Situation-Based Contingencies Underlying Trait-Content Manifestation in Behavior

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ABSTRACT   Two studies investigated whether situations are associated with the manifestation of Big Five trait contents in behavior. Several times per day for 2 or 5 weeks, participants reported their current Extraversion, Agreeableness, Conscientiousness, and Emotional Stability states and rated the concurrent situation on several characteristics. Multilevel models tested for the average individual's contingency of each Big Five state on each situation characteristic and for whether individuals differed from each other reliably in those contingencies. Results showed that (1) there are psychologically active characteristics of situations on which trait-manifesting behavior is contingent; (2) contingencies on psychologically active characteristics of varying situations are part of the explanation for the sizeable within-person variability in behavior; (3) individuals differ reliably in their contingencies, and such individual differences may partially explain individual differences in amount of variability; and (4) the situation characteristics that are psychologically active differ by trait. These findings suggest that within-person variability in personality states is meaningful and is related to situations, that personality psychology should characterize situations in terms of their relevance to personality states, and that process and individual-difference structure approaches can be integrated in personality psychology.

The density-distributions approach to personality describes traits in terms of individuals' accumulation of everyday personality states (Fleeson, 2001). Because individuals manifest different trait contents in their behavior at different moments, one way to characterize an individual's personality is by the distributions of the different trait

contents expressed or manifest in his or her behavior. There are at least four goals behind the density distribution approach to personality: (a) to cast personality in terms of behavior and its patterns, (b) to predict and explain the manifestation of traits in behavior, (c) to describe the dynamic aspects of traits as they interact with situations and emotions to produce changing behavior, and (d) to explore a possible integration between the process and individual-differences structure approaches to personality (Fleeson & Leicht, 2006; Funder, 2001; Mischel, 2004; Roberts & Pomerantz, 2004). The specific purpose of this article is to determine whether situations have a role in these distributions, that is, in whether moment-to-moment within-person variability in personality states can be meaningfully related to moment-to-moment variability in the psychologically active characteristics of situations.

A personality state is defined in this approach as a dimension with the same content and scale as a personality trait but that assesses how the person is at the moment rather than how he or she is in general (Cattell, Cattell, & Rhymer, 1947; Fridhandler, 1986; Nesselroade, 1988; Schutte, Malouff, Segrera, Wolf, & Rodgers, 2003). For example, the content of Extraversion is talkativeness, boldness, and assertiveness, and so forth. The more the person can be described by the trait content at the moment, the higher the level of the state. For example, a 5 on 7-point state Extraversion dimension means the individual is being moderately talkative, bold, and assertive at the moment.

This assessment of behavior focuses on the extent to which the trait content is present in the person at the moment and on using adjectives as descriptors. Trait content is meant here in the broad sense, including how the individual is acting, feeling, and thinking at the moment (PytlikZillig, Hemenover, & Dienstbier, 2002). It is what the individual is doing as a whole. Unlike in the act frequencies approach (Buss & Craik, 1983), this approach does not describe the specific, physical actions or movements the person is making, but it is still an assessment of how the person is behaving. For example, "warm" is an accurate description of a person at the moment if he or she is doing something pleasant for others, thinking nice thoughts about them, and/or feeling pleasantly toward them. However, "warm" does not specify what his or her specific actions were, such as whether he or she smiled, slapped someone on the back, or shared dessert. Rather, it assesses the meaning of the behavior,

avoiding the problem that superficially similar physical actions can have very different meanings depending on other factors (e.g., slapping someone on the back can be warm or it can be aggressive).

The relationship of dispositional individual differences in trait levels to states is an important and complex issue that is not being addressed in these studies. Instead, these studies are taking the trait assessment apparatus and applying it to the person at the moment, rather than to the person in general, to assess how much the content of the traits is present in the behavior and to predict variability in that content. It is acknowledged that using the same assessment methodology does not guarantee that the same thing is being assessed. Some components of trait content (e.g., fixed neurological structures) may not be present in states. This approach, however, attempts to discover whether the measurement apparatus is meaningful and fruitful when applied to the person at the moment.

The frequency with which an individual is at each level of a state over a period of time creates a density distribution, and this distribution is proposed as one way to characterize that individual on that trait. Initial work revealed three general findings regarding the nature of Big Five density distributions (Fleeson, 2001). The first finding was that the amount that the average individual varied in his or her behavior across 2 weeks was almost as much the total amount that behavior varied in the entire sample and about the same as the amount of variability between individuals. Second, although each individual varied considerably, each had a central point or tendency around which they varied. Split-half analyses revealed that individual differences in these central points remained stationary from week to week, with stability correlations around .80 to .90 (Epstein, 1979; Fleeson, 2001; Moskowitz, 1982). The third finding was that individuals differed not only in the central tendency of their distributions but also in the size of them (stability of amount of variability was over .50), supporting the view that degree of behavioral variability is a potentially important part of personality (Larsen, 1989; Nesselroade, 1988).

The three findings together in the same data became persuasive evidence that it is important to treat personality as having both variability in behavior (at the moment-to-moment, single-behavior level) and stability in behavior (at the week-to-week, parameter level). This means that the two aspects of personality can be pursued

independently and without rancor (Fleeson, 2001; 2004; Funder & Colvin, 1991; McAdams, 1995; Mischel & Shoda, 1998). The variability within a distribution can be studied in order to assess psychological functioning relevant to personality traits, and the stable parameters can be studied to address broad individual differences. This article is aimed at explaining the first and third findings: Why are individuals so variable, and why do they show stable differences in how variable they are?

Explaining Within-Person Variability in Personality: Psychologically Active Characteristics of Situations

The large variability in behavior means that most individuals switch from introverted to extraverted states from moment to moment, from rude to polite, from responsible to irresponsible, and so on. This variability may be the result of flexible and responsive discrimination among situations and of planful action, suggesting that an important aspect of personality may be how individuals react to context and how they carry out sequences of action. In these cases, personality units that capture such contingencies of behavior would be needed to explain the variability within a person in behavior (Brandstaetter & Eliasz, 2001; Cantor & Fleeson, 1994; McAdams, 1995; Shoda & LeeTiernan, 2002). Alternatively, within-person variability may be random or capricious, simply error to be averaged out rather than meaningful or revealing of psychological processes. Thus, it is important to identify whether this variability is explainable and whether such contextual personality units are needed.

Similarly, although the differences between individuals in amount of variability are stable, it is not known what such individual differences represent or how they arise. For example, it is not known why some individuals shift frequently and rapidly between introverted and extraverted states whereas others have less frequent and less rapid shifts. If individual differences in amount of variability are to be added as an important personality variable, their psychological meaning needs to be explained.

Fleeson and Jolley (2006), consistent with the Cognitive-Affective Personality System meta-theory (Mischel & Shoda, 1995), proposed that trait-manifesting behavior is caused by several sources, including the psychologically relevant features of situations, the goals an individual has active at the moment, time-based processes such as

inertia and cycles, and internal physiological or cognitive structures that support individuals' average or typical ways of acting. Behavior varies across occasions because some of the forces that cause it—situations, goals, and cycles—vary across occasions. Furthermore, differences between individuals' amounts of variability are explained not by an internal, top-down variable that makes people more or less variable in general but rather, in part, by the bottom-up accumulation of differential moment-to-moment forces. That is, individuals differ in their amounts of within-person variability because they differ in the strength or variability of the forces that cause within-person variability.

The present research tests whether, specifically, situations are predictors of variability in personality states. It is assumed that situations differ in how adaptive or functional different personality states are and that one reason for the large within-person variability in states may be that individuals adjust their behavior when the situation characteristics change in order to increase the adaptiveness of their behavior (Allport, 1937; Bandura, 2001; Cantor & Fleeson, 1994; Mischel, 2004; Snyder & Cantor, 1998). Additionally, the reason that some individuals are more variable in a state than are others may be that they adjust that state more strongly in reaction to those situation characteristics.

