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Evolutionary Perspectives on Situations

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Abstract and Keywords

Evolutionary perspectives presume that the mind has been shaped by human ancestors' encounters with recurrent adaptive problems. Focusing on these recurrent adaptive problems offers researchers theoretically derived hypotheses about the psychology of situations. Specifically, this analysis suggests novel insights about the cues that signal particular kinds of situations, how situations are differently construed by perceivers, and when situations guide or constrain behavior. It also offers guidance in generating situation taxonomies akin to those found for personality. This chapter aims to show how the integration of evolutionary analysis with the study of situations can be rich and generative, highlighting insights from this perspective that have already emerged, as well as proposing new directions for specific topics in the study of situations.

Keywords: evolution, situations, recurrent adaptive problems, ecology, fundamental motives, life history strategy

Seeing one's child gravely ill, meeting a new and desirable romantic partner, the death of a close relative, being venerated by one's peers for one's accomplishments, being physically attacked—these situations are likely to be psychologically powerful, producing strong emotional reactions and behavioral responses in most people. But what makes these situations particularly affecting? Moreover, what makes each of these a situation at all?

An evolutionary analysis can help us to answer questions like these. In this chapter, we highlight some of the useful insights an evolutionary analysis brings to the psychology of situations. Our aim is to be illustrative rather than comprehensive, and we point to areas in the study of situations where evolutionary perspectives can be particularly generative.

Recurrent Adaptive Problems

Evolutionary perspectives provide a set of theoretical tools for exploring situation structure and content. Foremost of these is the idea that the human mind has been shaped by our ancestors' encounters with *recurrent adaptive problems* (e.g., Buss, 2009a, 2009b; Figueredo et al., 2010; Neuberg, Kenrick, & Schaller, 2010). Our ancestors faced a wide array of challenges to survival and reproduction. Consider the problem of avoiding illness and disease. Pathogens and toxins enter our bodies in a variety of ways—for example, when we ingest poisonous plants, cut ourselves on objects that have infectious organisms, or, of course, encounter other people who carry communicable pathogens. Disease has had clear implications for humans' *reproductive fitness*, or the presence of one's genes in subsequent generations, as diseases could often be fatal. Even if not fatal, diseases could lead one to be less able to address other recurrent adaptive challenges such as contributing to a group (e.g., contracting polio would limit one's physical mobility, and in turn, ability to forage for food and the like). Thus, to the extent that people differentially succeeded in detecting, avoiding, and managing the recurrent adaptive problems of disease—and if this variability was produced via a heritable mechanism, e.g., genetic variation—the most successful strategies for addressing disease would have been selected for among the population. As a result, humans have a set of species-typical disease-avoidance adaptations, including not only our physical immune system, which mounts defenses against toxins or pathogens that have infected us, but also a behavioral immune system, which leads us to avoid those who might carry infectious organisms (Schaller, 2011). Of course, avoiding disease is just one broad category of adaptive problem humans have recurrently faced. Humans are attuned to signs that different recurrent adaptive problems are present and act accordingly to strategically manage those problems (Buss, 2009a; Neuberg et al., 2010).

Note that evolution should not lead to rigid behavioral programs in response to particular cues of adaptive problems, or an inflexible psychology. Avoiding disease by never coming into physical contact with other individuals would prohibit successful reproduction. Instead, evolution should lead to psychological systems that weigh the reproductive costs and benefits of possible behaviors and select behaviors that provide an overall reproductive benefit. Hence, situation perception and behavioral flexibility are critical, given that different situations will represent different cost and benefit trade-offs.

Furthermore, in proposing that adaptive problems structure situational psychology, we do not presume that people consciously identify the adaptive problems that may be present in situations, nor do we presume that adaptive problems actually *are* present in situations as they are psychologically construed—psychological mechanisms for detecting recurrent adaptive problems in situations need not be conscious or even consistently accurate. All that is required is that people respond to cues that would indicate a recurrent adaptive problem in a way that produced generally functional responses in the past (i.e., increased reproductive fitness). That is, evolution should shape proximate mechanisms that on

average produce ultimate gains in reproductive fitness (Scott-Phillips, Dickins, & West, 2011). We refer the interested reader to Confer and colleagues (2010) and Neuberg, Kenrick, and Schaller (2010) for an in-depth discussion of these issues.

