J Nonverbal Behav (2010) 34:43–56
DOI 10.1007/s10919-009-0079-9

ORIGINAL PAPER

Behavioral Stability Across Time and Situations: Nonverbal Versus Verbal Consistency

Max Weisbuch · Michael L. Slepian · Asha Clarke · Nalini Ambady · Jeremy Veenstra-VanderWeele

Published online: 13 October 2009

Abstract Behavioral consistency has been at the center of debates regarding the stability of personality. We argue that people are consistent but that such consistency is best observed in nonverbal behavior. In Study 1, participants' verbal and nonverbal behaviors were observed in a mock interview and then in an informal interaction. In Study 2, medical students' verbal and nonverbal behaviors were observed during first- and third-year clinical skills evaluation. Nonverbal behavior exhibited consistency across context and time (a duration of 2 years) whereas verbal behavior did not. Discussion focuses on implications for theories of personality and nonverbal behavior.

Keywords Consistency · Nonverbal behavior · Individual differences

Introduction

Traditional treatments of personality suggest that individuals exhibit consistency in their behavior and have stable qualities and dispositions (cf. Cervone and Shoda 1999; Diener and Larsen 1984; Epstein 1979; Funder and Colvin 1991; Mischel et al. 2002; Shoda and Mischel 2000). Indeed, laypeople intuitively attribute stable personalities to others (e.g., the fundamental attribution error; Ross 1977). Yet some studies suggest that little consistency exists in individuals' behavior across situations (Endler 1973; Mischel 1968; Mischel and Peake 1982). While such studies date back nearly a century (e.g., Hartshorne and May 1928) the "person-situation debate" gained momentum with Mischel's (1968) classic critique. Since that time, the issue of what matters more—the person or the situation—has been a recurring topic in personality psychology (Funder 2006; Kenrick and Funder 1988; Mischel et al. 2002). Though many studies demonstrate a lack of consistency others provide evidence of consistency (Fleeson 2001, 2007; Funder 2006; Mischel and

M. Weisbuch (✉) · M. L. Slepian · A. Clarke · N. Ambady
Psychology Department, Tufts University, 490 Boston Avenue, Medford, MA 02155, USA
e-mail: max.weisbuch@tufts.edu

J. Veenstra-VanderWeele
Department of Psychiatry, Vanderbilt Medical Center, Vanderbilt University, Nashville, TN, USA

Shoda 1998). Here, we describe a simple behavioral distinction that may help to explain why individuals can appear to be consistent and inconsistent at the same time. Specifically, in two studies, we examine the extent to which nonverbal behavior reveals consistency but verbal behavior does not.

Verbal and Nonverbal Behavior as Proxies for Inconsistent and Consistent Behavior

Several explanations for diverging patterns of behavioral stability have received empirical support (Bem and Allen 1974; Fleeson 2001; Funder and Colvin 1991; Kenrick and Funder 1988; Vansteelandt and Van Mechelen 2004). For example, behaviors that are only loosely tied to the situation and behaviors that are automatic are more likely to exhibit consistency than behaviors that are closely tied to the situation or are deliberate (Funder 2006; Furr and Funder 2004; Ten Berge and De Raad 2002). Yet these distinctions are largely confounded with the distinction between nonverbal and verbal behavior. This theoretical confound is often carried into empirical studies of consistency—for example, automatic behaviors in one study included "is expressive in face, voice, and gestures," "moves around a great deal," and "laughs frequently," whereas deliberate behaviors included "offers advice," "expresses criticism," and "demonstrates intelligence" (Furr and Funder). Although this confound is ecologically valid (nonverbal behaviors *are* more likely to be automatic; see below), it is typically de-emphasized in published manuscripts. In fact, we could not locate a single study that explicitly compared verbal to nonverbal consistency. This state of affairs is unfortunate as the rather simple distinction between nonverbal and verbal behavior may explain why people can appear to be both consistent and inconsistent. For reasons outlined in what follows, we argue that observations of nonverbal behavior are likely to give rise to observations of consistency whereas observations of verbal behavior are likely to give rise to observations of inconsistency.

First, nonverbal behaviors, such as facial expressions, body posture, and interpersonal distance are together more difficult to consciously control than verbal behavior (DePaulo 1992; Ekman and Friesen 1969, 1974; Streeter et al. 1977). Even individually, many nonverbal behaviors are difficult to control. For example, the Duchenne smile (Ekman et al. 1990; Hager and Ekman 1985), the blushing response (Keltner and Buswell 1997), and fearful freezing (Lang et al. 2000) are all quite difficult to control individually. Additionally, there is evidence that automatic mechanisms link the experience of emotion to its facial and motor expression (see Niedenthal 2007; Scherer 2005). Even if one is able to control an individual nonverbal behavior (e.g., smiling), it may be difficult or impossible for people to simultaneously control many nonverbal behaviors (e.g., smiling, postural expansion, limb movement; cf. Zuckerman et al. 1981). Conversely, if individuals want to control their verbal behavior there is a single channel to consider—spoken content. This is not to say, of course, that all nonverbal behavior is automatic and all verbal behavior is deliberate but rather that people consciously control more of their verbal than nonverbal behavior (e.g., DePaulo 1992). Because consciously controlled behavior is more likely to be inconsistent than is relatively automatic behavior (Furr and Funder 2004), verbal behavior should be less consistent than nonverbal behavior.

