

### Data Analysis Methods

The last step in creating a taxonomy of situations is to analyze the data collected using one of the aforementioned options. Here, the most common approaches are multidimensional scaling (MDS), factor analysis, and cluster analysis. Space limitations do not permit detailed discussions of each of these approaches (and there are numerous books and hundreds of journal articles published on each), but there are a few key issues that should be discussed here.

First, an inherent characteristic of data reduction analyses is that some explanatory power is lost in pursuit of parsimony. Second, all of these approaches require a rather large amount of human interpretative judgment. That is, once a particular structure is decided on, it is incumbent on the researcher to make sense of the specific ways the original stimuli map onto that structure. Although this process is difficult, it is possible to validate the ultimate structure post hoc. Specifically, a new group of participants can rate the original stimulus on the dimensions decided on by the researcher and a host of plausible alternatives. These ratings can then be regressed onto the location of each stimulus on the ultimate MDS map. Conceptually similar methods are also available for factor analyses and cluster analyses, wherein an independent sample of participants assesses the extent to which the stimuli are either indicators of a given factor or "belong" in each of the resultant factors (respectively). Regardless of which approach is used, validation of the researcher's original solution by an independent group of raters is an essential step in the development of any taxonomic solution.



## Shared Characteristics of Extant Situational Taxonomies

Given the numerous decisions researchers must make when developing taxonomies of situations (as well as the sheer magnitude of any such endeavor), it should not be surprising that a true consensus pertaining to the nature and structure of situations remains elusive. Additionally, however, there is a host of more systemic issues that have limited extant taxonomic efforts. I argue that, despite the diversity of approaches outlined previously, nearly all attempts to create taxonomies of situations share two (potentially related) features.

First, they represent the work of a single researcher (or team of researchers) working in relative isolation, with little attempt to build on existing efforts. This phenomenon is particularly unfortunate because many areas of social science research posit main and/or interactive effects for situations. Thus it is somewhat puzzling that more consensus does not exist around this question in psychology as a whole. This critique, however, comes with a caveat; namely, that most researchers who have created taxonomies of situations have made a concerted effort to draw from one or more extant efforts (e.g., in offering dimension names), but few if any have actively *built on* or *extended* the work of others. Consistent with the Frederiksen (1972) epigraph at the beginning of this article, this reluctance to work in concert with other researchers (from the past or the present) is unfortunate given that it is highly unlikely that any single scholar will ever produce *the* definitive taxonomy of situations.

Second, no single taxonomy has been adopted across disciplines to any great degree; nor has any developer of a taxonomy made an effort to “advertise” across multiple disciplines. Therefore there continue to be numerous calls across a variety of literatures for a universally accepted taxonomy of situations. Many of the attempts to classify this domain of constructs have been published in discipline-specific journals and have primarily cited work in closely related areas. The end result of this isolation is that efforts from one area of study that are potentially useful in other areas of study are not discovered and therefore are not used. This phenomenon also, however, speaks to an unfortunate “Catch 22” in the publication of scholarly work in this area: namely, there is no general psychology journal that regularly and consistently publishes work relevant to situational taxonomies, and the science of situational taxonomy has no single natural home in any subdiscipline of psychology.

It is important to highlight here, however, the collaborative research efforts of an international team of psychologists who have devoted substantial effort to situational

taxonomy. Specifically, The International Situations Project (headquartered at the University of California Riverside) represents a consortium of scholars who have collected large amounts of data from across the world and have published several studies on the topic of situational taxonomy.

Perhaps the most important contribution of this group is the creation of the Situational Eight DIAMONDS, which posits that eight characteristics can be used to define situations in general (Rauthmann et al., 2014). Specifically, “Duty” refers to the extent to which a task needs to be completed, “Intellect” refers to the extent to which one’s intellectual capacity can/should be demonstrated, “Adversity” refers to the extent to which threats/harm may occur, “Mating” refers to the extent to which sex is a salient characteristic, “pOsitivity” refers to the extent to which good things may occur, “Negativity” refers to the extent to which bad things may occur, “Deception” refers to the extent to which someone may be misled, and “Sociality” refers to the extent to which personal interactions may occur.

