



## Mixed impressions: Reactions of strangers to people with pathological personality traits <sup>☆</sup>

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### Abstract

This study builds on previous work investigating reactions to people with pathological personality traits based on thin slices of behavior (Oltmanns, Friedman, Fiedler, & Turkheimer, 2004). Verbal and nonverbal aspects of the signal were separated and examined in a new sample of 150 target individuals (military recruits). Ratings were made after viewing or listening to a 30 s excerpt from an interview that had been conducted with each target person. Undergraduate students (408 total) served as raters in one of the following conditions: transcript, sound only, picture only, or full channel (sound and picture). In all conditions, people with higher scores on histrionic and narcissistic personality traits were rated in a more positive manner, and those with higher scores on schizoid and avoidant personality traits were rated more negatively. The consistency of ratings based on different sources indicates that important and somewhat redundant cues are available in both verbal and nonverbal channels. Initial reactions to people with pathological personality traits are influenced by both verbal and nonverbal cues.

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## 1. Introduction

First impressions are made rapidly, often without intention or awareness (Uleman, Newman, & Moskowitz, 1996). Surprisingly, people are disinclined to change these opinions across time. First impressions have lasting influence over subsequent judgments about others (Sunnafrank & Ramirez, 2004) even when the observers are told that their first impressions were based on incorrect information (Darley & Gross, 1983). Observers will go so far as to find evidence that supports an erroneous assumption about others even if they know that assumption was based on false data (Gilbert & Osborne, 1989). Fortunately, it seems that groups are able to make fairly accurate judgments about others on the basis of minimal information (Ambady, Hallahan, & Rosenthal, 1995; Ambady & Rosenthal, 1992, 1993).

Recent evidence indicates that people who (in other contexts) exhibit symptoms of paranoid, schizotypal, and avoidant personality disorder are perceived unfavorably by people who have viewed no more than a 30-s videotape of their behavior (Oltmanns, Friedman, Fiedler, & Turkheimer, 2004). Other studies have demonstrated that these personality disorders are associated with impairment in interpersonal relationships and social functioning (Lara, Ferro, & Klein, 1997; Oltmanns, Melley, & Turkheimer, 2002). Clinicians and researchers have traditionally believed that the negative impact of pathological personality traits becomes evident only gradually, during the course of an extended relationship (APA, 2000). The new evidence regarding first impressions suggests that some important elements of this process may actually begin much earlier.

In fact, first impressions of people with personality pathology are mixed. While some personality disorders present negatively as judged from “thin slices” of behavior, others seem to present positively. Oltmanns et al. (2004) found that thin slice raters formed positive initial impressions of individuals who also received high scores with regard to histrionic and narcissistic traits based on nominations from their peers. These people were perceived by raters as being more likeable than other target persons based on 30-s video clips. This initial attraction to histrionic and narcissistic individuals fits with the concept of gradual development of relationship impairment related to personality disorders, which has only been substantiated in studies of narcissism. Paulhus (1998) found that self-enhancers (those with narcissistic tendencies) were initially the most well liked members of small groups, but after several encounters they become the least liked members.

All pathological personality traits are not evident in 30 s of behavior. Some people who exhibit pathological personality traits create negative impressions based on minimal information while others create positive impressions (at least initially). Little is currently known about what specific aspects of the 30 s signal provide the basis for

the raters' impressions. One 30-s videotape clip includes information coded on multiple levels, including speech content, vocal modulation, facial expression, and general physical appearance. Understanding the impact of specific aspects of the signal will help as to explain the process by which these effects are generated, and may also provide suggestions about ways in which negative impressions might be minimized for both pathological and nonpathological individuals.

In a meta-analysis of "thin slice" studies, [Ambady, Bernieri, and Richeson \(2000\)](#) found that judgments based on a full channel signal (i.e., video which included picture and speech) were more reliable than judgments based on less comprehensive signals (only picture, only sound, content filtered speech, etc.) for most personality traits. However, a few traits, such as anxiety and dominance, were more reliably distinguished when based on only one type of channel, in this case content filtered speech. This finding suggests that some traits may be more accessible when only specific types of information are available. Because there is a paucity of research comparing the impact of different channels, Ambady et al. recommended caution when interpreting these results. It remains unclear whether certain specific elements of the original signal are more important in determining observers' accuracy and reliability. It seems likely, however, that the verbal and nonverbal elements of the signal are both critical to accurate judgments as suggested by research on physical attractiveness, nonverbal behaviors, auditory cues, and verbal content.