Beyond automaticity, there is a self-evident distinction in the number of meanings that can possibly be communicated via verbal versus nonverbal behavior. The number of meaningful statements that can be spoken in any given situation is infinite (Pinker 1991). Conversely, nonverbal behaviors have a finite number of relatively simple meanings, such as "fear" "dominance" and "attending to something over on the left." For this reason, there is much greater variability in verbal behavior and hence a greater potential for cross-situation variability.

Finally, as with any form of measurement, the ratio of signal to noise should increase with redundancy. Just as average scores on a multiple-item personality scale should exhibit more consistency than scores on a single-item personality scale (all else equal), behavioral expression should exhibit more consistency when considered across multiple *channels* of communication. Verbal behavior consists of one stream of communication (spoken words) whereas nonverbal behavior consists of many parallel streams (e.g., eye gaze, smiling, furrowing of the brows, posture; cf. Walker-Andrews 2008). The latter thus allows for more signal than noise in the translation from stable trait to behavioral expression, which should enhance stability in behavioral expression across situations.

The Current Research: Nonverbal Versus Verbal Consistency

Unsurprisingly then, many of the consistent behaviors observed in previous studies were nonverbal (cf. Diener and Larsen 1984; Funder and Colvin 1991; Furr and Funder 2004; Moskowitz 1982). Yet these studies did not isolate verbal from nonverbal behavior as the goals of that prior research did not regard behavioral channels. In the current research, we isolated verbal from nonverbal behavior and examined the consistency of each. Our hypothesis was that behavioral consistency is manifested in nonverbal behavior but is not manifested in verbal behavior.

Study 1: Situational Consistency

Method

Overview and Hypotheses

Undergraduate participants' behavior was recorded in two separate situations. The first situation was an interview with an older adult male researcher dressed in formal clothing. The second situation consisted of a "getting to know you" task with a female peer (actually a confederate). The interview and the getting to know you task were used to allow for the natural expression of verbal and nonverbal behavior while providing different meaningful contexts. For both situations, we separated nonverbal from verbal behavior by creating (a) silent videos and (b) written transcripts. At a different university, the emotional behavior of participants was coded by undergraduate raters. We expected greater behavioral consistency in ratings from nonverbal than verbal behavior.

Participants

Forty-one undergraduates (21 female, 20 male) at a private university in the northeastern United States participated in exchange for money. Participants were run individually, such that there were 41 experimental sessions.

Procedure

Upon arrival at the laboratory, each participant completed informed consent and was subsequently instructed to take a seat in a largely unfurnished office. Several situations unfolded in this office, as described below.

First Situation Participants were first interviewed by a professionally dressed older adult male researcher. The participant was seated at a table, which separated him or her from the interviewer. Both were seated in office chairs and a video camera (behind and to the left of the interviewer) was aimed at the participant. The interview began with questions about the participant's professional plans after college and ended with questions about the participant's experience at their university. The final question was, "What do you think of your experience in college so far? How happy are you at this university?" Subsequently, participants performed a set of tasks for an unrelated study. These tasks included reading newspaper headlines aloud and a pantomime task.

Second Situation Following the completion of the aforementioned tasks, participants were introduced to a female student from another university (actually a confederate), and the experimenter informed both that they were to engage in a "getting to know you" task. The recording video camera was again behind and to the left of the confederate. The experimenter explained that the goal of the task was for participants to get to know each other—to accomplish this goal, they should ask each other questions. Confederates were trained (over a period of several weeks) to maintain consistency across participants while responding naturally. Confederates thus asked the same questions across participants, responded identically across participants to a variety of anticipated questions, and maintained the same pleasant and engaged demeanor across participants. After the interaction, participants were thanked, debriefed and compensated.

Behavioral Coding

Materials About ten second video clips were constructed to provide informative segments of behavior. Such brief segments of behavior appear to provide sufficient information for perceivers to make accurate judgments about target persons; these judgments are often as accurate as those from much longer segments of behavior (Ambady and Rosenthal 1992). Additionally, judgments made from video clips are about as accurate as judgments made from transcripts (Ambady and Rosenthal 1992), suggesting roughly equivalent predictive validity of video and transcript ratings.