Elements of Situations in Evolutionary Perspective

Recent theoretical advances can help us describe how recurrent adaptive problems operate within situations. Rauthmann, Sherman, and Funder (2015) proposed that situations convey information at three levels: cues, characteristics, and classes. Cues are the physical stimuli of the immediate environment. Cues could take a variety of forms, from aspects of other people (e.g., facial expressions, posture, and spoken language) to the physical space (e.g., whether the space is enclosed or open) to social ecological factors like the presence of many other people (high population density) or the prevalence of one gender versus another (sex ratio). Cues are interpreted by perceivers and in turn provide situations with their psychological meaning (situation *characteristics*). Thus, an environment with a significant male-to-female ratio imbalance does not impart any particular psychological significance on its own. Rather, situation characteristics tap into individuals' interpretation of the situational cues—that the cue of a biased sex ratio signifies opportunities to demonstrate dominance or that it may be either challenging or comparatively easy to find a romantic partner (cf., Brown, Neel, & Sherman, 2015; Morse, Neel, Todd, & Funder, 2015). Lastly, situation classes are types or categories of situations, which comprise similar situation cues and levels of situation characteristics. A “mate selection” situation (e.g., a romantic date) might contain similar cues (e.g., potential romantic partners) and levels of situation characteristics (e.g., opportunities to initiate a romantic/sexual relationship).

Situation Cues in Evolutionary Perspective

Some situational cues may indicate the presence of an adaptive problem (e.g., a sweaty, pale, shallow-breathing person may be likely to carry an infectious pathogen). Other kinds of situational cues, however, may indicate not the presence of an adaptive problem, but the available strategies for dealing with it. For example, Cesario, Plaks, Hagiwara, Navarrete, and Higgins (2010) showed that for white participants who associate black people with danger, responses to seeing a black face differ depending on whether participants completed the study in a situation that afforded free movement (e.g., an open field) versus restricted movement (e.g., a typical lab space). When in a constricted space, fight-related concepts and action tendencies were facilitated in response to black male faces, whereas in spaces that allowed movement, flight-related concepts and action tendencies were facilitated. Thus, although participants confronted the same general adaptive problem (self-protection) indicated by the same cue to that problem (an

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outgroup male face), their behavioral response to that situation differed depending on cues that would allow either fight or flight to be the most functional response. It may thus be useful to consider two kinds of situation cues: those that indicate the presence of adaptive problems, and those that indicate the strategies available for navigating them.

How Are Particular Situation Cues Linked to Situation Characteristics?

Some situation cues (e.g., the smell of a dead, rotting animal) may not require prior experience or learning to be perceived to indicate a specific situation characteristic (e.g., a dead animal that requires avoidance to prevent potential contamination). This may be especially true of those environmental cues that *reliably* indicated a recurrent adaptive problem. However, it is important to note that an evolutionary perspective on situations does not presume that our sensitivity to all situational cues must be innate, nor must the connection between particular situation cues and particular situation characteristics be innate. For example, successfully avoiding disease does not require the detection of one finite set of situational cues that reliably indicated the presence of that adaptive problem in ancestral environments. Because there are a large number of potential ways of becoming infected, there are likely to be many situational cues that could be linked to a particular adaptive problem. Noticing that someone is sweaty, pale, and glassy-eyed may be somewhat useful for avoiding disease, but many other cues could also indicate a disease threat. For many situation cues, we learn their links to situation characteristics through a process that unfolds over development and is guided by cultural learning. For example, we are not born with “innate” knowledge of who our siblings, parents, cousins, or children, are—we learn this over the course of experience.

That said, our minds do appear to be *prepared* to learn that certain cues relate to certain adaptive problems. Regarding kin detection, humans appear to use co-residence during early childhood as one indicator of who are one’s siblings, which subsequently influences whether one sees that person as a deserving recipient of altruistic behavior, or someone with whom to avoid sexual encounters (Lieberman, Tooby, & Cosmides, 2007). As another example, humans show preparedness to learn to fear snakes, spiders, and outgroup men. That is, a conditioned fear response to these stimuli extinguishes more slowly than a conditioned fear response to flowers, outgroup women, or in-group members (Öhman & Mineka, 2001; LoBue, Rakison, & DeLoache, 2010; Navarrete et al., 2009). Snakes, spiders, and outgroup men were particularly likely to pose a danger in our ancestral past, and thus researchers argue that preparedness to learn that these stimuli are dangerous is an inherited capability that offered some advantage in dealing with these particular challenges to self-protection. Yet even in these studies, experience is key. There was likely to have been selective pressure on humans to flexibly learn how to identify the cues that indicate threats and opportunities to reproductive fitness.