Psychologically active characteristics of situations are defined as the characteristics of situations that provoke a change in states (i.e., in the level to which given trait contents are manifest in an individual's behavior in that situation; Bem & Allen, 1974; Cervone, 2004; Frederiksen, 1972; Funder, 2001; Furr & Funder, 2004; Pervin, 1978; PytlikZillig, Dienstbier, Kim, & Boger, under review; Shoda & LeeTiernan, 2002; Snyder & Cantor, 1998; Ten Berge & De Raad, 1999; Vansteelandt & Van Mechelen, 2004). For example, the level of structure in a situation may be a psychologically active characteristic of situations for state Conscientiousness because structured situations may increase the level of state Conscientiousness that is manifest in behavior in those situations. This approach is in contrast to the usual classification of situations by their type, category, or physical surround, such as "lecture," "party," or "dorm" (Mischel & Shoda, 1998; Pervin, 1978). A dimensional approach analyzes situations into their psychologically relevant characteristics, treats situations as having degrees of a characteristic, allows situations to have multiple characteristics at once, studies characteristics

independently, and produces situation-state contingencies with co-efficients that have direction and graded magnitude.

A *contingency* is defined as a systematic relationship between a given state and a given situation characteristic. In the above exam-ple, there is a contingency of the Conscientiousness state on the level of structure in the situation. Note that these contingencies do not refer to the traits or to individual differences in the traits. Rather, they refer to changes in the state, that is, to changes in the extent to which the trait's affective, behavioral, and cognitive content de-scribes the way the individual is being at the moment. For example, the question is whether structured situations increase the extent to which individuals can be described as conscientious (responsible, hardworking, and thorough) while they are in the situation, and the question is not about how individual differences in Conscientious-ness are revealed in structured situations. Rather, previous studies' findings that states are highly variable within each person (Fleeson, 2001) have led to the question as to what predicts that variability, for example, why is the same person responsible one hour and irrespon-sible the next? The present studies investigate whether and which situation characteristics might be responsible, in order to investigate whether within-person variability in states is meaningful as opposed to capricious or error.

Different states are likely to have different sets of psychologically active characteristics that provoke them, because different states may be adaptive in different situations. However, this study is ex-ploratory when it comes to the specific situation characteristics that are hypothesized to be active for each trait because the goal of this study is to test the broader, more abstract hypotheses that states are contingent on situations and that traits and individuals differ in their contingencies. In fact, given that traits are often described in fixed, biological terms and because the long-standing divide between pro-cess and structure approaches has resulted in very little knowledge about how situations might be relevant to traits, these studies at-tempted to cast a wide net of situation characteristics to maximize the chances of capturing at least some situation characteristics.

The exploratory strategy for selecting situation characteristics was to identify situations that seemed to differ in the kind of behavior that is evident in them and then to speculate what characteristics in those situations was responsible for the behavioral differences. For example, parties seem to produce more extraverted behavior than do

lectures, and I speculated that lack of structure, the friendliness of others, and the degree of interaction might be the active characteristics behind this. This process was completed for three traits: Extraversion, Agreeableness, and Conscientiousness. Conscientiousness provided a noninterpersonal contrast to the other two traits, and Agreeableness and Extraversion provided interpersonal contrasts to each other to investigate whether even two similar interpersonal traits have different contingencies.

Individual Differences in Contingencies

Contingencies describe covariances that occur within one individual and are discovered by comparing how the individual acts in some situations to how he or she acts in other situations (not comparing to other individuals). This is an inherently within-person and individual-centered approach. On the one hand, this approach will test for and reveal "main effect" contingencies—contingencies that are true for the average or typical individual. The first question of this study is whether within-person variability in Big Five states is meaningful and systematically related to situation characteristics in such a main-effect manner.

On the other hand, individuals may differ in their contingencies because contingencies may be based on the perceived adaptiveness of given states in given situations. For example, some individuals may not reduce their Extraversion with the unfamiliarity of others because those individuals may perceive Extraversion to be adaptive in getting to know others. The current studies will test whether the contingencies differ significantly and reliably across individuals. Such reliable differences are akin to interactions between individuals and situation characteristics and reveal emergent individual differences. That is, such interactions would not reveal external individual differences in traits or other variables but rather would represent newly discovered individual differences in themselves. They would mean that individuals differ in not only how often they manifest the states but also the conditions under which they manifest the states (Bowers, 1973; Endler & Parker, 1992; Fleeson, 2007; McAdams, 1995; Mischel & Shoda, 1998). One purpose of the present studies was to discover whether it was possible to identify situation characteristics that not only revealed contingencies for Big Five states but also revealed individual differences in contingencies.

Such a finding might encourage future work toward explaining and predicting such individual differences.

In addition, individual differences in contingencies may be part of the explanation for the observed individual differences in the amount of within-person variability. That is, individuals who change their behavior more strongly when situation characteristics change may be the ones who end up more variable on that state. Such a finding would both explain part of the psychological meaning of individual differences in within-person variability and would also support the meaningfulness of within-person variability in personality states.

STUDY 1

Method

Participants

Twenty-nine students participated in the experiment in partial fulfillment of the requirements for an introductory psychology course. Three participants provided fewer than 20 valid reports and so were excluded from all analyses.

Procedure

Four times per day for 14 days, participants described how they were acting and what the situation had been like during the previous half hour. These reports were completed on a regular schedule, every 4 hours (10 am, 2 pm, 6 pm, 10 pm, and 2 am) and took about 1 to 2 minutes to complete. To allow for irregular student schedules, participants were told to complete either the earliest four times (if they woke up early enough) or the latest four times.

Reports were completed on Palm Pilots, hand-held computers about the size of a calculator. Each question appeared on a small screen, and participants responded by tapping a number with a plastic stylus. To encourage timely completion, participants uploaded their data every 2 days, and those who missed an upload were contacted.

The first report occurred during a 45-minute introductory session in which the procedure was explained. The unique nature of this study, that it investigated a complete picture of 2 weeks of each individual's life, was stressed, as well as that it was important that they complete as many as reports as honestly as possible. At the end of the introductory session, participants were invited to withdraw for partial credit if they felt the

study would be too intrusive. Participants also completed several questionnaires during this introductory session and others at the end of the experience-sampling phase.

The response rate was within normal range for experience-sampling studies. For the included 26 subjects, the mean number of reports was 46.2 of 56 possible (82%), with a range of 29 to 56 reports. Participants had been instructed to miss a report if it would be a major inconvenience to complete (e.g., driving, during an exam, while sleeping). Participants were also told they could complete a report up to 4 hours later than the scheduled time but to describe the scheduled hour nonetheless. Reports were excluded that contained six or more missing values, were completed at least 1 hour earlier or 4 hours later than the scheduled time, or were beyond the four allowed per day. Because time of completion was recorded surreptitiously, this guaranteed that all reports were completed close in time to the described behavior. In total, 232 of the 1,201 reports were excluded for one of these reasons, leaving an average of more than 37 reports per participant (66% of possible).

Materials

Personality states.   Personality states were assessed with the same format as traditional, adjective-based, Big Five scales with the exception that, rather than describing themselves in general, participants described their behavior and emotion during the previous half hour (e.g., "During the last half hour, how hardworking have you been?). The Numbers 1 through 7 were listed across the bottom of the screen, and participants responded by tapping a number on the electronic number pad. Participants could also tap the Number 9 if the item was irrelevant to what they were doing. The Big Five are appropriately assessable with a large variety of adjectives (Goldberg, 1992); for this study, adjectives were chosen that loaded on the correct factor in Goldberg (1992), were reliable in previous work, were distinct from each other, were easy to use to describe behavior, and had a minimal social desirability component. In order to reduce participant fatigue, the number of items was kept small; in this study the desire was to not go beyond 25 items per report. Thus, only the traits of Extraversion, Agreeableness, and Conscientiousness could be assessed, with three items each (Extraversion: quiet (reversed), bold, energetic; Agreeableness: polite, warm, unsympathetic (reversed); Conscientiousness: disorganized (reversed), hardworking, responsible.