From an evolutionary perspective, physical attractiveness is a cue for health and genetic fitness; two characteristics that make a person desirable as a mate. Thus physically attractive females are rated by males as having a wide variety of positive traits and as being of greater reproductive interest ([Cunningham, 1986](#)). Regardless of the theoretical underpinnings of the effect, physical attractiveness is closely related to the reactions of others. This is commonly documented as the attribution of positive traits to attractive individuals, both male and female. In fact, some researchers have argued that personality is shaped by ones' physical appearance as a consequence of patterns of others' reactions ([Zebrowitz, Collins, & Dutta, 1998](#)).

Nonverbal behaviors also play a central role in judgments regarding attractiveness and personality. They convey a wealth of information that is often beyond conscious control but is invaluable in making personality judgments ([DePaulo, 1992](#)). People are apparently predisposed to associate negative characteristics with individuals who are not smiling ([Ferrari & Swinkels, 1996](#)). Nonverbal behaviors such as smiling and laughing are considered to be indicative of extraversion and a general sense of sexuality ([Simpson, Gangestad, & Biek, 1993](#)). Other nonverbal behaviors such as eye-contact and frequent gestures have been shown to be strong cues for rating extraversion ([Kenny, Horner, Kashy, & Chu, 1992](#)). Nonverbal behaviors play a unique and important role in determining whether people will pursue relationships following initial interactions.

Auditory cues also provide a variety of useful cues. Judgments based solely on auditory information include a combination of both verbal content and vocal quality. Though some researchers have indicated that vocal quality (considered

separately from verbal content) provides little or no information in determining deception, others have found that each factor makes a unique contribution (O'Sullivan, Ekman, Friesen, & Scherer, 1985). Individuals rated as vocally attractive are found to be low in neuroticism and high in conscientiousness, which are both traits difficult to judge in an interpersonal setting (where physical attractiveness is more influential in determining ratings) (Zuckerman, Mikake, & Elkin, 1995). Extraversion, in particular, has been shown to correlate highly with vocal and speech characteristics in several studies (Siegman, 1987) even independent of verbal content (Scherer, 1978).

Verbal content has been shown by some researchers to influence social perception above and beyond physical attractiveness and nonverbal behavior (Berry, Pennebaker, Mueller, & Hiller, 1997). For example, extraversion can be reliably rated from interactions in internet chat-rooms or following one internet interaction (Markey & Wells, 2002). Although relatively little research has been conducted on the impact of verbal content of speech on social judgments, it provides important information directly related to daily interactions.

It seems likely that some channels of information play a more important role than others in determining the impact of pathological personality traits on first impressions. The impact of different channels may vary as a function of the trait in question. People with narcissistic and histrionic traits are typically expressive, well-groomed, and attractive; all factors typically associated with positive personality traits such as extraversion. On the other hand, people with histrionic traits also tend to talk in a way that is vague and difficult to understand. People with narcissistic traits often describe themselves in a self-aggrandizing manner (DSMV-IV-TR, APA, 2000). These considerations suggest that people with narcissistic and histrionic traits may be perceived favorably on the basis of thin slices of expressive behavior because their physical appearance and mannerisms overcome the aversive content of the things that they say.

The potential value of attempting to identify the basis for negative first impressions may also be illustrated using the example of avoidant personality disorder. These are people who have pervasive feelings of inadequacy and are hypersensitive to negative evaluation; they are afraid that other people will criticize or reject them. Our previous findings indicate that these worries are not entirely unfounded or irrational. In fact, other people tend not to like them after viewing a single 30-s videotape of their behavior (Oltmanns et al., 2004). If we could identify specifically the basis upon which the thin slice raters base their negative evaluations, it might be possible to help people with avoidant personality disorder change aspects of their behavior that lead to these negative judgments. In addition, by teasing apart these channels, we will be able to come to a greater understanding of how specific types of information may elicit different judgments from observers.