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Of course, skyscrapers, smartphones, being in crowds of hundreds of thousands of people, and many other aspects of our modern environments are novel and would not have been encountered by our ancestors. What are we to make of these novel situational cues? As we have outlined, there is plenty of room in evolutionary approaches for the possibility that we learn to associate certain situational cues (even historically novel ones) to particular adaptive problems. That said, it is worth considering that these novel cues will be viewed through a “stone-aged” lens (Cosmides & Tooby, 1997); that is, we have the same underlying psychological architecture to process the world now as we did a few thousand years ago when some situation cues were quite different. As one example of this, until technology facilitated travel to distant places, humans typically did not venture over great distances during the course of their lifetimes, and thus did not encounter others that we could today characterize as being of a different “race.” So, although people of other races may serve as potentially powerful situational cues today (of opportunities for intergroup conflict or cooperation, etc.), this cognition is operating on psychological architecture that evolved to serve other purposes, such as to detect who belongs to what group (Kurzban, Tooby, & Cosmides, 2001), or what kinds of environments people grew up in (Williams, Sng, & Neuberg, 2016).

Of course, whether or not a situation poses certain adaptive problems is not always clear. Is a person’s apparent friendliness only friendliness, or is the person romantically interested? Is this stranger walking down the street going to try to hurt me? Are colleagues at this meeting skeptical of my authority? Given situational ambiguity, situational perception and construal may be attuned to minimizing those mistakes judged to be more costly (Haselton & Buss, 2000; Haselton & Funder, 2006). We would expect that people are generally tuned to err on the side of seeing adaptive problems or opportunities when in fact they do not exist, rather than missing adaptive problems or opportunities.

Insights from Behavioral Ecology

Considerable work examines cultural and ecological factors that shape social behaviors (e.g., Gelfand et al., 2011; Guttentag & Secord, 1983; Oishi, 2010; Schaller & Murray, 2008; Sng, Neuberg, Varnum, & Kenrick, 2017; Talhelm et al., 2014). The study of how ecologies influence human and non-human animal behavior is referred to as behavioral ecology (see Davies, Krebs, & West, 2012). The environments we live in contain a wide array of information, and there are an almost limitless number of aspects of the environment that could influence our psychology. One advantage, then, of a behavioral ecological approach is that existing work in animal behavior can be leveraged to narrow the scope of ecological study. From this vantage point, certain ecological dimensions are theorized, and have been found, to be important. Resource distribution, the presence of kin, mortality risks, and even the proportion of other individuals adopting specific behaviors have all been shown to affect behavior. Hence, this evolutionary perspective provides an approach that “cuts ecologies/chronic situations at their joints.” Ecological perspectives can point to sets of cues that will signify particular situations and are likely to produce functional behavior. Further, ecological perspectives suggest that long-term exposure to particular kinds of situational cues may produce differences between individuals, or even between cultures, that mirror these temporary changes.

For example, individuals who are shown temporary situational cues of disease threat—such as photos of disease symptoms—report lower extraversion and more conformist behaviors (Mortensen et al., 2010; Murray & Schaller, 2012). Behaviors like these are geared toward reducing or restricting affiliation (and forgoing its benefits) in order to minimize the threat of infection from others (see also Sacco, Young, & Hugenberg, 2014). In the same vein, people in societies with a long history of infectious disease are less extraverted and open and are also less likely to engage in sexually promiscuous behaviors (Schaller & Murray, 2008).

To provide another example, from evolutionary life history theory, population density is predicted to lead to a “slower” life history strategy, characterized by traits such as a future time orientation, a greater preference for long-term committed relationships, and having fewer children with greater investment in each child (Sng et al., 2017). Such traits arguably facilitate greater social competition in a crowded environment. Indeed, people in more crowded populations, both across countries and across the US states, seem to exhibit this “slow” psychological profile. Similarly, in experimental situations when individuals learn about increasing crowdedness in their surroundings, or even just hear sounds of background noise that indicates greater crowding, people also shift toward a slower strategy, becoming more future oriented and preferring to focus on fewer relationships or fewer children.