Situation characteristics.   Participants also rated the situation on 11 potentially important characteristics, with these items in the following order (exact wording): "During the last half hour, how many other people

were present?''; ''During the last half hour, how much did you interact with others?'' ''Was what you were doing chosen by you or more imposed on you? (1 = *chosen* to 7 = *imposed*)''; ''How well do you know the others that were around?''1 2 3 4 5 6 7; ''How much do you like the others that were around? (from 1 to 7, 4 = *neutral*)''; ''How friendly were other people? (from 1 = *very unfriendly* to 4 = *neither* to 7 = *very friendly*)''; ''What is the relative social status of others around you? (from 1 = *less status than you* to 4 = *same* to 7 = *more than you*)''; ''How structured was the situation around you? (from 1 = *no structure at all* to 7 = *highly structured*)''; ''Was the last half hour free time or fulfilling an obligation? (from 1 = *pure free time* to 7 = *purely obligation*)''; ''How soon is the deadline for what you were doing? (from 1 = *very distant* to 7 = *very near*)''; ''How interesting was what you were doing?''1 2 3 4 5 6 7 In all cases, participants responded by tapping a number on the electronic number pad; participants could respond 9 if the item was irrelevant. Number of others present was recoded as 0, 1, 3 to 10, or 11 or more.

In addition, four items concerned affect, and one item indicated the time of day. Thus, each report described one participant's behavior as described by three state dimensions and the situation characterized by 11 dimensions; put together, a participant's 23 to 52 reports describe the ebb and flow of his or her behavior as he or she traversed a variety of situations.

Reliability.   Cronbach's alphas for the three states were calculated twice, once to obtain reliability estimates across occasions by ipsatizing (subtracting each participant's mean on an adjective from each of his or her ratings of that adjective) and once to obtain reliability estimates across persons by aggregating means of each adjective. In both cases, alphas were reasonable for three-item scales: Extraversion, .69 (ipsatized), .54 (aggregated); Agreeableness, .58 (ipsatized), .75 (aggregated); Conscientiousness, .68 (ipsatized), .76 (aggregated). Except for the .60 correlation between aggregated mean levels of Agreeableness and aggregated mean levels of Conscientiousness, the three states appear to have low levels of dependence, with correlations of − .03, .07, and .20 among ipsatized occasion state levels and .07, .14, and .60 among aggregated state levels.

Results

Density Distributions of Personality States

The first set of results describes the amount of variability and stability in the three personality states within and between individuals. In addition to replicating and extending Fleeson (2001), these

Table 1
Density Distributions of State Extraversion, Agreeableness, and Conscientiousness

Distribution Parameter	Extraversion	Agreeableness	Conscientiousness
Average level	3.75	5.14	4.53
Variance between individuals	.14 (7%)	.30 (24%)	.23 (10%)
Variance within individuals	1.92 (93%)	.96 (76%)	2.03 (90%)
Stability of individual differences			
In average level	.58	.60	.68
In amount of variation	.60	.46	.60

Note. Results of three unconditional multilevel models, one for each state ($N = 26$ individuals, $N = 897$ to 969 occasions). The average level shows the typical participant's mean level of the state. Percentages indicate that the percents of total variance in states that occurred within participants were much greater than the percentage of total variation in states that occurred between participants. Nonetheless, the stability lines indicate that individual differences in average state level and in amount of variation in states were both stable from one week to the next.

analyses describe the variability that is to be explained in the later analyses. Unconditional models from multilevel modeling (MLM, also known as hierarchical linear modeling)[1] were used to account for estimation variation, in which state level was predicted from a grand mean, a deviation for the participant's mean, and a deviation specific to that occasion. The first three rows of Table 1 show the results for each state, depicting the average state for the average individual, the amount of variance between individuals in states, and the amount of variance within individuals in states. As can be seen, 76% to 93% of the variance in states occurred within individuals, and only 7% to 24% of the variance in states occurred between individuals. This means that the average individual regularly switches from Extraversion to Introversion, from Agreeableness to Disagreeableness, and from Conscientiousness to Negligence, in the course of a few days. This is a sizeable amount of variance within each individual and suggests that understanding the manifestation of trait content in behavior will require explaining this sizeable variability. The point of this article is to begin to explain why the same individual switches between states so often.

1. All analyses were conducted in SPSS, including MLM using the "mixed models" command.

This variability does not mean, however, that individuals don't differ stably from each other in their behavior. Rather, differences between individuals are evident in the parameters of each individual's distribution of states. Each participant's data were split into first and second half, and the mean (based on the estimated means from the unconditional models) and standard deviation were calculated for each trait for each half. The bottom two rows of Table 1 show stability correlations indicating the degree to which individual differences in average state level and in amount of variability were maintained across two independent sets of data. The stability correlations were lower than the .8 to .9 reported in Fleeson (2001) but were substantially higher than .3 to .4 and provide evidence that individuals have characteristic ways of acting.

Psychologically Active Characteristics of Situations

A factor analysis was conducted on the situation characteristics to reduce any potential redundancies. All situation characteristics were ipsatized (each individual's across-occasion mean on a characteristic was subtracted from the participant's ratings of that characteristic on each occasion) to eliminate between-person variance and to limit the factor analysis to within-person and across-occasion variance. A principal-components, oblimin-rotated factor analysis revealed three factors accounting for 58% of the variance. *Anonymity* of the situation (33% of the variance) had the highest loadings for the number of others present, how well the participant knew the others (reversed), how much the individual liked the others (reversed), and how structured the situation was. *Friendliness* of the situation (14%) had the highest loadings for how friendly the others were, how much the participant interacted with the others, and the others' status. *Task orientation* (12%) had highest loadings for obligation, imposition, deadline nearness, and the interest level of the situation (reversed). Scales were constructed by taking the mean of each of the ipsatized situation characteristics that had their highest loadings on the factor and then ipsatizing the resulting factors.

The standard deviations of the resulting factors across all occasions were 1.14, 1.31, and 1.45, respectively, indicating that participants experienced a wide variety of these situation characteristics during the course of their daily lives and that there was enough variability for investigating whether personality states varied in step
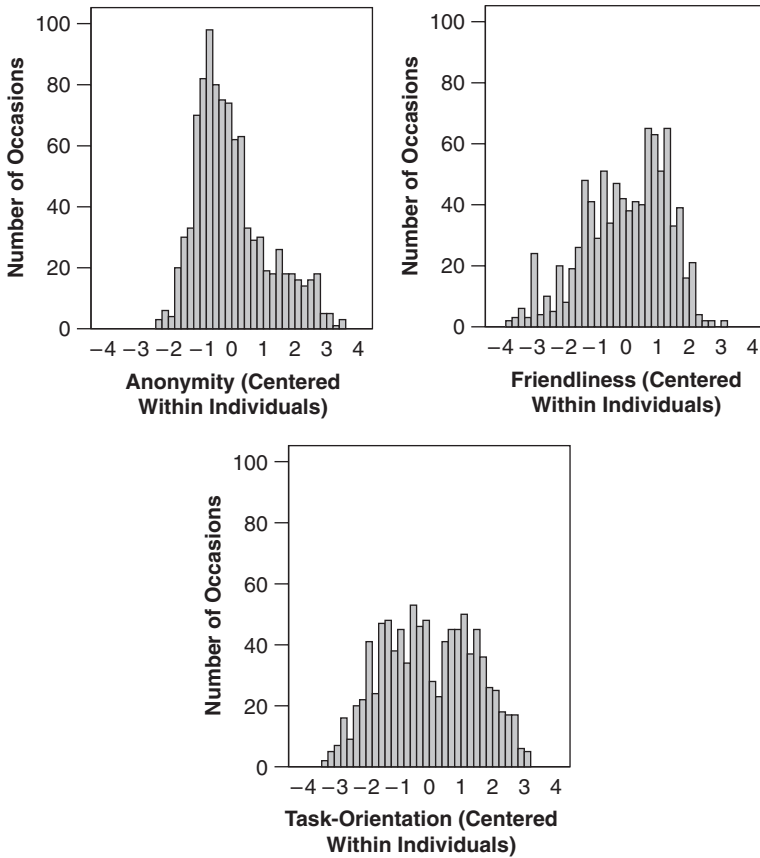
Figure 1

Histograms of situation factors, after centering within each individual. The amount of variability and relatively normal distributions show that situation characteristics varied within individuals and that there should be sufficient variability to correlate with personality state variability.