In our previous study (Oltmanns et al., 2004), we found that untrained raters were accurate in their personality ratings of individuals with various DSM-IV personality disorders based on a 30-s video clip which included both sound and picture information. The first goal of the current study is to replicate these findings with a new target

sample. More importantly, the second goal of the current study is to isolate specific aspects of the stimuli that were used as a basis for thin slice judgments, in order to determine the extent of their influence on personality judgments. We compared thin slice personality ratings for individuals with maladaptive personality traits when the information provided was limited to verbal content alone, all verbal aspects (including vocal quality), nonverbal content alone, or a condition in which both nonverbal and verbal information were included. Our goal was to examine the relative impact of verbal and nonverbal behavior in influencing negative and positive reactions to individuals with various pathological personality traits.

## **2. Method**

### *2.1. Participants*

This study involved two groups of participants: people who rated the tapes and target persons pictured on the videotapes. Raters included 408 undergraduate students at the University of Virginia (82 men and 326 women). Most were in their first year at the university with a median age of 18 (ranging from 17 to 21). Seventy-two percent of the raters were White, 9% were Black, 10% were Asian, and the remaining 9% indicated they were either Bi-racial or of Hispanic descent. Raters volunteered to participate in this study and received course credit for doing so.

Targets were selected from a larger sample of 2111 recruits who participated in a personality assessment screening at the end of 6 weeks of basic training (Thomas, Turkheimer, & Oltmanns, 2003). Approximately 20% of the participants in each training group were selected to complete a structured diagnostic interview, the Structured Interview for DSM-IV Personality (SIDP-IV; Pfohl, Blum, & Zimmerman, 1997). Out of 2111 recruits who were screened in our entire military sample, 433 completed the SIDP-IV. Fifty-two of the 433 SIDP-IV interviews were not employed in thin slice analyses because they were not recorded on videotape or because of technical difficulties with the quality of the tape (either sound or visual image). Approximately one-third of the people chosen for an interview had scores among the highest in their group on self-reported personality disorder traits, one-third were selected based on high levels of peer-reported personality disorder traits, and the others were selected randomly from the remaining people in order to serve as a control group. Interviewees were selected in this manner in an attempt to include as many individuals with personality pathology as possible, and still have adequate numbers of interviewees to compare the differences between individuals with self-rated and peer-rated personality disorder traits.

Our previous paper on thin slice results examined data from 231 of these interviews (those collected during the first several months of our project). The new sample consists of 150 clips of Air Force recruits (86 men and 64 women) from interviews that were conducted in the latter months of data collection and were not used in our previous study (Oltmanns et al., 2004). All were enlisted personnel (not pilots or

Table 1  
Personality disorder diagnoses for target individuals

Disorder	Met diagnostic criteria	One criterion short	Met at least one criterion
Schizotypal	0	1	43
Paranoid	2	7	46
Schizoid	0	2	33
Antisocial	3	6	22
Borderline	6	1	50
Histrionic	2	1	40
Narcissistic	1	3	39
Avoidant	12	3	31
Dependent	2	3	35
Obsessive-compulsive	8	7	75

*Note.*  $N = 150$ . Numbers are likely inflated by comorbidity between disorders.

officers) and all held high school degrees with an average age of 19 ( $SD = 1.5$ ) and an average IQ of 104. Sixty-four percent of the recruits in this sample were White, 18% were Black, 9% were Hispanic, and 3% were Asian. Of the target people in this study, 24% met criteria or were one criterion short of a personality disorder diagnosis based on the SIDP-IV. Detailed information about the prevalence of personality disorder criteria in the sample based on the SIDP-IV is presented in Table 1.

## 2.2. Personality assessment tools

In addition to the SIDP-IV, all recruits in the larger personality assessment project completed a series of questions in which they nominated fellow members of the basic training groups who exhibited various pathological traits. These questions included lay translations of features of personality disorders listed in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) as well as additional filler items on various positive characteristics. Further details on this procedure including descriptive statistics and internal consistency measures are provided in Thomas et al. (2003).