The video clip from the first interaction (interview) consisted of the first 10 s of the response to the final interview question. Two 10-s video clips were constructed from the second interaction (informal interaction). The first clip consisted of the first 10 s in which the participant spoke for at least half of those seconds. The second clip was extracted from just before the ending of the interaction, which took place close to 3 min later. Finally, a research assistant transcribed the verbal components of the clips from both situations. After transcription, the audio track was removed from all video clips.

Molar Affective Ratings Behavior can be defined with respect to micro-level actions (e.g., smiles) or larger "molar" action units corresponding to the ultimate meaning of behavior. In the current research, we focused especially on molar rather than micro behaviors because molar ratings have been found to be better predictors of behavior (Ambady et al. 2000) and to exhibit superior consistency (Funder and Colvin 1991). Rather than using a count of smiles or positive words, we utilized global ratings of affect. In this way, nonverbal versus verbal behavior was *not* redundant with molar versus micro behavior.

Forty-four undergraduates (29 females) were assigned to rate transcripts from both situations ($n = 14$), silent video clips from the social interaction ($n = 16$), or silent video

clips from the interview ($n = 14$).[1] Participants rated the targets with respect to (a) behavioral happiness and (b) behavioral sadness (from −3, "*not at all happy/sad*" to +3, "*extremely happy/sad*"). All stimuli were presented in a random order on computer screens via MediaLab software; video clips remained on the screen for their duration and were replaced by ratings scales. Transcripts remained on the screen until the "continue" option was selected, at which point the transcripts were replaced by rating scales. Both happy and sad ratings were collected in order to treat affective behavior as a global (hedonic) variable rather than as a unipolar variable. We anticipated a highly negative correlation between these two ratings, such that their difference would denote a reliable scale of affective behavior.

For the interview, inter-rater reliability was acceptably high for the silent video clips (happy $\alpha = .94$; sad $\alpha = .87$) and the transcripts (α's = .94 and .91). For the informal interaction, each judge's ratings were averaged across the two clips. Inter-rater reliability was acceptably high for the silent video clips (α's = .91 and .84) and for the transcripts (α's = .82 and .76). Consequently, each rating was averaged across all judges. This process of data compilation generated eight data points for each participant (verbal interview happy, verbal interview sad, nonverbal interview happy, etc.).

Additional Ratings To control for static elements of appearance, four trained research assistants viewed the video clips and coded (on 1–7 scales) the physical attractiveness, "neatness" of clothing, "neatness" of hair, and "tightness" of clothing (α's > .60). Consequently, ratings for each participant were averaged across judges.

Additionally, two trained researchers coded the amount of time participants spent talking in each clip (α's > .78). Consequently, for each participant, these ratings were averaged within situation. To create an overall index of speaking time for each participant, speaking time was averaged across the two situations ($M_{\text{Speaking Time}} = 9.01$ s).

Results

Correlational analyses revealed a significant negative relationship between happiness and sadness ratings. For the silent video, happiness and sadness ratings were highly correlated for both the interview, $r(39) = -.87$, $p < .001$, and for the informal interaction, $r(39) = -.75$, $p < .001$. Likewise, for the transcripts, happiness and sadness were highly correlated for both the interview, $r(39) = -.89$, $p < .001$, and for the informal interaction, $r(39) = -.78$, $p < .001$. As a result, we subtracted sadness ratings from happiness ratings within each medium to create affect scores (see Table 1 for descriptive statistics).

We expected that nonverbal behavior would be consistent across situations. Indeed, a significant correlation was observed between nonverbal affective behavior (ratings from silent videos) during the interview and nonverbal affective behavior during the informal interaction, $r(39) = .54$, $p < .001$. This relationship held even after controlling for physical attractiveness [pr (38) = .55], for clothing and hair style [pr (37) = .54], for gender [pr (38) = .47], and for race [White versus non-White; pr (38) = .54].

As expected, the consistency correlation for nonverbal behavior was significantly greater than that for verbal behavior, as confirmed by a directional comparison of

[1] For logistical reasons, the transcript and video rating sessions were run in different semesters. Although the sacrifice of random assignment is a limitation of the current methodology, analyses examined consistency *within* transcript ratings or *within* silent video ratings. Hence, the sacrifice of random assignment here may be only a minor limitation.