(see Figure 1). Their relatively normal distributions also justified the dimensional approach to situations, although anonymity was positively skewed, friendliness was negatively skewed, and task orientation was somewhat bimodal. Task orientation was positively related to anonymity ($r = .48$) and negatively related to friendliness ($r = -.32$). Anonymity and friendliness were almost unrelated ($r = -.06$).

Contingencies of Personality States on Situations

The following analyses were conducted with MLM. MLM not only addresses the questions of theoretical interest but is particularly useful in cases where each participant has multiple occasions of data and where those occasions are nested within participants. MLM is also suited for handling different numbers of occasions and missing occasions per participant. It is analogous to analyzing each participant individually and separately, getting a separate contingency for each participant, and then doing a meta-analysis on those results to find (a) the average or typical individual's contingency, and (b) the extent to which individuals differed in their contingencies.

Table 2 shows the results of three MLM analyses, each predicting one of the personality states from the three situation characteristics simultaneously. The situation characteristics and the intercept were each modeled as having both a fixed and a random component across individuals (after the situation characteristics were centered within individuals).[2] The "average contingency" column shows unstandardized betas, which can be interpreted just as are unstandardized betas from ordinary regression. They reveal the direction and magnitude of association between variation in the personality state and variation in the situation characteristics for the average or typical individual. The "*SD* of contingencies" columns show the amount that the contingencies differed across individuals and can be added plus or minus to the average betas to get a sense of the distribution of betas across individuals (these *SD*s are the square roots of the variance estimates for the contingencies).

Extraversion.   The average contingency of Extraversion on friendliness was $b = .67$, $p < .001$, meaning that friendliness of interaction partners was a characteristic of situations that were associated with changes in state Extraversion for the average or typical individual. This beta can be interpreted as a usual unstandardized beta from a regression. Specifically, for every one-point increase in interactant friendliness (holding anonymity and task orientation constant), state Extraversion (momentary talkativeness, energy, and boldness)

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2. Random components varied and covaried across individuals. This means that individuals were estimated as having different intercepts and contingencies and that relationships among these differences were estimated.

Table 2
Contingencies of Personality States on Psychologically Active Characteristics of Situations, Study 1

| | Personality State | | | | | |
| | Extraversion | | Agreeableness | | Conscientiousness | |
Situation Characteristic	Average Contingency	SD of Contingencies	Average Contingency	SD of Contingencies	Average Contingency	SD of Contingencies
Anonymity	$.09^{\dagger}$ (.05)	$.20^{*}$	.06 (.04)	.09	$.09^{\dagger}$ (.05)	.17
Task orientation	$-.08^{\dagger}$ (.04)	$.14^{\dagger}$	$-.10^{**}$ (.03)	.07	$.56^{***}$ (.04)	$.25^{*}$
Friendliness	$.67^{***}$ (.04)	$.13^{\dagger}$	$.13^{*}$ (.05)	$.20^{*}$	.03 (.04)	.13

Note. Contin. = Contingency. Results of three multilevel models in which a personality state was predicted from three situation characteristics simultaneously. For Extraversion and Conscientiousness, contingencies and the intercept varied and covaried across individuals; for Agreeableness, they varied but not did covary across individuals. The average contingency is the unstandardized beta predicting the personality state from the situation characteristic for the average individual. Standard errors on the contingencies are in parentheses. The "SD of contingencies" column shows the amount individuals differed in the contingencies, in the standard deviation metric; significant standard deviations mean that not only how often but also when an individual manifests a given personality state is a characteristic of personality. *N*s differed across the characteristics.
$^{***}p<.001.$ $^{**}p<.01.$ $^{*}p<.05.$ $^{\dagger}p<.10.$

increased .67 points (and as interactants became less friendly, the average individual's Extraversion dropped at the same rate). Anonymity and task orientation did not significantly predict changes in Extraversion state, although there was a trend that individuals became more extraverted in more anonymous and less task-oriented situations, in addition to becoming more extraverted in friendlier situations.

The significant standard deviation on this contingency of state Extraversion on anonymity, $SD = .20$, $p < .05$, means that individuals differed reliably in how their Extraversion varied with situation anonymity. Individuals one standard deviation below the mean had a negative contingency of $-.11$, meaning that their level of Extraversion (energy, talkativeness, and boldness) decreased as the situation became more anonymous, whereas individuals one standard deviation above the mean had a positive contingency of .29, such that these individuals became not less but more energetic, talkative, and bold as the situation became more anonymous. The significance of these differences across individuals means that individuals differed stably in this contingency, more than can be expected from the particular situations that happened to be sampled for these individuals. The standard deviations on the other two contingencies were not significant, although there was a trend toward significance. The lack of significance does not mean that individuals do not vary; it means that there was not sufficient evidence to be certain that the observed differences between individuals were due to more than sampling error.

Agreeableness.   State Agreeableness is the extent to which warm, polite, and sympathetic describe how the individual is at the moment. Because the analysis would not converge when contingencies were allowed to covary across individuals, they were allowed to vary but not covary across individuals when predicting Agreeableness states (i.e., the covariance structure was set to variance components). State Agreeableness was significantly contingent on two of the three situation-characteristic factors. Individuals were increasingly agreeable (warm, polite, and sympathetic) as the situation became friendlier, but decreasingly agreeable (more cold, rude, and unsympathetic) as the situation increased in task orientation. In addition, individuals differed significantly in their contingency of Agreeableness on friendliness. Because the standard deviation is .20, and

assuming a normal distribution of contingencies, about one-quarter of the population has a zero or negative relationship between how friendly others are and how agreeable they act. For example, individuals one standard deviation below the mean actually become more disagreeable (more cold, rude, and unsympathetic) the friendlier others are, yet become more agreeable (more warm, polite, and unsympathetic) the less friendly others are.

Conscientiousness. State Conscientiousness is the extent to which hardworking, organized, and responsible describe the individual's behavior at the moment. Conscientiousness had a very different pattern of contingencies from the other two traits; for Conscientiousness, task orientation of the situation had a very powerful and positive association to state Conscientiousness, whereas friendliness was not associated with state Conscientiousness. Furthermore, the contingency of state Conscientiousness on task orientation differed significantly across individuals. These differences were primarily in the magnitude of the association rather than in the direction. As shown in Figure 2, for those individuals one standard deviation above the mean, state Conscientiousness was almost entirely dependent on task orientation in the situation, whereas for those one standard deviation below the mean, state Conscientiousness was only somewhat higher in task-oriented than in freely chosen situations.