For this study, we chose to focus solely on the peer-nomination score rather than self-report measures of personality pathology since the thin slice response is a peer-response from a stranger. To do so, a peer-nomination score was calculated for each of the 10 personality disorders by dividing the sum of nominations a participant received by the total number of individuals in the basic training group.

## 3. Materials

To develop uniform thin slice stimuli, we selected one 30 s excerpt from the target recruit's answer to the first question on the SIDP-IV "What do you enjoy doing?" Six different stimulus tapes were then compiled, with each tape including clips from the interviews of 26 target recruits. Six of the clips were dropped from the analysis due to incomplete information, leaving the total number of clips at 150.

### 3.1. Procedure

Participants watched and rated one of the six composite tapes of the targets in one of the four conditions: both sound and picture (full channel), sound only (sound), picture only (nonverbal) or written transcript. Each tape was rated in a group setting with 17 participants per group. In the full channel condition, the stimulus tapes were shown on a 32in. television screen. The experimenter paused the videotape briefly between clips to allow participants to rate the target. For the sound condition, a large blank sheet of paper was taped over the television screen to prevent the participants from obtaining visual information. In the nonverbal condition, the sound was turned off, and participants rated the videotapes solely based on the visual image. For the transcript condition, participants read and rated printed materials (transcriptions of the video clips on one of the six composite tapes).

Participants were asked to make ratings of each target person on seven items using a Likert scale from 1 (not at all) to 10 (completely). The raters were asked to indicate the degree to which each statement described the personality of the target individual. Five items were traits and descriptors from the five-factor model of personality (Costa & McCrae, 1992) including: extraverted (talkative, assertive, active, excitement-seeking, and fun-loving); agreeable (trusting, straight-forward, helpful, easy-going, modest); conscientious (deliberate, orderly, competent, dutiful, and achievement-striving); emotional (anxious, depressed, self-conscious, impulsive, vulnerable); and curious (nonconforming, seeks novelty and fantasy, open to new ideas and values). “Emotional” and “curious” are referred to in our analyses as the traits neuroticism and openness. For the two remaining items, participants were asked how physically attractive they found the target individual to be, and “Based on your first impression, would you like to get to know this person better?” (referred to in our analyses as “likeability”).

## 4. Results

We ran a series of preliminary analyses to examine gender effects for both targets and raters. In comparison to male raters, female raters assigned higher mean scores to both male and female targets. This effect replicates findings reported by other investigators (Winqvist, Mohr, & Kenny, 1998). Female targets received higher mean scores than male targets for all personality traits rated, and the pattern of ratings for male and female targets was similar for all traits. No significant gender by personality trait interactions were found. Therefore, we combined ratings across gender and present the combined findings below.

The reliability of the thin slice ratings was calculated separately for each of the four conditions, using intraclass correlations. Reliabilities for the composite ratings (based on the 17 raters who watched each tape) are presented in Table 2. While the highest reliability was found for the trait of extraversion ( $M = .94$ ), reliability for agreeableness, openness, physical attractiveness, and likeability was high across all three conditions ( $M = .87$ ). For conscientiousness, reliability ranged from good in the

Table 2  
Reliability of thin slice ratings by condition

Rating	Full channel	Nonverbal	Sound	Transcript
Extraversion	.95	.94	.94	.94
Agreeableness	.87	.88	.86	.83
Conscientiousness	.76	.60	.83	.84
Neuroticism	.46	.60	.72	.83
Openness	.89	.88	.87	.85
Likeable	.87	.88	.87	.83
Attractiveness	.89	.88	.83	.87

sound only condition ( $r = .80$ ) and transcript condition (.84) to moderate in the nonverbal condition ( $r = .60$ ). Neuroticism ratings had relatively low reliability in all conditions except the transcript condition ( $r = .83$ ), with the lowest reliability in the full channel condition ( $r = .46$ ).

#### 4.1. Condition comparisons

To compare thin slice ratings from the different conditions, we first calculated Pearson's correlations among the ratings. To correct for the unreliability of neuroticism and some conscientiousness ratings, we also calculated disattenuated correlations among all variable combinations. Results of these calculations are presented in Table 3. As would be expected, the lowest correlations occurred when the transcript and nonverbal conditions were compared. Correlations between the sound only and full channel conditions were also relatively lower than between other conditions. Correlations between the sound only and transcript conditions were moderate for all variables except for agreeableness.