Sex ratio influences a variety of social behaviors, from financial investment styles to relationship preferences (Ackerman, Maner, & Carpenter, 2016; Moss & Maner, 2016; Pedersen, 1991; Schmitt, 2005; Secord, 1983). For example, when perceiving a highly

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male-skewed sex ratio, males tend to adopt a relationship strategy that focuses on having long-term committed relationships (Moss & Maner, 2016). This is presumably because in a male-skewed environment, there is more competition between males, giving females more bargaining power in relationships, being the scarcer sex. Hence, males shift toward female relationship style preferences, which are on average more commitment-oriented. Note that men may be more likely to take risks to effectively compete with other men for mates (Griskevicius et al., 2012) but once in a relationship become oriented toward a long-term commitment. The opposite occurs for women in a female-skewed environment (i.e., women shift toward short-term sexual relationships).

In addition to representing a chronic situational influence, ecologies may also provide a situational baseline from which significant deviations are most likely perceived by individuals within the ecology, and which presumably would then influence behavior. The United States in general has a relatively balanced sex ratio (97 males for every 100 females; Central Intelligence Agency, 2013). Given this, one might expect that any situational skew of the sex ratio, be it toward males or females, would stand out to perceivers in the situation given the deviation from the norm. On the other hand, certain societies have a much more skewed sex ratio. In Kuwait, for instance, there are 143 males for every 100 females. In such an ecology, it may be the case that a *balanced* sex ratio would be an atypical situation that may alter perceivers' behavior. Hence, one direct way of thinking about ecologies is that they are chronic situations. But ecological thinking might also lend insights into the situational cues that individuals in any given ecology would pay attention to. To the extent that ecologies represent chronic situations, and individuals are sensitive to changes from what they are used to, one might expect that people will vary in what they pay attention to depending on the ecologies they are used to.

Situations and Multiple Adaptive Problems

Some adaptive problems may be especially likely to covary. For example, because sexual behavior typically includes (or would have in ancestral environments) close contact with another person, and moreover because some diseases are sexually transmitted, it is likely that those situations that afford sex often afford disease transmission as well (see Tybur, Lieberman, Kurzban, & DeScioli, 2013). Likewise, general affiliation with others and caring for kin can increase exposure to potential pathogens (e.g., Sacco et al., 2014). The presence of these situational affordances may require that people make tradeoffs between which adaptive problem is most relevant to them now, which one requires their attention and which may be risked.

Prevalence versus Potency

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Some kinds of situations may be quite uncommon (at least for those residing in certain areas of the world, such as western, educated, industrialized, rich, and democratic [WEIRD] places; Henrich, Heine, & Norenzayan, 2010), but pose very steep potential costs or benefits to reproductive fitness. For example, in one study, on four occasions undergraduate participants reported on the situation they had been in the previous day at one of four times. A template-matching technique revealed that this sampling included few situations that related to problems of self-protection or avoiding disease (Morse et al., 2015). Yet despite their rarity for these participants, situations that would endanger physical safety or health would have clear fitness implications. An evolutionary perspective thus suggests a useful distinction between how prevalent, common, or “everyday” a situation is—that is, how often a typical person will experience a situation—and the potency of a situation. We can define the potency of a situation as the likelihood that it would have incurred a major cost or benefit to reproductive fitness in ancestral environments.

Note that many major life events may be low prevalence for many populations but are nonetheless highly consequential for reproductive fitness (e.g., a relative dying, experiencing intergroup war, becoming gravely ill, having a child, etc.). In addition, some situations may be particularly psychologically potent even if, in current environments, there are no longer major fitness costs or benefits tied to the situation. For example, for those who have access to modern methods of birth control, sex is much less likely to lead to reproduction, and so sex has a less reliable connection to actual reproductive fitness than it did in the ancestral past. Yet we would still expect sex-related situations to be psychologically potent, as modern birth control does not change the fitness implications of sex that our ancestors faced, and it was these (often significant) fitness implications that shaped the architecture of the human mind. Future work may productively adopt this evolutionary analysis to derive predictions about what kinds of situations will be highly potent. In addition, efforts to develop situation taxonomies may explicitly seek to include potent situations—especially those that may be rare—as doing so can provide a useful supplement to methods that focus on everyday situations.