Summary. These results support the first four hypotheses. Supporting the first and second hypotheses of the study, there were indeed identifiable characteristics of situations that predicted variation in state Extraversion, Agreeableness, and Conscientiousness, and part of the reason that there was within-person variation in Big Five states was that there was variation in situations. Supporting Hypothesis 3 were the reliable individual differences in at least one contingency for each state. Supporting Hypothesis 4 was that different states were associated with different characteristics of situations. Together, these are the critical results for a process approach to personality. First, they demonstrate that within-person variability in trait-relevant behavior is not error or capricious but, rather, represents meaningful deviations from a typical way of acting, predictable from the situation. Second, they demonstrate substantial and reliable individual differences in when individuals act extraverted,
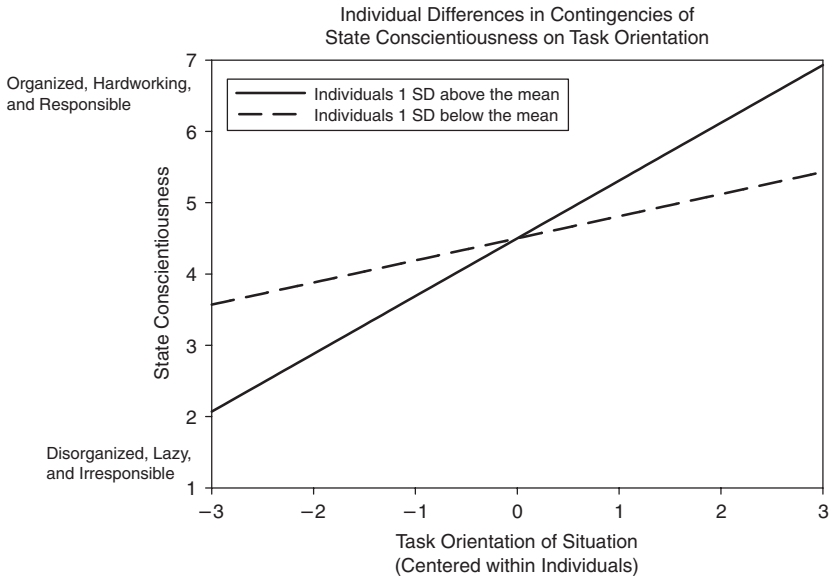
Individual Differences in Contingencies of
State Conscientiousness on Task Orientation

Figure 2

Predicted values of state Conscientiousness for individuals one stan-
dard deviation above and one standard below the mean contingen-
cy of state Conscientiousness on changes in the task orientation of the
situation. For those individuals one standard deviation above the
mean, being in the state of Conscientiousness was almost entirely
dependent on task orientation in the situation whereas those one
standard deviation below the mean were only somewhat more con-
scientious in task-oriented than in freely chosen situations.

agreeable, or conscientious, meaning that there are indeed individual
differences in contingent personality units to be identified by a pro-
cess approach.

*Individual Differences in Contingencies as an Explanation for
Individual Differences in Amount of Variability*

If situation-based contingencies are indeed what underlie at least
part of the large amount of within-person variability in personality
states, then individual differences in situation-state contingencies
might be what underlie at least part of the individual differences in
amount of variability. This is to be expected to some degree on
a mathematical basis, because variability is a precondition for

observing contingencies, but given the number of potential factors that may influence amount of variability, it is important to verify this expectation empirically. The following analyses predicted amount of variability from the individual's contingency.

Amount of variability in a state was operationalized by taking each individual's standard deviation for the state across all of his or her reports. Each individual's contingency was taken from the MLM analyses.[3] The hypothesis is that a greater magnitude of contingency will be associated with a greater amount of within-person variability. In cases where the average contingency is positive and large, there should be a positive linear relationship. In cases where the average contingency is close to zero, however, larger magnitudes could be both positive and negative. Thus, there may be a quadratic relationship between the contingency and variability. A quadratic term was created by squaring the contingency after centering it. Amount of variance in a given personality state was predicted once from the contingency alone (the linear prediction) and once with the contingency and the contingency squared (the quadratic prediction).

Table 3 shows the R^2-changes associated with each model. Individual differences in state Extraversion variability were not associated with contingencies of Extraversion on anonymity or task orientation, in neither a linear nor quadratic fashion. There was a trend such that individuals whose Extraversion state was more contingent on friendliness were more variable.

Variability in state Agreeableness was significantly related to contingencies of state Agreeableness on task orientation in a quadratic manner. This means that individuals with greater reactivity of Agreeableness to the level of task orientation in the situation, either negatively or positively, ended up being more variable in state Agreeableness. This relationship accounted for 30% of the variance in how variable individuals are in state Agreeableness. The contingency of Agreeableness on friendliness had a trend toward a similar quadratic prediction of amount of variability.

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3. Because SPSS does not save the estimated contingencies, the predicted values for the state based on the contingencies were saved from the MLM analysis, and a multiple regression for each individual predicting the saved predicted values from the three situation factors simultaneously provided the contingencies for these analyses.

Table 3
Percentages of Variance Explaining Individual Differences in Within-Person Variability From Individual Differences in Contingencies, Study 1

| | Personality State | | | | | |
| | Extraversion | | Agreeableness | | Conscientiousness | |
Contingency	Linear	Quadratic	Linear	Quadratic	Linear	Quadratic
Anonymity	.00	+.09	.02	+.08	.00	+.06
Task orientation	.08	+.07	.08	+.22*	.57***	+.01
Friendliness	.12†	+.00	.01	+.15†	.02	+.39**

Note. Table entries are R^2 changes. The linear column shows R^2 change comparing a linear model to a null model; the quadratic column shows R^2 change accounted for by adding the quadratic term. A significant positive quadratic term R^2 change or a significant linear R^2 change means that the greater the magnitude of the contingency, the more variable the individual is in that personality state. Adding the R^2 change for the quadratic term to the R^2 change for the linear term produces the total R^2 explained by quadratic equation. The coefficients for all significant quadratic terms were positive.
***$p < .001$. **$p < .01$. *$p < .05$. †$p < .10$.

Two contingencies of state Conscientiousness were significantly related to within-person variability in state Conscientiousness. Individuals whose state Conscientiousness was more strongly contingent on the degree of task orientation in the situation ended up more variable in their levels of state Conscientiousness; this relationship accounted for 57% of the variance in within-person variability amounts. Within-person variability in state Conscientiousness was also significantly related to contingencies of Conscientiousness on friendliness (41% of the variance). This means that individuals who either became more conscientious in friendly situations or became less conscientious is friendly situations were much more variable in state Conscientiousness than individuals who did not vary their Conscientiousness as a function of situation friendliness.

This hypothesis received partial support. Individual differences in within-person variability were strongly predicted by individual differences in corresponding contingencies in three of nine cases and had a trend toward significance in two more. Because there were only 26 participants in Study 1, the other cases may not have reached

significance due to lower power. In sum, reliable individual differences in amount of within-person variability may emerge partially from accumulated and reliable individual differences in reactions to momentary situations.

STUDY 2: RELIABILITY AND PRECISION OF THE CONTINGENCY ESTIMATES

Study 1 revealed strong support for four hypotheses and partial support for the fifth. Contingencies were present for all three traits and differed across individuals. Study 2 was designed to test the reliability and precision of the estimates of the contingencies and of the individual differences in them. First, Study 2 replicated most of Study 1's design. Second, Study 2 increased the number of participants to 47, and also increased the number of reports per participant to close to the maximum possible, by having participants participate in the study for 5 weeks each, five times per day. This is especially important because the lack of a significant variance of contingencies across individuals does not mean that individuals did not vary, only that the differences were not detected; much greater power may help detect any existing differences. Third, Study 2 extended the generalizability of the findings by replacing Agreeableness with a fourth trait, emotional stability, and by testing additional situation characteristics.

Method

The method was the same as in Study 1 except where noted below.

Participants

Forty-seven students participated in the experiment in partial fulfillment of the requirements for an introductory psychology course. Because the study was 5 weeks long, only participants who had scored higher than 5.8 (out of 7) on a previous mass testing of Conscientiousness were allowed to participate.

Procedure

Participants completed reports for 5 weeks, five times per day, generating a large amount of data per individual. In each report, participants described how they were acting and what the situation was like during the

previous half hour. These reports were completed on Palm Pilots, every 3 hours (11 am, 2 pm, 5 pm, 8 pm, and 11 pm). To encourage timely completion, participants uploaded their data every 2 days, and those who missed an upload were contacted (except when they were out of town for Thanksgiving).