Similar patterns of correlations exist between the sound and full conditions and the nonverbal and full channel conditions. In both of these comparisons, there were strong correlations between extraversion, agreeableness, and likeability. The correlations for conscientiousness, neuroticism, and openness were strongest when comparing the full channel condition to the sound only condition. For attractiveness, the

Table 3  
Correlations among thin slice conditions

Rating	Nonverbal vs transcript	Transcript vs sound	Nonverbal vs full channel	Sound vs full channel	Transcript vs full channel
Extraversion	.47(.50)	.62(.66)	.70(.74)	.85(.90)	.51(.54)
Agreeableness	.33(.38)	.38(.45)	.66(.75)	.58(.67)	.28(.33)
Conscientiousness	.06(.09)	.50(.60)	.32(.47)	.54(.68)	.45(.56)
Neuroticism	.34(.52)	.52(.67)	.49(.93)	.55(.96)	.30(.49)
Openness	.34(.39)	.56(.65)	.57(.64)	.80(.91)	.47(.54)
Likeable	.27(.31)	.44(.52)	.64(.73)	.64(.74)	.35(.41)
Attractiveness	.28(.33)	.49(.58)	.72(.81)	.42(.49)	.24(.27)

Note. Numbers in parentheses are disattenuated correlations calculated as  $(r_{xy}/\sqrt{\text{rel}(x) * \text{rel}(y)})$ .

correlation was stronger between the nonverbal and full channel than for either of the other condition comparisons.

To determine the relative impact of vocal, verbal, and nonverbal conditions as compared to the more common situation where all three would be available, a series of multiple regressions were employed. For each of the seven thin slice rating variables, the full channel condition was predicted by ratings made in the nonverbal, sound, and transcript conditions. Squared semi-partial correlations were then calculated for each modality to determine relative variance explained by each condition. Results are presented in Table 4.

For all seven of the thin slice rating variables, the transcript condition explained relatively little of the total variance in the full channel condition. Variance explained by the transcript condition was significantly greater than zero only for conscientiousness, openness, and likeability, and variance for all three of these variables was better accounted for by nonverbal and sound components. For extraversion, conscientiousness, neuroticism, and openness, nonverbal, and sound components each accounted for a similar and significant portion of total variance in the full channel condition. While both nonverbal and sound components explained a significant portion of variance for agreeableness, likeability, and attractiveness, the nonverbal component had a much larger effect size for these three variables.

Table 4  
Relative variance in full channel condition explained by other conditions

Rating	Condition	$sr^2$	$p$
Extraversion	Nonverbal	.45	.001
	Sound	.53	.001
	Transcript	.02	.09
Agreeableness	Nonverbal	.39	.001
	Sound	.22	.001
	Transcript	.02	.12
Conscientiousness	Nonverbal	.13	.001
	Sound	.17	.001
	Transcript	.08	.002
Neuroticism	Nonverbal	.14	.001
	Sound	.18	.001
	Transcript	.01	.92
Openness	Nonverbal	.31	.001
	Sound	.46	.001
	Transcript	.04	.02
Likeable	Nonverbal	.42	.001
	Sound	.29	.001
	Transcript	.05	.01
Attractiveness	Nonverbal	.49	.001
	Sound	.05	.01
	Transcript	.02	.09

#### *4.2. Relationship between thin slice and personality disorder ratings*

For each of the rating conditions, Pearson's correlations were computed between the thin slice ratings and the peer ratings of personality disorder obtained in the larger study (discussed above). These correlations are presented in [Table 5](#). Significant differences in thin slice ratings were found for several personality disorders within each condition. Across conditions, physical attractiveness was related to more personality disorder ratings than any of the other thin slice ratings. Thin slice ratings of agreeableness and conscientiousness had the fewest significant correlations with personality disorder traits across different conditions. Relatively fewer significant correlations were found in the transcript only condition than in any of the other conditions (full channel, nonverbal or sound only).