Table 1 Means and standard deviations of behavioral ratings

	Verbal	Nonverbal	Still image
Affect interview (study 1)	1.72 (1.62)	.80 (1.19)	NA
Affect interaction (study 1)	1.40 (1.05)	1.52 (.96)	NA
Engagement time 1 (study 2)	4.34 (.76)	4.44 (.56)	4.60
Engagement time 2 (study 2)	4.48 (.35)	3.97 (.55)	4.35

Table 2 By channel correlations for Study 1

	Interview nonverbal	Interaction nonverbal	Interview verbal	Interview nonverbal
Interview nonverbal				
Interaction nonverbal	.54*			
Interview verbal	−.08	−.13		
Interaction verbal	−.13	.05	−.06	

* $p < .05$

correlations using Fisher's z transformation, $Z = 2.9$, $p = .002$. In fact, there was no significant correlation of verbal affective behavior (ratings from the transcripts) between the two situations, $r(39) = -.06$, *ns* (see Table 2). Yet perhaps the lack of consistency in verbal behavior was driven by those participants who spoke relatively little during the recorded clip. To address this possibility, we regressed social interaction verbal affect on the interaction between interview verbal affect and talking-time (after entering main effects). The regression equation revealed no significant interaction ($p > .5$), suggesting that the absence of contextual consistency in verbal behavior was not contingent on the absence of speaking time.

Discussion

We observed cross-situation consistency in nonverbal behavior but not verbal behavior. Indeed, participants showed greater consistency in nonverbal affect, relative to verbal affect. To address plausible alternative explanations, we confirmed that appearance cues did not account for nonverbal consistency and the inconsistency of verbal behavior was not contingent on the amount of verbal behavior. The results of this initial study thus suggest a greater role for nonverbal than verbal behavior in cross-situation consistency.

Just as nonverbal behavior may be more consistent than verbal behavior across situations, it may exhibit superior consistency over time. As compared to the debate regarding cross-situation consistency, there is less controversy regarding the existence of temporal consistency in behavior. For example, trait theorists (e.g., Costa and McCrae 1988) and situation theorists (e.g., Mischel and Peake 1982) agree that behavior (restricted to the same situation) is consistent over time. Yet consistency is rarely 100% and just as different behavioral channels vary in cross-context consistency, they should vary in temporal consistency. We explore this issue in Study 2.

Study 2: Temporal Consistency

Temporal consistency is less controversial than situational consistency and evidence for it clearly exists (Epstein 1979; Mischel and Peake 1982). Yet influential models and studies of temporal consistency generally emphasize how consistency over time may be revealed within individuals rather than within behaviors (e.g., "behavioral signatures;" Mischel and Shoda 1995). Although this idiographic approach reveals the organization of dynamic behavior at the individual level, it may overlook a nomothetic pattern across individuals. That is, while individuals may show consistency in behavioral signatures across time, certain behaviors across participants may show more temporal consistency than others. Because of the tremendous variability possible in meaningful verbal behavior, as compared to meaningful nonverbal behavior, we expected greater temporal consistency in nonverbal than verbal behavior.

Method

Overview and Hypotheses

Medical students' behavior was recorded in two similar situations, separated by 32 months including core clinical curriculum. Medical students were videotaped during clinical evaluations taking place during their first and third years of medical school. In both situations participants responded to a similar cue from a patient (actually an actress); this allowed for the isolation of temporal differences, while holding the situation roughly constant. The first year situation was the first standardized patient interview that the students performed in their introductory clinical skills class. The third year situation was a standardized clinical interview performed at the end of third-year clinical rotations to evaluate students' clinical skills and prepare them for their Board examinations. Because behavior was recorded during clinical education rather than laboratory-based experiments, the context for this study had the added advantage of being especially naturalistic. Moreover, the fact that the students were being evaluated on their performance made the situation heavily engaging. Finally, it is worth highlighting that these observations of naturalistic behavior were separated by the relatively long (for social psychological studies) span of 32 months.

For both situations, we separated nonverbal from verbal behavior by creating (a) silent videos and (b) written transcripts. The behavior of all participants was coded by undergraduate raters at a separate university. As in Study 1, we expected greater behavioral consistency in ratings from nonverbal compared to verbal behavior.

Participants

Forty-nine medical students (26 female) at a private university in the Midwestern United States participated on a voluntary basis during standardized patient interviews.

Procedure

Medical students were video-recorded during standardized patient interviews as part of the students' first and third year clinical training and evaluations. During these evaluations, the students were expected to interview actresses who portrayed patients with particular

symptoms and conditions. An unobtrusive video camera was aimed at the medical student. Although the symptoms and conditions portrayed by the actress were slightly different between the first and third years, for the purpose of this study we standardized one aspect of the patient's behavior across the 2 years: in both exams, the patient-actress verbally expressed that she had been experiencing stress. In the first year exam, this *empathic cue* occurred when the patient indicated that symptoms of her disease condition were causing her stress and embarrassment at work. In the third year exam, the empathic cue occurred when the patient indicated that she was experiencing chest pain that may have occurred from a variety of psychological stressors.

Behavioral Coding

As in Study 1, independent groups of judges made molar ratings of silent video clips and transcripts in order to create indices of nonverbal and verbal behavior, respectively. Also as in Study 1, trained researchers coded the amount of time each participant spent talking per clip. Finally, to rule out the possibility that consistency in static appearance accounts for apparent behavioral consistency, additional groups of independent judges made molar ratings of still frame images taken from each video clip. For all media, molar ratings regarded variables related to interpersonal engagement, as described below.