Situation Taxonomies

Researchers have noted that our understanding of the basic dimensions of situations has lagged behind our understanding of basic dimensions of personality, and they have called for more work in this area (Hogan, 2009; Rauthmann, Sherman, & Funder, 2015; Reis, 2008). Numerous schemes have recently been proposed to taxonomize the recurrent adaptive problems that shaped human motivation and behavior (e.g., Aunger & Curtis, 2013; Bernard, Mills, Swenson, & Walsh, 2005; Buss, 2009a; Figueredo et al. 2010; MacDonald, 1995). One of these, the Fundamental Motives Framework (Kenrick, Giskevicius, Neuberg, & Schaller, 2010; Neel, Kenrick, White, & Neuberg, 2016; Schaller, Kenrick, Neel, & Neuberg, 2017), builds from the observation that humans

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strongly depend on one other for the satisfaction of goals related to survival and reproduction, yet sociality brings potentially steep costs. This framework proposes that social motivations function to address these recurrent problems of social life: self-protection from physical danger, disease avoidance, affiliation, status, mate seeking, mate retention, and kin care. Solving each of these adaptive problems requires sensitivity to somewhat distinct sets of situational cues that indicate particular situation characteristics (e.g., of who is diseased, whether one is being rejected, whether there are opportunities to attain status, whether one's kin are in danger, etc.) and the deployment of distinct suites of behavior that function to manage these adaptive problems.

The fundamental motives framework can provide a theory-driven approach to understanding and measuring the goal content of situations. Early work from this approach focused on manipulating particular aspects of the situation that would be linked to particular fundamental motives, such as darkness (Schaller, Park, & Mueller, 2003) or the presence of attractive members of the opposite sex (Maner et al., 2003), or by using film clips or guided visualizations that immerse the participant in a motive-relevant situation (e.g., being alone in the house while someone is breaking in; imagining a romantic encounter on a beach; e.g., Maner et al., 2005) and then measuring subsequent social judgment and behavior. More recent work has explored the Fundamental Motives Framework as an approach to taxonomizing and measuring social situations. Researchers have developed a short measure—Situation Affordances for Adaptive Problems (SAAP)—to assess the situational characteristics that would promote (or prevent) the achievement of these fundamental motives (Brown et al., 2015; Rauthmann, 2016). For example, a situation where an individual is on a romantic date with a significant other may tap into opportunities to keep a romantic partner satisfied with the relationship or to demonstrate to the partner his or her commitment to the relationship. Another instrument, the Riverside Situational Q-sort (RSQ; Wagerman & Funder, 2009; Sherman et al., 2010), can be deployed to examine the extent to which fundamental motives are present in situations—even for datasets that were not specifically designed to examine this question. For example, work has used the RSQ to create situational templates that reflect each of the fundamental motives (Morse et al., 2015). This strategy allows for the measurement of the extent to which different fundamental motives are relevant to any particular situation, and testing what kinds of combinations of behavior people engage in when in these situations.

Some other situation models have adopted an evolutionary approach, yet defined the important aspects of situations differently. For example, Balliet, Tybur, and van Lange (2016)'s Functional Interdependence Theory builds from earlier models of interdependence (Kelley & Thibaut, 1978), which proposed that people evaluate the interpersonal aspects of social situations along four functionally relevant dimensions that describe one's relationship to another person: Interdependence, Correspondence, Coordination, and Power. Balliet and colleagues unite this idea with the evolutionary psychology concept of *internal regulatory variables* (e.g., Tooby & Cosmides, 2008), which

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integrate relevant inputs to assess and represent an aspect of a situation in a person's mind. Here, internal regulatory variables assess each of the four interdependence dimensions, which combine to constitute the assessment of the social aspects of a situation and subsequently guide behavior.

An intriguing question is whether it would be fruitful to integrate Functional Interdependence Theory with the Fundamental Motives Framework, or whether they are essentially independent approaches to distinct aspects of situations (i.e., social relations and motivationally relevant adaptive problems, respectively). One could ask, what are the levels of internal regulatory variables for different fundamental motive situations? Or perhaps the better question is: Would people perceive or respond differently to adaptively relevant situations (e.g., avoiding catching someone's illness, maintaining status in the face of threat from subordinates, protecting one's kin from harm, pursuing a desirable mate), depending on the extent of interdependence, correspondence, coordination, and power assessed in the relationship in question? Future work may profitably consider the extent to which these differing evolutionary approaches to situations may enrich each other.