Perhaps due to the longer duration and the included holiday, the response rate was not as high as in Study 1, but it was still reasonable. The mean number of reports was 120 of 175 possible (69%), with a range of 62 to 174 reports. Strict criteria were again used for including a report in the analyses. Reports were excluded that contained 17 or more missing values, were completed at least 1 hour earlier or 3 hours later than the scheduled time, or were beyond the five allowed per day. Of the 5,688 reports 1,163 were excluded for one of these reasons. Thus, this study amassed a substantial amount of data, 4,493 total reports or an average of about 96 reports per participant (55% of possible), providing intensive studies of individuals' state patterns in everyday life. These data should provide relatively efficient estimates of participants' contingencies.

Materials

Emotional stability replaced Agreeableness in this study and was assessed with three adjectives: *self-confident*, *sensitive* (reversed), and *insecure* (reversed). Three new situation characteristics replaced interactant likeability, deadline nearness, interest, and interactivity. Participants rated the following items in the following order (exact wording provided): "During the last half hour, how many other people were present?" "During the last half hour, was what you were doing chosen by you or imposed on you? 1 = *chosen* to 7 = *imposed* (9 = *irrelevant*)"; "How well do you know the others that were around during the last half hour? 1 = *not at all* to 7 = *very well* (9 = *irrelevant*)"; "How friendly were other people during the last half hour? 1 = *unfriendly* to 4 = *neither* to 7 = *very friendly* (9 = *irrelevant*)"; "How much status do those around you during the last half hour have? 1 = *less status than you* to 4 = *equal* to 7 = *more status than you* (9 = *irrelevant*)"; "How structured was the situation around you during the last half hour? 1 = *no structure at all* to 7 = *highly structured* (9 = *irrelevant*)"; "Was the last half hour free time or fulfilling an obligation? from 1 = *pure free time* to 7 = *purely obligation* (9 = *irrelevant*)"; "Will you be (or were you being) evaluated on what you were doing during the last half hour? 1 = *not at all* to 7 = *very much* (9 = *irrelevant*)"; "How good are you at what you were doing during the last hour? 1 = *terrible* to 7 = *excellent* (9 = *irrelevant*)"; "During the past half hour, were you doing something for its own sake or as a means to get something else? 1 = *own sake* to 7 = *for something else*." Materials were otherwise similar

to those in Study 1, although each question included the reminder that 9 equaled irrelevant when there was space on the screen.

Reliability.   Cronbach's alphas for the three traits were just acceptable for three-item scales: Extraversion, .62 (ipsatized), .33 (aggregated); Emotional Stability, .49 (ipsatized), .52 (aggregated); Conscientiousness, .52 (ipsatized), .49 (aggregated). Removing "sensitive" from emotional stability would increase its reliability to .57 and removing "disorganized" from Conscientiousness would increases its reliability to .62, but for consistency with Study 1 and theory, these scales were left as they were. The three traits appear to have low levels of dependence, with correlations of $-.09$, .06, and .10 between ipsatized occasion levels and $-.10$, .32, and .36 between aggregated average state levels.

Results

Descriptives of Personality States and Situation Characteristics

State density distributions were very similar to those in Study 1 and in other studies (Fleeson, 2001). As revealed from an unconditional model (using MLM), the typical individual had means of 3.56 ($SE = .06$), 5.24 ($SE = .10$), and 4.90 ($SE = .08$) and state variance within individuals of 1.76 (91%), .85 (62%), and 1.53 (83%), for Extraversion, emotional stability, and Conscientiousness, respectively. Variance between individuals in states was .16 (8%), .50 (37%), and .31 (16%) for Extraversion, Emotional Stability, and Conscientiousness, respectively. Thus, the typical individual had wide distributions of all three states, with 62% to 91% of the variance being within individuals, meaning that each individual expressed a wide range of trait contents in everyday life, e.g., changing from extraverted to introverted and back again. Nonetheless, individual differences in MLM-estimated means from the first to the second half of the data were stable, .54, .86, and .74 for Extraversion, Emotional Stability, and Conscientiousness, respectively, as were individual differences in amount of variability, .64, .66, and .75 stability for Extraversion, Emotional Stability, and Conscientiousness variability, respectively.

A principal components, oblimin-rotated factor analysis on the ipsatized situation characteristics revealed three factors, which accounted for 65% of the variance. The first two factors generally replicated Study 1. *Task orientation* had the highest loadings for the characteristics of fulfilling an obligation, extrinsic orientation, being

evaluated, imposition, and degree of talent (reversed) and accounted for 43% of the variance. *Anonymity* had highest loadings from the number of others, familiarity with the others (reversed), structure, and how friendly the others were (reversed) and accounted for 12% of the variance. The final factor, *others' status*, had the highest loading for only others' status and accounted for 10% of the variance. Scales were constructed by taking the mean of the ipsatized items with the highest loadings and then ipsatizing the factors. As shown in Figure 3, the three factors had relatively normal distributions (there was a positive skew for anonymity, a slight bimodality for task orientation, and a strong kurtosis for others' status), with standard deviations across all occasions of 1.25, 1.66, and .75 for anonymity, task orientation, and others' status, respectively. Task orientation and anonymity were positively related to each other ($r = .52$). but both were only weakly related to other's status ($r = -.04$, $r = -.06$, respectively).

Contingencies of Personality States on Situations

Multilevel modeling was used to test for contingencies. Table 4 shows the average unstandardized betas and the standard deviations of the betas across participants from three MLM analyses, each predicting one state from three situation factors simultaneously. All situation factors were included as fixed effects and also varied and covaried across individuals (the covariance matrix was unstructured). In addition, the greater power of Study 2 meant that existing effects in the population were more likely to be detected with significance. The results were similar to those from Study 1, not only in the fixed effects but also in the amount of individual differences in the contingencies. Thus, these are fairly reliable estimates of the actual contingencies.

All three situation characteristics significantly predicted variation in state Extraversion. The findings for Extraversion replicated that task orientation was associated with reduced state Extraversion for the typical individual. However, there was a significant negative association of anonymity to state Extraversion. Additionally, individuals became more extraverted as others increased in status. The significant differences across individuals in contingencies of state Extraversion on anonymity and task orientation mean that individuals not only adjust their current Extraversion state with changing
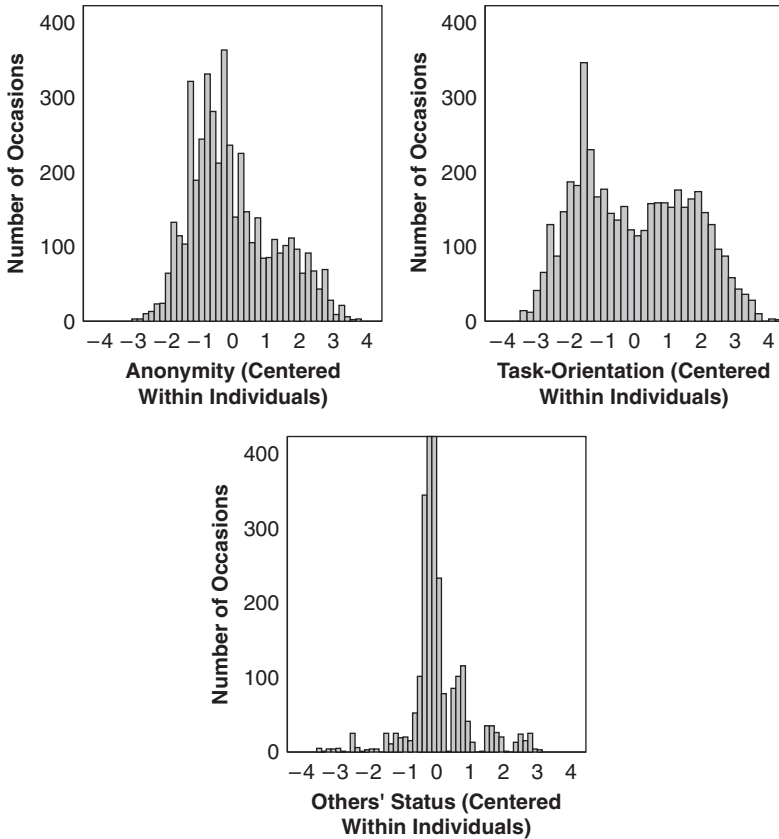
Figure 3
Histograms of situation factors, after centering within each individual, for Study 2. Except for others' status, the amount of variability and relatively normal distributions show that situation characteristics varied within individuals and that there should be sufficient variability to correlate with personality state variability.