The relevant portion of the clinical exam videotape was the time period following the introduction of the empathic cue. For both the first and third year videos, we digitally edited the videos in order to reduce the sample for each participant to the 10 s following the introduction of the empathic cue. From these 10-s clips, three types of behavioral samples were created. Silent videos were simply the clips with the audio track removed. Transcripts were written records of medical students' words during the clip. Still images were the first single frames of each clip in which the participant's face was visible (i.e., the participant was not looking at his/her clipboard). Within each type of behavioral sample, two sets of clips were created—one set for first year exams and one set for third year exams. There were thus a total of four sets of video clips and two sets of still images.

Molar Ratings In an effort to generalize beyond the Study 1 findings for simple affect, behavioral samples were rated for interpersonal engagement. Seventy-two undergraduate students (50 female) participated as judges in exchange for money or credit toward a requirement for a lower-level psychology course. A computer programming error resulted in loss of data from a total of 5 judges, resulting in a total of 67 judges with useable data distributed as follows: First-year silent video ($n = 13$), first-year transcripts ($n = 13$), third-year silent video ($n = 8$), third year transcripts ($n = 13$), first-year still images ($n = 10$), and third-year still images ($n = 10$).[2] Each group of judges rated medical students on likeability, concern for patient, and friendliness (from 0, "*not at all*" to 6, "*extremely*"). Additionally, still-frame judges rated the attractiveness of medical students. All stimuli were presented in a random order on a computer screen via MediaLab software; video clips remained on the screen for their duration and were replaced by ratings scales. Transcripts and still images remained on the screen until the "continue" option was selected, at which point the transcripts/images were replaced by rating scales.

[2] For logistical reasons, the still image ratings were run in a different semester from the other ratings. Again, analyses examined consistency *within* each media such that the sacrifice of random assignment may be only a minor limitation.

In general, judges were consistent in their ratings. Judges of first-year transcripts exhibited inter-rater reliability in their ratings of medical student friendliness ($\alpha = .89$), concern ($\alpha = .80$), and likability ($\alpha = .87$), as did judges of first-year silent videos (α's = .77, .56, and .77, respectively) and judges of first-year still images (α's = .78, .62, and .64, respectively). Judges of third-year transcripts exhibited inter-rater reliability in their ratings of medical student friendliness ($\alpha = .87$), concern ($\alpha = .86$), and likeability ($\alpha = .87$), as did judges of third-year silent videos (α's = .61, .53, and .61, respectively) and judges of first-year still images (α's = .84, .83, and .78, respectively). Judges of still-frame images also exhibited reliability in their ratings of physical attractiveness for the first-year ($\alpha = .89$) and the third-year ($\alpha = .78$).

Within each of the six judge groups, friendliness, concern, and likeability ratings for each participant were averaged across judges. Subsequently, we evaluated the internal consistency of these three items within each behavioral sample (e.g., year 1 silent-video). Ratings were consistent among the three items for first-year transcripts ($\alpha = .91$), first-year silent video ($\alpha = .80$), first-year still images ($\alpha = .78$), third-year transcripts ($\alpha = .80$), third-year silent video ($\alpha = .93$), and third-year still images ($\alpha = .90$). Hence, we calculated an interpersonal engagement score for each participant by averaging the friendliness, concern, and likeability ratings within each type of behavioral sample.

Molecular Coding of Speaking Time As in Study 1, speaking time was coded by two trained researchers. These researchers achieved high reliability for both first-year ($\alpha = .97$) and third-year ($\alpha = .93$) video clips. Consequently, for each participant, these ratings were averaged within year. To create an overall index of speaking time for each participant, speaking time was averaged across the two clips ($M_{\text{Speaking Time}} = 6.82$ s).

Results

We refer to interpersonal engagement ratings with respect to the behavior on which ratings were based: nonverbal behavior (silent video), verbal behavior (transcripts), and appearance (still images; see Table 1 for descriptive statistics).

Temporal Consistency in Ratings Based on Appearance

Medical students did maintain some consistency in their appearance, as there was a significant correlation between first-year and third-year attractiveness ratings from still images, $r(47) = .44$, $p = .002$. Yet there was not a significant correlation in ratings of interpersonal engagement from still images in the first- and third-years, $r(47) = .07$, $p = .64$. Hence, it seems to be the case that this sample exhibited consistency in their physical appearance but that still images were not sufficient for providing temporally consistent ratings of psychological states (interpersonal engagement).