To clarify the patterns inherent within these ratings, [Table 6](#) summarizes the significant findings from these correlation analyses and indicates findings that were replicated from our first study. Since only the full channel condition was included in our first study, only full channel results from this study can be viewed as replications of our previous work. Many of the results from our first study were replicated in this analysis, including patterns of thin slice ratings of avoidant, histrionic, and narcissistic personality disorders and specific traits of OCPD, dependent, schizotypal, and schizoid disorders. As seen in the table, when sound information was provided, more of the full channel ratings were replicated than when either transcript or nonverbal information was provided alone. Thin slice trait ratings were consistent across different conditions for histrionic, narcissistic, avoidant, and OCPD personality disorder ratings. Some trait ratings were consistent across two or more conditions for all of the other personality disorder ratings except schizotypal and dependent personality disorder traits.

### **5. Discussion**

The personality ratings made by our thin slice raters were quite reliable, regardless of the condition in which they were made. This result is consistent with previous thin slice research ([Ambady et al., 2000](#)). The only exceptions were found for the neuroticism rating in the full channel condition and for conscientiousness and neuroticism ratings in the nonverbal condition. The reason for low reliability in these three cases is unclear, but other investigators have noted that neuroticism is a difficult trait for untrained people to understand and to rate ([Funder & Dobroth, 1987](#); [Paulhus & Bruce, 1992](#)). The reliability for neuroticism ratings was also relatively low in our first study ([Oltmanns et al., 2004](#)). Neuroticism ratings in the present study were more reliable if they were made on the basis of only one information channel rather than in the full channel condition. This counterintuitive finding is also consistent with results from another lab ([Borkenau & Liebler, 1992](#)). If they are provided with limited information, raters may rely heavily on stereotypes (which they share with other raters) to make judgments regarding neuroticism. The task becomes more difficult when they are presented with more varied information, as in the full channel condition, because neuroticism includes subtle dimensions that are difficult to discern after 30 s.

Table 5  
Correlations between thin slice measures and peer measures by condition

Personality disorder	Thin slice rating						
	Extraverted	Agreeable	Conscientious	Neurotic	Open	Likeable	Attractive
<i>Full channel</i>							
Schizotypal	-.01	.04	.08	<b>.18</b>	.13	.01	-.16
Paranoid	.10	.03	.05	-.06	.11	.15	<b>.21</b>
Schizoid	-.08	-.08	.06	.07	.04	-.06	-.17
Antisocial	.10	.03	.02	-.11	.08	.11	.12
Borderline	.02	.02	-.01	.10	.07	.06	.04
Histrionic	<b>.22</b>	.16	.04	-.04	<b>.20</b>	<b>.25</b>	<b>.27</b>
Narcissistic	<b>.21</b>	.10	.09	-.12	<b>.17</b>	<b>.24</b>	<b>.33</b>
Avoidant	-.12	-.03	-.02	<b>.23</b>	.01	-.14	-.29
Dependent	-.01	.05	.02	<b>.17</b>	.09	-.02	-.14
Obsessive-compulsive	.13	.08	<b>.18</b>	-.13	<b>.17</b>	<b>.17</b>	<b>.19</b>
<i>Nonverbal</i>							
Schizotypal	-.05	-.03	-.11	.12	.01	-.05	-.14
Paranoid	-.01	.01	-.03	-.11	.06	.09	<b>.21</b>
Schizoid	-.14	-.10	-.10	.03	-.08	-.08	-.13
Antisocial	.01	.04	.01	-.12	.05	.10	<b>.16</b>
Borderline	-.06	-.03	-.09	.09	-.02	-.01	.05
Histrionic	.12	.12	.04	.03	<b>.18</b>	<b>.18</b>	<b>.25</b>
Narcissistic	.08	.04	.01	-.13	.12	.16	<b>.32</b>
Avoidant	-.10	-.04	-.12	<b>.19</b>	-.07	-.11	-.25
Dependent	-.02	.03	-.08	.15	.01	-.02	-.09
Obsessive-compulsive	-.03	-.09	-.04	-.20	-.01	.04	<b>.22</b>
<i>Sound only</i>							
Schizotypal	.02	-.01	.07	.05	.08	-.01	-.11
Paranoid	.10	.06	.05	-.04	.06	.14	<b>.22</b>
Schizoid	-.06	-.11	-.01	.03	-.01	-.12	-.18
Antisocial	.09	.04	.01	-.09	.06	.11	<b>.16</b>
Borderline	<b>.22</b>	-.03	-.01	.03	-.01	.02	.02
Histrionic	<b>.21</b>	.11	.08	-.05	<b>.17</b>	<b>.23</b>	<b>.28</b>
Narcissistic	<b>.20</b>	<b>.17</b>	.15	-.08	.15	<b>.28</b>	<b>.36</b>
Avoidant	-.10	-.15	-.02	.16	-.02	-.17	-.27
Dependent	.03	-.03	.05	.13	.08	-.04	-.10
Obsessive-compulsive	.13	.15	<b>.18</b>	-.07	.12	<b>.19</b>	<b>.23</b>
<i>Transcript only</i>							
Schizotypal	-.09	.04	.14	.06	.15	.02	-.14
Paranoid	.07	.05	.12	.02	.09	.11	.11
Schizoid	-.10	-.01	.12	.01	.11	-.02	-.16
Antisocial	.07	.02	.06	-.06	.05	.11	.08
Borderline	-.02	.04	.11	.03	.10	.07	-.04
Histrionic	.16	.08	.10	.04	.12	<b>.20</b>	<b>.19</b>
Narcissistic	<b>.18</b>	.11	.16	-.02	.09	<b>.23</b>	<b>.25</b>
Avoidant	-.21	-.04	.08	.11	.06	-.12	-.28
Dependent	-.14	-.03	.06	.05	.04	-.09	-.18
Obsessive-compulsive	.08	.10	.14	-.11	.11	<b>.16</b>	.14