situation characteristics, but that they do so reliably differently. Because these standard deviations are close in size to the effect for the typical individual, it means that individuals differ not only in the magnitude of the contingency but also to some extent in the direction of the effect. That is, although the typical individual became more introverted as the situation became more anonymous and more task oriented, many individuals actually became more extraverted in those same anonymous or task-oriented situations and became

Table 4

Contingencies of Personality States on Psychologically Active Characteristics of Situations, Study 2

	Personality State					
	Extraversion		Emotional Stability		Conscientiousness	
Situation Characteristic	Average Contingency	SD of Contingencies	Average Contingency	SD of Contingencies	Average Contingency	SD of Contingencies
Anonymity	−.11** (.04)	.16*	−.03 (.02)	.10†	.07* (.03)	.15*
Task orientation	−.18*** (.03)	.13**	−.06** (.02)	.11*	.30** (.03)	.20**
Others' status	.12* (.04)	.16	−.00 (.03)	.14†	−.01 (.04)	.15†

Note. Contin. = Contingency. Results of three multilevel models in which a personality state was predicted from three situation characteristics simultaneously. Contingencies and the intercept varied and covaried across individuals. The average contingency is the unstandardized beta predicting the personality state from the situation characteristic, for the average individual. Standard errors on the contingencies are in parentheses. The "*SD* of contingencies" column shows the amount individuals differed in the contingencies, in the standard deviation metric; significant standard deviations mean that not only how often but also when an individual manifests a given personality state is a characteristic of personality. *N*s differed across the characteristics.

*** *p* < .001. ** *p* < .01. * *p* < .05. † *p* < .10.

introverted only when the situation became more familiar or freely chosen.

State Emotional Stability is the extent to which *secure*, *nonsensitive*, and *self-confident* describe how the individual is at the moment. Emotional Stability was significantly contingent on the task orientation of the situation. But not on the other two situation factors, for the average person. The typical individual increased state Neuroticism (insecurity, sensitivity, and lack of self-confidence) as the situation became more task oriented. However, there were significant individual differences in this contingency, meaning that many individuals did not increase or actually decreased state Neuroticism in more task-oriented situations.

State Conscientiousness is the extent to which *hardworking*, *organized*, and *responsible* describe the individual's behavior at the moment. Individuals reported being more organized, hardworking, and responsible the more anonymous and especially the more task oriented the situation. In addition, both anonymity and task orientation interacted with individuals in predicting state Conscientiousness. In the case of situation anonymity, this meant that a large minority of the individuals manifested increased Conscientiousness when in familiar rather than anonymous situations. In the case of task orientation, the differences were mostly in how strongly individuals changed their Conscientiousness in association with task orientation. However, assuming a normal distribution of contingencies in the population, approximately 6% of the population has a negative association between task orientation and Conscientiousness.

Study 2's findings replicated Study 1's results. More results were found to be significant in Study 2, possibly due to the greater power of having more participants participate for much longer. In addition, the results were extended to include new situation characteristics and also to apply to a new trait: emotional stability. There was only one difference in direction between the two studies: state Extraversion was negatively related to anonymity in Study 2 but positively related to anonymity in Study 1. Because the Study 1 association was not quite significant, it may represent chance variation. However, it may also be due to time of year (fall for Study 2 and spring for Study 1) or to a slight difference in the anonymity factors (friendliness of others, reversed, in Study 2, was replaced by liking of others, reversed, in Study 1).

Table 5
Percentages of Variance Explaining Individual Differences in Within-Person Variability From Individual Differences in Contingencies, Study 2

	Personality State					
			Emotional			
	Extraversion		Stability		Conscientiousness	
Contingency	Linear	Quadratic	Linear	Quadratic	Linear	Quadratic
Anonymity	.01	+.09*	.00	+.35***	.07†	+.14*
Task orientation	.05	+.12*	.00	+.30***	.34***	+.02
Others' status	.29***	+.15**	.02	+.13*	.04	+.18**

Note. Table entries are R^2 changes. The linear column shows R^2 change comparing a linear model to a null model; the quadratic column shows R^2 change accounted for by adding the quadratic term. A significant positive quadratic term R^2 change or a significant linear R^2 change means that the greater the magnitude of the contingency, the more variable the individual is in that personality state. Adding the R^2 change for the quadratic term to the R^2 change for the linear term produces the total R^2 explained by quadratic equation. The coefficients for all quadratic terms were positive.
***$p < .001$. **$p < .01$. *$p < .05$. †$p < .10$.

Situation Contingencies and Amount of Within-Person Variability

The next set of analyses examined whether individual differences in amount of variability on a given state can be explained as being related to individual differences in magnitude of reaction of the state to relevant situation characteristics. Study 1 provided initial but mixed support for the hypothesis; Study 2's greater power provides an opportunity for a more definitive test. In each case, individual differences in amount of within-person variability in the state were predicted first from the contingency (the linear relationship) and then from the contingency and the contingency squared (the quadratic relationship). Contingencies were sample-mean centered before calculating the quadratic term.

All nine contingencies were significantly predictive of amount of within-person variability. Table 5 shows the R^2 changes. In eight of the nine cases, the relationship was quadratic, such that the greater the magnitude of the contingency, in either a positive or a negative

direction, the more variable the individual was on the corresponding state. R^2's on these effects varied from 10% to 44% of the between-person variance in within-person variability. These results emphasize that it is reactivity that is related to amount of variability because the quadratic results mean that both positive and negative reactivities to a situation predict greater variability on that state. For example, the individuals who end up more variable in their state emotional stability are the ones whose emotional stability reacts more strongly to the anonymity of the situation, regardless of whether the direction of reaction is a strongly increased emotional stability or a strongly decreased emotional stability in anonymous situations. The only linear association was for the contingency of Conscientiousness on task orientation, and this result replicates the linear association from Study 1. In sum, these results provide strong support for the bottom-up approach to explaining individual differences in amount of within-person variability: that it emerges from the accumulated individual differences in reactions to situations in the moment.

DISCUSSION

The purpose of these studies was to investigate whether situations play a role in the manifestation of trait content in states, to assess whether within-person variation in personality states was meaningful and was related to situations rather than being error variance only to be averaged across, and to determine whether individual differences in such situation-state contingencies may partly explain the reliable individual differences in amount of within-person variability. The results showed that within-person variation in Big Five states was indeed associated with variation in situation characteristics. All five general hypotheses received strong support. There were psychologically active characteristics of situations on which trait-manifesting behavior was contingent, contingencies on psychologically active characteristics of varying situations were part of the explanation for within-person variability in behavior, individuals differed reliably in their contingencies, the characteristics that were psychologically active differed by trait, and individual differences in contingency magnitudes predicted individual differences in amount of within-person variability. Furthermore, two studies revealed very similar contingencies, demonstrating the reliability and precision of the estimates

of the contingencies, despite the low sample size in Study 1. These results and the similar findings of PytlikZillig et al. (under review) suggest the need for and viability of more research into the processes underlying trait-content manifestation so that personality psychology will be able to describe personality in terms of behavior and will also be able to describe the nature of traits.

Integrating Process and Individual-Differences Structure

A long-standing divide in the field of personality has been the divide between within-person process approaches and individual-difference structural approaches (Fleeson, 2004; Funder, 2001; Roberts & Pomerantz, 2004). Process approaches to personality emphasize changes in one individual's behavior, the role of situations in personality, and especially the cognitive-affective processes underlying changes in behavior (Cervone, 2004; Pervin, 2003). Individual-differences structure approaches emphasize stability of one individual's behavior, individual differences, and the correlations among these individual differences. That is, they are concerned with the covariance structure of variables on which individuals differ stably (e.g., Epstein, 1979; Goldberg, 1992). These two positions have been divided partly because of their differing emphases, partly because variability and stability have been seen as threats to each other's magnitude, and partly because dynamic process and static structure appear incommensurate.