Temporal Consistency in Nonverbal Behavior

There was a significant correlation between nonverbal engagement in the first-year and nonverbal engagement in the third-year, $r(47) = .30$, $p = .04$. This relationship held even after controlling for gender [*pr* (46) = .27], race [*pr* (46) = .30], attractiveness ratings [*pr* (46) = .28], and the appearance-based ratings of interpersonal engagement [*pr* (46) = .30). We also controlled for *change* in static physical appearance, as indicated

by the difference between first- and third-year appearance-based ratings of interpersonal engagement. Doing so did not reduce the consistency between first- and third-year nonverbal engagement [pr (46) = .29) nor did controlling for the difference between first- and third-year physical attractiveness [pr (46) = .29]. Hence, consistency in nonverbal behavior was not a simple function of appearance or consistency in appearance.

Temporal Consistency in Verbal Behavior

In contrast to nonverbal engagement, there was no correlation between verbal engagement in the first year and verbal engagement in the third-year, $r(47) = -.06$, $p = .67$ (for all correlations, see Table 3). And as in Study 1, the consistency correlation for nonverbal behavior was significantly greater than this correlation for verbal behavior, as confirmed by a directional comparison of correlations using Fisher's z transformation, $Z = 1.8$, $p = .04$. An alternative possibility is that the absence of verbal consistency was a function of those participants who spoke very little during the interaction. To address this possibility, we regressed third-year verbal engagement on the first-year by talking-time interaction (after entering main effects). The regression equation revealed no interaction ($p > .9$), suggesting that the absence of temporal consistency in verbal behavior was not contingent on the absence of speaking time. A median split on speaking time illustrated the lack of consistency [$r(23) = -.03$] among those who spoke for a relatively long period of time ($M = 8.3$) as well as the lack of consistency [$r(22) = -.11$] among those who spoke for a shorter period of time ($M = 5.3$ s). In short, there was no evidence for temporal consistency in verbal behavior and this dearth of consistency was unrelated to speaking time.

Discussion

Consistency was observed in nonverbal behavior but not in verbal behavior. Medical students exhibited consistent levels of nonverbal engagement during clinical interviews separated by more than 2 years. These results were not a function of consistency in physical appearance but rather dynamic nonverbal behavior. In contrast, verbal engagement did not appear to be consistent over time and this inconsistency was independent of the amount of time that medical students spoke during the examination. Indeed, there was significantly greater consistency in nonverbal behavior than in verbal behavior.

The nature of nonverbal consistency is remarkable for three reasons—the time span over which consistency was observed, the fact that a major intervention occurred during this time period (clinical skills training), and the fact that consistency was observed in a

Table 3 By channel correlations for Study 2

	Year 1 nonverbal	Year 3 nonverbal	Year 1 verbal	Year 3 verbal	Year 1 still image	Year 3 still image
Year 1 nonverbal						
Year 3 nonverbal	.30*					
Year 1 verbal	−.03	−.20				
Year 3 verbal	.12	.005	−.06			
Year 1 still image	−.32*	−.05	−.06	−.20		
Year 3 still image	.04	.06	−.08	−.14	.07	

* $p < .05$

situation uncommon in its ecological validity and level of impact. The behavior was observed during the course of clinical training, not in a psychological laboratory, and it was behavior in which the participants were highly invested. In other words, there were many factors that might otherwise limit temporal consistency yet it was still observed with respect to nonverbal behavior.

General Discussion

In these two studies we observed consistency in nonverbal behavior across situations and time, but did not observe consistency for verbal behavior. In both studies, it is notable that we controlled for physical appearance in nonverbal consistency. And while it is possible that extended speech might be associated with verbal consistency, increased speaking time was not associated with increased verbal consistency here.

In Study 1, nonverbal affective behavior was consistent across the two situations, whereas verbal affective behavior was not. While the two situations had similarities (both took place in a research setting and included roughly standardized responses by a confederate), they differed on meaningful dimensions. The first situation was formal, relative to the second, and consisted of an interview with an older and higher-status researcher dressed professionally. The second situation asked the participant to get acquainted with a peer, and was informal in comparison to the first situation.

In Study 2, nonverbal behavior exhibited temporal consistency whereas verbal behavior did not. Such consistency was observed in medical students' interactions with simulated patients during two instances separated by over 2 years—the behavior of the patients was roughly standardized within year, allowing for considerable ecological validity but reasonable experimental control. It is remarkable that consistency emerged in this context, in that the interactions were separated by over 2 years, the medical student interacted with two different patients, and medical students responded to two slightly different complaints. Moreover, this nonverbal consistency occurred despite the fact that a major intervention in the studied domain (physician-patient interaction) occurred between the first and third year.