Note. Correlations in bold are significant at level  $p < .05$ .

Table 6  
 Pattern of significant correlations between peer personality disorder measure and thin slice ratings

	Full channel	Transcript only	Sound only	Nonverbal
Schizotypal	Neurotic*			
Paranoid	Attractive		Attractive	Attractive
Schizoid	Unattractive*		Unattractive	
Antisocial			Attractive	Attractive
Borderline			Extraverted	
Histrionic	Extraverted*	Likeable	Extraverted	Open
	Open*	Attractive	Open	Likeable
	Likeable*		Likeable	Attractive
	Attractive*		Attractive	
Narcissistic	Extraverted*	Extraverted	Extraverted	Attractive
	Open*	Likeable	Agreeable	
	Likeable*	Attractive	Likeable	
	Attractive*		Attractive	
Avoidant	Neurotic*	Not extraverted	Not likeable	Neurotic
	Unattractive*	Unattractive	Unattractive	Unattractive
Dependent	Neurotic*	Unattractive		
OCPD	Conscientious*	Likeable	Conscientious	Not neurotic
	Open		Likeable	Attractive
	Likeable		Attractive	
	Attractive			

Note. OCPD, Obsessive-compulsive personality disorder.

\* Starred items are replicated from first study.

To determine which channel provides the strongest basis for raters' judgments, we first compared the three limited conditions (sound, transcript, and nonverbal) to a full channel condition. Then, we examined how the trait perceptions were related to peer-reported personality information about the targets. Simply looking at the correlations among the conditions, ratings made in the transcript condition are less related to ratings made in the full channel condition than either nonverbal or sound only ratings. The only exception is for conscientiousness, for which transcript and sound ratings are more highly correlated with full channel ratings. In general, this pattern of results indicates that the content of the person's speech is not the primary basis for personality judgments that are made by the thin slice raters. The limited amount of information available to the raters in the transcript condition is less influential than the vocal information that was provided in the sound condition and the dynamic visual information that was provided in the nonverbal condition. Ratings of most of the personality variables were strongly related across both sound and nonverbal conditions. This finding supports other research that demonstrated five-factor traits to be related to both verbal and nonverbal information sources, with strongest effects for extraversion and conscientiousness (Borkenau & Liebler, 1992). The one exception to a more general basis for ratings in our results appeared with regard to ratings of agreeableness, likeability, and attractiveness. For these dimensions, visual images (i.e., the nonverbal condition) had a greater impact than other components on raters' impressions.