The current findings propose that the two approaches might eventually be integrated (Fleeson & Leicht, 2006). First, these findings mean that variability and stability are not threats to each other's magnitude. This conclusion was reached by the acknowledgements that momentary states are not highly stable or predictable from traits but that the slight stability and predictability they have adds up to a very powerful stability when summed over several occasions (Epstein, 1979; Fleeson, 2004). Second, rather than being a threat to the stability of traits, variability is, in contrast, an opportunity to understand the mechanisms underlying trait content manifestation in behavior. Third, in the reverse direction, the Big Five may be able to provide an interesting content of behavior for process approaches. It is not clear what behaviors to focus on when studying personality processes. Big Five states may be a good starting point because they are connected to the major dimensions on which people differ from

each other. This is not to argue that the Big Five are the only states of interest but that using them may allow process and structure to be integrated in detail. In particular, as the detailed, step-by-step cognitive mechanisms leading from situation characteristics to Big Five states become identified, processes underlying the major dimensions of the individual-differences structure approach may be elucidated (Funder, 2001; Morf, 2002; Pervin, 2003). The current studies point to the feasibility of the integration by showing that within-person variability in Big Five states is meaningful and is related to situation characteristics.

Developing a Theory of Psychologically Active Characteristics of Situations

When it comes to the specific characteristics of situations that are psychologically active for a given trait, these studies were exploratory. The main purpose of this article was the more abstract point that situations do predict within-person trait variation, they do so differently for different traits, and they do so differently for different individuals. Despite calls for more understanding of how situations are relevant to dispositions (Funder, 2001; Mischel & Shoda, 1998; Shoda & LeeTiernan, 2002), the field has very little knowledge of which situations matter to trait-manifesting behavior. When starting this research, it was unclear, for at least three reasons, how difficult it would be to identify any situation features at all that predicted trait manifestation. First, because traits are theorized to be biological, fixed, and internal determinants of behavior (McCrae et al., 2000), it may have been that only very powerful situations could overcome internal or random factors in determining how extraverted or agreeable someone behaves (for example, it may have been that only very powerful situations could make introverted individuals act extraverted). Second, if situation features are relevant to states, it may be the subtle or rapidly varying aspects of situations that are not measurable in the current approach. Finally, there could be such complex interactions among situation features that main effects would all be washed out. Thus, a wide net of exploratory situation features were included in this research in the hope of identifying at least some. That so many turned out to be relevant emphasizes the powerful role of situations in explaining personality states.

The next step is to develop theories about which situation characteristics matter—and which do not matter—to which traits because characterizing situations in terms of their relevance to trait-manifesting behavior is important for understanding how traits work (Funder, 2001; Vansteelandt & Van Mechelen, 2004). The strategy for selecting situation characteristics in this research was to pick situations that appeared to differ in their manifesting behavior and to try to analyze them into their psychologically active characteristics. An alternative strategy is to analyze the traits into their facets and then consider what situation characteristics would encourage those facets. For example, situations where energetic, talkative, and bold action is less likely to meet harmful consequences are likely to encourage extraverted states. Allport (1937) proposed that the situation characteristics that matter are those that make certain states more effective for the kinds of goals individuals are likely to pursue when those situation characteristics are present. Bem and Funder (1978) proposed a template-matching strategy in which situations are characterized by what kind of people produce what kinds of behavior in those situations. Ten Berge and De Raad (2002) organized situations according to individuals' abilities to handle the situation. Heller, Watson, Komar, Min, and Perunovic (in press) proposed that the role the individual is fulfilling is an important characteristic of the situation.

Implications for Interactionism

Interactionism is the position that behavior is the result of an interaction between situations and persons. Interactionism may be usefully studied with the method used in this article (Fleeson, 2007). It provides a clear test for the presence of interactions and obtains a relatively representative assessment of the situation strengths individuals actually encounter as opposed to the potentially arbitrary situation strengths created in the laboratory (Bowers, 1973). Interactionism was supported strongly in the present data. The exploratory situation characteristics not only were frequently associated with trait manifestation, they also supported person-situation interactions for almost half of the contingencies. The high frequency of significant interactions justifies the claim that interactionism is important to obtain an accurate prediction of behavior.

Significant variability in the contingencies across individuals means that these differences are reliable and go beyond the particular situations and occasions that happened to be sampled in a particular study. An individual's unique set of contingencies can be considered part of his or her personality that predicts how he or she will be acting on a continuous basis. How an individual will act at any given moment is not only a function of the individual's trait level or of the situation but rather of how the individual uniquely and regularly responds to the concurrent situation characteristic.

A next step in integrating the process and situation approaches is to explain the individual differences in contingencies. For example, consider the finding that about one-quarter of the participants (assuming a normal distribution) had a zero or negative association between their own state Agreeableness and the situation friendliness. This means that these individuals are most agreeable (polite, warm, and sympathetic) when others are unfriendly and that these individuals are least agreeable (rude, cold, and unsympathetic) when others are friendly. This result raises interesting questions about why these individuals have such a pattern. However, the current research (sparked by previous research demonstrating large amounts of within-person variability in states) was aimed at the critical prior goal of establishing that within-person variability in states is meaningful and associated with situations (and that individuals differ in those associations). The positive outcome of the present research may now spark the next step, identifying and explaining those individual differences.

Limitations and Future Research

This research identified associations only and cannot support causal conclusions about situations and states. The theoretical approach assumes that situation characteristics cause changes in behavior as individuals adapt to the situation, so it is important to eventually establish causality. One possibility is a two-pronged approach: an experience-sampling study like the present research is conducted to identify contingencies, and small, focused experimental studies are conducted to test the causal direction of the contingencies. For example, interactant friendliness could be manipulated to test whether it causes a change in participant Extraversion.

Employing self-report of situations and behaviors creates potential limitations to the findings. Social desirability may have influenced both types of ratings: Situations may have been rated in a way that justifies, or at least explains, the participant's behavior in the situation or behavior may have been rated more favorably than it deserved. Second, differences between participants in perceptions of situations mean that the independent variables differed across participants. On the one hand, this could be partially responsible for individual differences in contingencies. On the other hand, such differences worked against finding the many significant contingencies for the average individual; given that two studies found very similar estimates of the contingencies, there was likely to be at least some agreement in such perceptions. Third, imperceptible or subtle characteristics of situations were not able to be reported by participants, so this method can not identify contingencies on such characteristics of situations. However, it is important to be clear that this method does not require participants to be aware of or report the contingency; the participants only needed to be aware of the situation characteristics and the behaviors. The analyses, rather, identified the contingencies that emerged from the hundreds of occasions.

Fourth, this research did not investigate the influence of individuals on situations in terms of selecting or modifying situations (Snyder & Gangestad, 1982). Such influences will eventually need to be integrated in this framework. Fortunately, many characteristics of situations are perceptible and reportable, and this study was able to reveal numerous significant contingencies based on perceptible characteristics. Thus, this method provides a critical first step toward identifying those situations that relate to, and those that do not relate to, Big Five states.

Conclusion

It is time for personality to go forward with integrated research (Fleeson, 2004; Funder, 2001). Two studies showed that reacting to situation characteristics may be an important process underlying the way in which trait contents become manifest in behavior. Furthermore, there were individual differences in the characteristics associated with trait manifestation. Further development of this kind of research will move personality psychology toward the point where it both can describe individual differences in actual behavior and also

explain the complex mechanisms underlying traits. This first step showed that personality states vary rapidly, widely, and meaningfully within the typical individual, that they vary in association with situation characteristics, and that people differ in how their states vary in association with situations.

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