Individual Differences: What Does a Situation Afford Me?

Because evolutionary perspectives focus on general psychological architecture all typically developing humans are endowed with, it is sometimes assumed that evolutionary perspectives can only point to human universals and leave no room for variability. In fact, evolutionary perspectives offer numerous approaches to understanding human variability (e.g., Buss, 2009b; Denissen & Penke, 2008; DeYoung, 2015; Figueredo, et al., 2010; Neel et al., 2016; Nettle, 2007; Simpson & Gangestad, 1992). Germane to the current discussion of situations, we would expect certain aspects of individual differences to guide how people respond differently to certain situations, to the extent that either (a) the adaptive problems present in a particular situation differ across people, or (b) the strategies people use to manage a particular adaptive problem depend on individual differences. Take, for example, a particular child crying from hunger. For that child's parent, this situation poses the problem of successfully provisioning kin, but for the child's sibling, the situation can pose the problem of diversion of resources. Furthermore, the strategies the sibling uses to solve this problem may depend on individual differences—if the sibling is physically stronger than the crying child, they may simply steal that child's food, whereas if the sibling is physically weaker than the crying child, they may resort to their own entreaties for food, attempting their own louder and more plaintive cries.

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Evolutionary perspectives identify certain individual differences as particularly relevant to the pursuit of adaptive problems. In this section, we focus on life history strategy and sex. We illustrate how these individual differences guide the recurrent adaptive problems most relevant to a person, and thus are likely to guide situation construal, evocation, manipulation, and selection.

Life History Strategy

Life history theory is a biological framework that describes organisms' development as navigating a sequence of reproductive tradeoffs (Del Giudice, Gangestad, & Kaplan, 2015; Stearns, 1992). Organisms must grow before they can reproduce, and they must reproduce before they can care for offspring. This suggests, for those species whose offspring require care, three somewhat distinct life stages organisms move through: growing, mating, and parenting. Although compared to many other animals, humans move through this process very slowly—e.g., spending many years on growth before reaching reproductive age—there nonetheless are individual differences between humans in the speed of their movement through these life history stages. For those who grow up in stable and resource-rich environments, where mortality is low and it is a relatively good bet that a person will live well into adulthood, delaying reproduction to invest in continued growth is a safe bet. In contrast, for those who grow up in harsh and unpredictable environments, where resources are uncertain and death or injury common, waiting to reproduce may be a costly bet, as you may die before getting to reproduce. Indeed, existing work finds that people who grow up in harsh and unpredictable environments tend to exhibit faster reproductive behaviors (referred to as a “fast” life history strategy), which is characterized by traits such as earlier puberty, earlier age of first birth, impulsivity, risk-taking, sexual promiscuity, and having more children (Brumbach, Figueredo, & Ellis, 2009; Del Giudice et al., 2015; Ellis, 2004; Figueredo et al., 2005; Simpson et al., 2012).

Variability in life history strategy corresponds to different behavioral tendencies that are likely to be adaptive in different contexts (Sherman, Figueredo, & Funder, 2013). Life history strategy also guides how people respond to particular kinds of situations. For example, when confronted with information that there is increasing unpredictable mortality (e.g., from lethal violence) in the environment, people who grew up in low-socioeconomic status (SES) environments respond with a desire for earlier marriage and reproduction, whereas people who grew up in high-SES environments seek to delay reproduction (Griskevicius, Delton, Robertson & Tybur, 2011). Further work has found that these differences may be driven by differences in perceptions of control; individuals from lower (relative to higher) childhood SES backgrounds react to environmental uncertainty with a lowered personal sense of control (Mittal & Griskevicius, 2014).

Sex

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Many—perhaps most—adaptive problems encountered by males and females are the same. From a biological perspective, all humans faces the same problems of avoiding illness and injury, finding a mate and reproducing, and so forth. Many of the strategies men and women use to manage those problems may be the same, too. However, there is likely to be some variability in the strategies men and women use to manage certain adaptive problems, and men and women may encounter particular adaptive problems with different frequency. Much evolutionary work on sex differences draws from the observation of differences in minimal obligate parental investment (e.g., Buss & Schmitt, 1993; Trivers, 1972). That is, heterosexual sex that leads to offspring requires a woman to physically invest, at minimum, the time and energy it takes for the offspring to grow during pregnancy, and if the offspring is to survive after pregnancy, the time and energy required for breastfeeding. This constitutes a heavy minimal investment by the woman. Although human men very often also invest heavily in offspring, their *minimal* obligate investment is much less than women: After sex, they are no longer physically obliged to provide for their offspring in the way a woman is.