Implications for Personality Psychology

This research sheds light on the person-situation debate in personality psychology. Specifically, nonverbal behavior manifests many of the principles of behavioral consistency: automaticity, reduced variability, and a strong redundant signal. It is perhaps unsurprising, then, that nonverbal behavior was empirically consistent across situations and over time. In sharp contrast, verbal behavior exhibits few of the principles of consistent behavior: it is more difficult to control than nonverbal behavior, it is highly variable, and allows a single channel for behavioral expression. Indeed, verbal behavior exhibited little if any consistency here. By distinguishing between channels of behavior that do and do not capture the principles of consistent behavior, we successfully predicted the conditions under which behavior may be consistent or inconsistent. Going forward, it should be possible to examine the relative contribution of each of several principles of consistent behavior—for example, a lack of second-to-second variability in nonverbal behavior may account for apparent consistency over longer timescales.

Implications for Research in Nonverbal Behavior

Brief segments of nonverbal behavior are known to have predictive utility for a wide array of constructs and outcomes. It is important that such brief segments were examined here in the abstract (molar ratings). In Study 1 for instance, raters indicated how happy or how friendly a target appeared to be; they did not count the number of smiles or head nods. Such brief segments of molar nonverbal behavior have shown to be informative enough for accurate predictions of personality, relationship status (friend, lover), rapport, status hierarchy, acquaintanceship and level of romantic involvement (Ambady et al. 2000; Borkenau et al. 2004). Additionally, ratings of briefly-observed nonverbal behaviors have predictive validity in a number of outcomes; nonverbal behavior predicts teaching effectiveness (Ambady and Rosenthal 1993), outcomes of criminal trials (Blanck et al. 1985), physicians' malpractice claims (Ambady et al. 2002), and clinical performance (Tickle-Degnen and Puccinelli 1999). The current research shows that such predictive nonverbal behaviors can be stable; not only can they predict outcomes but they can at times predict the target's future nonverbal behavior in the same and different domains.

Conclusion

Principles of consistent behavior are theoretically manifested in nonverbal behavior. Indeed, across two studies examining consistency over time and situation, nonverbal behavior exhibited greater consistency than verbal behavior. Nonverbal consistency may thus play an important role in maintaining the coherence of personality.

Acknowledgments The project described was supported by NIMH grant F32MH078350 to the first author and by NIH grant R01 MH70833 to the fourth author. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Mental Health or the National Institutes of Health.

References

Ambady, N., Bernieri, F. J., & Richeson, J. A. (2000). Toward a histology of social behavior: Judgmental accuracy from thin slices of the behavioral stream. In M. P. Zanna (Ed.), *Advances in experimental social psychology, 32* (pp. 201–272). San Diego, CA: Academic Press.

Ambady, N., LaPlante, D., Nguyen, T., Rosenthal, R., Chaumeton, N., & Levinson, W. (2002). Surgeons' tone of voice: A clue to malpractice history. *Surgery, 132*, 5–9.

Ambady, N., & Rosenthal, R. (1992). Thin slices of expressive behavior as predictors of interpersonal consequences: A meta-analysis. *Psychological Bulletin, 111*, 256–274.

Ambady, N., & Rosenthal, R. (1993). Half a minute: Predicting teacher evaluations from thin slices of nonverbal behavior and physical attractiveness. *Journal of Personality and Social Psychology, 64*, 431–441.

Bem, D. J., & Allen, A. (1974). Predicting some of the people some of the time: The search for cross-situational consistencies in behavior. *Psychological Review, 81*, 506–520.

Blanck, P. D., Rosenthal, R., & Cordell, L. D. H. (1985). The appearance of justice: Judges verbal and nonverbal behaviour in criminal jury trials. *Stanford Law Review, 38*, 89–164.

Borkenau, P., Mauer, N., Riemann, R., Spinath, F. M., & Angleitner, A. (2004). Thin slices of behavior as cues of personality and intelligence. *Journal of Personality and Social Psychology, 86*, 599–614.

Cervone, D., & Shoda, Y. (1999). Beyond traits in the study of personality coherence. *Current Directions in Psychological Science, 8*, 27–32.

Costa, P. T., & McCrae, R. R. (1988). Personality in adulthood: A six-year longitudinal study of self-reports and spouse ratings on the NEO personality inventory. *Journal of Personality and Social Psychology, 54*, 853–863.

DePaulo, B. M. (1992). Nonverbal behavior and self-presentation. *Psychological Review, 111*, 203–243.