Many of the findings from our previous study were replicated in the full channel condition (Oltmanns et al., 2004). The correlations between extraversion ratings and histrionic personality disorder, conscientiousness ratings and obsessive-compulsive personality disorder, and neuroticism ratings and avoidant and dependent personality disorders were all in predicted directions (Widiger, Trull, Clarkin, Sanderson, & Costa, 2002). Some findings dropped out when the ratings were limited to just one channel, but the overall pattern of perceptions did not change. When limited to just one channel, the strongest results occurred when sound information was provided. Nevertheless, correlations between thin slice ratings and several types of disorder remained significant when only nonverbal information was provided. One interesting finding is that antisocial individuals were rated as physically attractive based on verbal or nonverbal information alone, but when full information was provided they were no longer considered appealing by thin slice raters. Perhaps antisocial individuals appear charming, and therefore attractive, when information about them is limited, but this positive impression does not hold when raters are provided with more complete information.

Raters across multiple channels responded positively towards individuals with histrionic and narcissistic (Cluster B) personality disorders, and they responded negatively to individuals with avoidant personality pathology. It has been proposed by researchers that a 'positive halo' effect exists for highly expressive individuals (such as those with histrionic and narcissistic personality disorder traits) where negative traits are initially overlooked and raters form a positive first impression (Bernieri, Gillis, Davis, & Grahe, 1996). This finding may partially explain the counterintuitive finding that raters did not react negatively to individuals with traits of these disorders. Contrary to our initial expectations, the negative features of narcissistic and histrionic traits were not evident in the transcript only condition. In other words, the content of their speech was apparently not perceived negatively. It would be interesting to determine whether this effect would become evident after exposure to much longer samples of speech from these people.

Examining the trait patterns related to these disorders may also help to explain our raters positive reactions to people with histrionic and narcissistic traits. In other research, extraversion, openness, and agreeableness of targets were found to predict observer ratings of relationship quality (Berry & Hansen, 2000). Extraversion has also been found to be important for perceptions of social status for both genders, and low neuroticism was found to be important for male social status (Anderson, John, Keltner, & Kring, 2001). The limited information provided to the thin slice raters is apparently not sufficient for the pathological extremes of these traits to be distinguished from normal levels. Although others are initially attracted to these people, more negative reactions would probably emerge if the relationship continued over a longer period of time (Paulhus, 1998). This may help one to explain the markedly shallow and varied social networks that are presumably characteristic of people with histrionic personality disorder (Bornstein, 1998).

This study includes some methodological issues that deserve comment. One is the use of a thin slice paradigm. This procedure obviously isolates very brief opportunities to observe the behavior of another person. It was employed in an attempt to

identify impressions that might be formed when two people meet for the first time. We do not intend to suggest that our target participants interacted directly with the thin slices judges or that they actually formed personal relationships. Future studies will be needed to address interpersonal perceptions that unfold over time in the context of real relationships, and there is no doubt that data from such an investigation would be interesting.

A second issue involves the fact that our target persons were all military recruits. This circumstance offers some advantages and some disadvantages. One advantage is that various facets of their physical appearance were rather tightly controlled. They all wore the same uniforms and they all had close haircuts. No one was wearing jewelry. The men had no facial hair and the women were not wearing make-up. These are all elements of physical appearance that might be used by thin slice raters to infer personality characteristics. In this sample, we know that variations in the raters' judgments were driven more specifically by what the person said and the way in which he or she said it. On the other hand, the raters were all undergraduate students. Their most immediate peers are not military recruits and their impressions may have been less accurate as a result. It would be interesting to replicate this study using targets and raters from the same group (all military recruits or all college students).

Finally, this study did not examine the role of personality characteristics in rater accuracy. Some studies have addressed this issue, but little conclusive evidence has been found (Akert & Panter, 1988; Bernieri & Gillis, 1995). Future studies should collect personality information about both the targets and the raters in order to determine the relative impact of personality pathology on both judging and perceiving other individuals.

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