This asymmetry suggests that men and women will often perceive the same situation cues as indicating different situation characteristics, either because the situation poses different adaptive problems to men and women or because the situation affords different strategies to men and women for solving those adaptive problems. For example, it has been suggested that both men and women fear outgroup men, but for different reasons. For men, the predominant recurrent adaptive problem outgroup men have posed is that of intergroup warfare and resource competition, whereas for women the predominant recurrent adaptive problem was that of sexual coercion (Navarrete, McDonald, Molina, & Sidanius, 2010). Thus, men and women will sometimes interpret the same situation cues as posing different adaptive problems.

Evolutionary Analysis of Additional Aspects of Situations

Strong and Weak Situations

Some situations may produce strongly consistent effects, regardless of the personality or individual characteristics of the person experiencing the situation (e.g., Mischel, 1977; Monson, Hesley, & Chernick, 1982; Cooper & Withey, 2009). For example, McDonald and Donnellan (2012) found that regardless of their agreeableness, self-esteem, or other personality variables, those who experienced ostracism in a cyberball game reported worse need satisfaction than those who had not been excluded—and the effect of ostracism was not moderated by personality variables. They argue that ostracism may thus constitute a strong situation. But why should ostracism or any other situation exert

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such consistent effects across individuals, regardless of how they vary? And which situations are especially likely to be strong?

Considering the adaptive problems of situations may help to clarify and predict which situations will be especially strong. As noted, the same objective situation (i.e., situation cues) may pose different threats and opportunities (i.e., situation characteristics) to different people. A strong situation, then, is likely to be coded as posing one predominant adaptive problem that is the same adaptive problem for everyone. We would thus expect that there will be strong consensus about the situation's characteristics (see Cooper & Withey, 2009). Second, potential costs of not successfully dealing with the adaptive problem posed in the situation are universally and unambiguously judged to be high—that is, it is considered to be a *potent* situation. Third, because different people may perceive different behavioral affordances in a situation, a narrow band of behavioral responses may be available or appropriate for successfully addressing the adaptive problem.

Ostracism may fit these requirements (see Williams, 2007, for an overview): For humans, group inclusion is the gateway to having many of one's needs filled and to effectively managing a variety of adaptive problems, from securing food to caring for kin. Because it is tightly connected to a variety of adaptive problems, ostracism is likely to be consensually seen as a potent situation, and one that affords a relatively narrow set of behavioral responses (e.g., ingratiation and other efforts at social connection; Maner, DeWall, Baumeister, & Schaller, 2007).

Relatedly, situations in which cherished or strongly moralized norms constrain behavior may contribute to strong situations because violating these norms is seen as unforgivable or grounds for possible exclusion from the group. It is worth noting that many of these norms may themselves emerge not randomly, but to facilitate group management of adaptive problems, such as cooperatively managing threats (e.g., Gelfand, 2012; Gelfand, et al., 2011).

Other contenders for strong situations include the death of close kin or one's child, encountering someone with obvious and extreme cues of pathogen risk (e.g., someone with an open and gushing wound), or being physically attacked; each of these has clear, strong, negative fitness implications. In addition, following the logic outlined earlier, the likelihood of each of these being a strong situation increases to the extent that features of the situation strongly constrain available behavioral responses (e.g., you are backed in to a corner while being physically attacked) or that a specific behavioral reaction is required for navigating the situation. Conversely, weak situations may be those in which multiple adaptive problems are present; different individuals may perceive different adaptive problems; the potential costs of not effectively dealing with the adaptive problem are low or variable across people; a broad array of possible reactions and behaviors could effectively address the adaptive problem; or simply, no potent adaptive problems are present (e.g., sitting alone in one's bedroom; Hough and Schneider, 1996).

Phylogenies of Situations

Typically, evolutionary psychological scientists use analyses that focus on the mechanisms that produce functional behavior, given recurrent adaptive problems our ancestors likely faced. A complementary perspective is to consider the ordering in which different adaptive problems arose for a particular species—that is, to adopt a *phylogenetic* level of analysis. Certainly, there are potential pitfalls to this approach, as there are many details we do not know about our species' evolutionary history. However, there are some sequences of events of which we can be relatively certain (e.g., sexual reproduction, and the attendant problem of finding a mate, arose before humans lived in large, interdependent groups).