Diener, E., & Larsen, R. J. (1984). Temporal stability and cross-situational consistency of affective, cognitive, and behavioral responses. *Journal of Personality and Social Psychology, 47*, 871–883.
Ekman, P., Davidson, R. J., & Friesen, W. V. (1990). Duchenne's smile: Emotional expression and brain physiology II. *Journal of Personality and Social Psychology, 58*, 342–353.
Ekman, P., & Friesen, W. V. (1969). Nonverbal leakage and cues to deception. *Psychiatry, 32*, 88–106.
Ekman, P., & Friesen, W. V. (1974). Detecting deception from the body or face. *Journal of Personality and Social Psychology, 29*, 288–289.
Endler, N. S. (1973). The person versus the situation: A pseudo issue? A response to Alker. *Journal of Personality, 41*, 287–303.
Epstein, S. (1979). The stability of behavior: I. On predicting most of the people much of the time. *Journal of Personality and Social Psychology, 37*, 1097–1126.
Fleeson, W. (2001). Toward a structure- and process-integrated view of personality: Traits as density distributions of states. *Journal of Personality and Social Psychology, 80*, 1011–1027.
Fleeson, W. (2007). Situation-based contingencies underlying trait-content manifestation in behavior. *Journal of Personality, 75*, 825–862.
Funder, D. C. (2006). Towards a resolution of the personality triad: Persons, situations, and behaviors. *Journal of Research in Personality, 40*, 21–34.
Funder, D. C., & Colvin, C. R. (1991). Explorations in behavioral consistency: Properties of persons, situations, and behaviors. *Journal of Personality and Social Psychology, 60*, 773–794.
Furr, R. M., & Funder, D. C. (2004). Situational similarity and behavioral consistency: Subjective, objective, variable-centered, and person-centered approaches. *Journal of Research in Personality, 38*, 421–447.
Hager, J. C., & Ekman, P. (1985). The asymmetry of facial actions is inconsistent with models of hemispheric specialization. *Psychophysiology, 22*, 307–318.
Hartshorne, H., & May, A. (1928). *Studies in the nature of character, vol. 1, studies in deceit*. New York: Macmillan.
Keltner, D., & Buswell, B. N. (1997). Embarrassment: Its distinct form and appeasement functions. *Psychological Bulletin, 122*, 250–270.
Kenrick, D. T., & Funder, D. C. (1988). Profiting from controversy: Lessons from the person-situation debate. *American Psychologist, 43*, 23–34.
Lang, P. J., Davis, M., & Ohman, A. (2000). Fear and anxiety: Animal models and human cognitive psychophysiology. *Journal of Affective Disorders, 61*, 137–159.
Mischel, W. (1968). *Personality and assessment*. New York: Wiley.
Mischel, W., & Peake, P. K. (1982). Beyond déjà vu in the search for cross-situational consistency. *Psychological Review, 89*, 730–755.
Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review, 102*, 246–268.
Mischel, W., & Shoda, Y. (1998). Reconciling processing dynamics and personality dispositions. *Annual Review of Psychology, 49*, 229–258.
Mischel, W., Shoda, Y., & Mendoza-Denton, R. (2002). Situation—behavior profiles as a locus of consistency in personality. *Current Directions in Psychological Science, 11*, 50–54.
Moskowitz, D. S. (1982). Coherence and cross-situational generality in personality: A new analysis of old problems. *Journal of Personality and Social Psychology, 43*, 754–768.
Niedenthal, P. M. (2007). Embodying emotion. *Science, 316*, 1002–1005.
Pinker, S. (1991). Rules of language. *Science, 253*, 530–535.
Ross, L. (1977). The intuitive psychologist and his shortcomings. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 10, pp. 173–220). New York: Academic Press.
Scherer, K. R. (2005). Unconscious processes in emotion: The bulk of the iceberg. In L. F. Barrett, P. M. Niedenthal, & P. Winkielman (Eds.), *Emotion and consciousness* (pp. 312–334). New York, NY: The Guilford Press.
Shoda, Y., & Mischel, W. (2000). Reconciling contextualism with the core assumptions of personality psychology. *European Journal of Personality, 14*, 407–428.
Streeter, L. A., Krauss, R. M., Geller, V. J., Olson, C. T., & Apple, W. (1977). Pitch changes during attempted deception. *Journal of Personality and Social Psychology, 35*, 345–350.
Ten Berge, M. A., & De Raad, B. (2002). The structure of situations from a personality perspective. *European Journal of Personality, 16*, 81–102.
Tickle-Degnen, L., & Puccinelli, N. M. (1999). The nonverbal expression of negative emotions: Peer and supervisor responses to occupational therapy students' emotional attributes. *Occupational Therapy Journal of Research, 19*, 18–29.

Vansteelandt, K., & Van Mechelen, I. V. (2004). The personality triad in balance: Multidimensional individual differences in situation-behavior profiles. *Journal of Research in Personality, 38*, 367–393.
Walker-Andrews, A. S. (2008). Intermodal emotional processes in infancy. In M. Lewis, J. M. Haviland, & L. Feldman-Barrett (Eds.), *Handbook of emotions* (pp. 364–375). New York: Guilford Press.
Zuckerman, M., DePaulo, B. M., & Rosenthal, R. (1981). Verbal and nonverbal communication of deception. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 14, pp. 1–59). New York: Academic Press.