Although the Situational Eight DIAMONDS is not a perfect solution to the problem of situational taxonomy (e.g., some items load in unexpected ways on their final factor structure, it deals only with situational characteristics while being agnostic with respect to situational categories), it does represent an important leap forward. Specifically, just as the Big Five represents the best-known factor structure of personality in general, the DIAMONDS model represents a comprehensive attempt to define the characteristics that define situations in general. As such, it is likely that this model will have an important impact on the understanding of situations and psychologists’ ability to make sense of this broad and important domain. Assuming for the moment, however, that the DIAMONDS model will not be the last word in situational taxonomy, the following section outlines several key areas of needed future research.

## Future Directions

### Accounting for the Hierarchical Structure of Situations

Some psychologists have recognized that categories of situations are naturally nested within each other and that categories at each level can be defined by their standing on one or more underlying characteristics (Saucier, Bel-Bahar, & Fernandez, 2007; Yang, Read, & Miller, 2006). At a very broad level of abstraction (although, perhaps not, *the* broadest), researchers might find that situations can be divided by settings into work and

recreational situations and that their standing on “duty” (for example) can be used to differentiate these broad categories. Within each of these broad domains, then, more specific types of situations also surely exist, which can themselves be classified and defined according to other relevant underlying characteristics. For example, Meyer (2009) has argued that work situations can be subdivided into four classes: “bureaucratic work situations,” “incubative work situations,” “prosaic work situations,” and “strategic work situations” which are defined by their standing on two dimensions: “maintenance-development” and “formality-informality.”

### **Simultaneously Accounting for Both Characteristics and Categories**

Although several theorists have pointed out the importance of defining both classes and characteristics of situations (e.g., Funder, 2006; Pervin, 1978), most of the material reviewed throughout the present article suggests that extant attempts to classify situations have tended to focus on only one of these goals, to the exclusion of the other (Eckes, 1995). This is unfortunate because a taxonomy that simultaneously conveys information about both hierarchical classes of situations and their defining characteristics would permit a large amount of definitional information to be conveyed via simple labels. For example, knowing that an incubative situation is a work situation conveys the fact that it is high on the higher-order characteristic of duty, as well as the lower-order characteristics identified by Meyer (2009)—namely, development orientation (i.e., that the situation is focused on the future), and informality (i.e., that the situation lacks policies, procedures, and rules about employee expectations). To the extent that subordinate classes of situations are further elucidated (e.g., taxonomic efforts are focused on discovering subtypes of “incubative work situations”), even more definitional information can be known by simply knowing where a given situation exists within the hierarchical taxonomy.

### **Stand on the Shoulders of Giants**

The last issue I will address is the rather piecemeal nature of the solutions outlined throughout this article. That is, extant situational taxonomies have tended to develop in relative isolation from one another. This is not to say that researchers developing situational taxonomies do not cite relevant prior efforts, but few (if any) actively seek to build on existing situational taxonomies. Given the enormity of the task in front of us, I argue that a sense of interconnected continuity will be necessary to achieve a reasonable consensus in this matter. Furthermore, I implore psychologists to look to other sciences that have created meaningful and long-lasting taxonomies of their concepts of interest.

For example, The Linnaean Taxonomy of organisms in biology efficiently conveys large amounts of information about both characteristics (e.g., warm-blooded versus cold-blooded animals) and categories (e.g., mammals versus reptiles). Similarly, the periodic table of elements in chemistry arranges chemicals into categories via columns (e.g., alkali metals, noble gases) on the basis of the configuration of the electrons in their shell, and the Diagnostic and Statistical Manual (DSM-5) groups psychiatric disorders on the basis of various diagnostic criteria.

Although none of these systems is without controversy, they all resulted from the cooperative efforts of concerned members of the discipline thinking, planning, and acting in concert to provide a universal system for the benefit of their respective fields. Such an effort would, I believe, benefit psychology as a whole by providing not only a universal nomenclature but also the foundations of an updatable system to which interested parties could contribute. Although individual taxonomic efforts reported to date have been impressive and useful, I think psychologists should recognize Frederiksen's (1972) wisdom when he stated that a taxonomy of situations "will surely not be the work of any one investigator" (p. 117), and psychologists should, therefore, begin the process of coming together to determine how our efforts might be used in concert to develop a system that will be mutually advantageous, scientifically rigorous, and able to withstand the test of time.

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