Nesse and Ellsworth (2009) present a phylogenetic approach to understanding emotions that may be usefully applied to the study of situations (and in fact, is closely tied to an understanding of situational affordances; see also Nesse, 2004). For example, they propose that our very distant ancestors' emotional responses constituted generic arousal in response to situations that posed threats and opportunities. Evolution built from there to produce more specific forms of emotions in response to the more specific adaptive problems humans encountered as they became more interdependent (see also Lench, Bench, Darbor, & Moore, 2015). A phylogenetic diagramming of social situations could outline the likely sequence in which different adaptive problems arose for humans (e.g., mate retention only became an adaptive problem when human ancestors moved toward pairbonding; Eastwick, 2009), and provide insights on, for example, which situational cues are likely to overlap for which kinds of adaptive problems.

Implications for Assessment

With the recent use of evolutionary theories, such as the Fundamental Motives Framework, in situation research (e.g., Brown et al., 2015; Morse et al., 2015), measurement tools such as the Situational Affordances for Adaptive Problems (SAAP; Brown et al., 2015) are being introduced for empirical study. Situations can now be assessed under tightly controlled circumstances in the laboratory or as they naturally occur in individuals' lives. In what follows, we describe potential ways these situations could be assessed and the kinds of research questions that could be explored.

Experimental Studies

Experiments allow for testing of hypothesized cause-and-effect relationships. A number of experimental studies could examine questions about the psychology of situations from an evolutionary perspective. For example, is there consensus in the situational characteristics that activate the fundamental motives in situations? Prior research has

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found that people can largely agree on the psychological properties of situations (Rauthmann & Sherman, in press; Serfass & Sherman, 2013; Sherman, Nave, & Funder, 2013). Serfass and Sherman (2013) conducted an experiment where participants described the psychological properties of Thematic Apperception Test (TAT) cards. Their results demonstrated that on average, people agree on what situations are like. Similar experiments could be designed such that all participants are exposed to the same situation cue (e.g., a skewed sex ratio, someone showing visible symptoms of disease). To what extent is there consensus about the situations these cues indicate?

Studies have also demonstrated that individuals perceive situations uniquely—“situation construal”—and that construal is related to individual differences such as personality traits and gender (Serfass & Sherman, 2013; Sherman et al., 2013). Thus, although everyone in the same situation might agree that a situation does indeed afford opportunities to avoid disease, others might not perceive these cues to indicate a threat to their health (and ergo, reproductive fitness). There are many real-world examples of individuals who have (wrongly) misperceived their situation, leading to deadly consequences (e.g., inferring psychological characteristics related to self-protection). Laboratory studies could explore whether subtle shifts in situational cues are related to differences in situation construal.

Observational Studies

Outside the laboratory, there are several innovative methods for studying evolutionarily relevant situations. These methods allow researchers to assess situations in vivo as individuals live their lives moment-to-moment. For example, experience sampling can be used to address questions such as: How are momentary shifts in situational affordances (e.g., disease avoidance, kin care) related to changes in behavior? Is there between- and within-person variability in the experience of these affordances (e.g., Sherman, Rauthmann, Brown, Serfass, & Jones, 2015)? A promising new form of experience sampling—wearable cameras—can allow researchers to see individuals' situations and their physical environments (Brown, Blake, & Sherman, 2017). In a recent study, Brown and colleagues (2017) asked participants to wear a small wearable camera for a day that captured images every 30 seconds. Participants then segmented their images into situations and described the psychological characteristics of those respective situations. With the assistance of computer vision software, physical stimuli captured in these images can automatically be extracted and then correlated with the situational affordances rated by participants. This can afford new insights into the specific stimuli that will be associated, on average, with adaptive-problem-relevant situations.

Conclusion

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By focusing on ultimate forces that shape the proximate mechanisms guiding behavior, evolutionary perspectives have brought novel insights to many areas of psychology. The study of situations is no exception. In this chapter, we have aimed to highlight some of theoretical and empirical tools an evolutionary analysis provides. As the study of situations grows and expands, we see much promise in a continued integration with evolutionary perspectives.

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