

2007

# The effect of thin slicing on structured interview decisions

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The Effect of Thin-Slicing on Structured Interview Decisions

by

Greg F. Schmidt

A thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Arts  
Department of Psychology  
College of Arts and Sciences  
University of South Florida

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Date of Approval:  
September 21, 2007

Keywords: selection, non-verbal behavior, interviews, impression management, stranger ratings

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I would like to dedicate this to my family and friends for their help, support, and patience  
as I continue to explore what this world has to offer.

## Acknowledgements

I would like to acknowledge the members of my thesis committee, for their time, guidance, and encouragement. I would like to specially acknowledge my major professor and advisor, Dr. Walter Borman, for without his guidance, feedback, and support this project would not have been possible.

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## The Effect of Thin-Slicing on Structured Interview Decisions

Greg F. Schmidt

### ABSTRACT

This study examined whether hiring recommendations based on thin slices of a structured interview were associated with recommendations based on the interview in its entirety. After viewing 12 seconds of silent interviewee behavior, participants made hiring recommendations that were significantly correlated with those produced by individuals viewing a still-frame of the interview and the entire interview. In an effort to determine what sources of information participants were using to arrive at their recommendations, nonverbal behaviors were examined in detail. Applicants who appeared attentive, not anxious, competent, confident, dominant, optimistic, and professional were more likely to receive positive hiring recommendations than others. Additional analyses reveal that these nonverbal behaviors impact hiring recommendations in both the still-frame and thin-slice video conditions after controlling for applicant physical attractiveness. Overall, results indicate that despite the availability of verbal content, interviewers may be heavily influenced by their first 12-second impression of a job applicant.

## Chapter One

### Introduction

A considerable amount of research has illustrated the surprising power of first impressions. Researchers have demonstrated that human judgments about teaching ability, outcomes of political races, and personality made on the basis of just a “thin slice” of observational data can be predictive of more traditional evaluations of performance. The term “thin slice” comes from Ambady and Rosenthal (1993), who examined the extent to which end-of-semester teacher evaluations are predicted by ‘thin slices’ of nonverbal behavior (NVB). These authors showed undergraduate student raters short (30 second, 15 second and 6 second) silent video clips of college instructors teaching, and found that their evaluations correlated significantly with teacher effectiveness ratings made by the teachers’ actual students at the end of the college semester. The idea that humans are capable of predicting performance criteria after being exposed to very small amounts of behavior has also been called zero-acquaintance rating, or stranger-rating (Albright, Kenny, & Malloy, 1988; Kenny, Horner, Kashy & Chu, 1992; Paunonen, 1991; Watson, 1989).

The current study explores the extent to which ratings based on thin slices of a selection interview correlate with hiring recommendations made by individuals viewing the same interview under different viewing constraints. More specifically, this study compares the hiring recommendations made by participants assigned to each of three conditions- those who view the selection interview in its entirety, those who see a thin-

slice of the interview, and those who only see a photograph of the job applicant. In an attempt to determine which sources of information these raters are basing their respective hiring recommendations upon, recommendations are also compared with ratings of a variety of non-verbal behaviors. This introduction begins with a description of Ambady and Rosenthal's study, followed by a review of relevant research concerning the selection interview and thin-sliced ratings.

*Ambady and Rosenthal, 1993*

In their frequently cited study, Ambady and Rosenthal (1993) asked participants to view 30-second, 15-second, and 6-second silent video clips of instructors teaching a class, and then rate the teachers' molar nonverbal behaviors, molecular nonverbal behaviors, and physical attractiveness. Molar NVBs refer to more 'meta' nonverbal behaviors that are comprised of a variety of specific behaviors, such as attentiveness, empathy, dominance, and competence, and were rated on a scale from 1 (not at all) to 9 (very). Molecular NVBs are more specific, concrete behaviors such as head nods, smiles, yawns, and fidgeting, and participants were asked to tally up the number of times each molecular NVB occurred during the short clip. Composite variables of both molecular and molar NVB ratings were then correlated with end-of-semester teacher evaluations by their actual students, which consisted of two questions: "Rate the quality of the section overall," and "Rate section leader's performance overall". Results showed that molar nonverbal behaviors predicted end-of-semester teacher evaluations significantly in all three conditions: 30 second video clip ( $r = .72$ ), 15 second video clip ( $r = .46$ ) and 6 second clip ( $r = .54$ ). Molecular NVB ratings and physical attractiveness ratings were correlated minimally with teacher effectiveness ratings, suggesting these factors do not

significantly influence student evaluations.

These surprising findings led to a great deal of subsequent research, much of which explored the extent to which these thin slice ratings correlated with a variety of different criteria. To our knowledge, no one has done so in the field of personnel selection. In a field where both research and legal guidelines suggest that hiring recommendations be based on objective, job-relevant characteristics in order to reliably select employees who are likely to perform well on the job, it seems important to examine whether first impressions based on thin-sliced observational data impact hiring recommendations.

### *The Selection Interview*

*History, Validity, and Structure.* Industrial and organizational psychologists have been studying the employment interview for more than 80 years in an attempt to further understand the psychological and interpersonal processes that occur during a selection decision (Dipboye & Gaugler, 1993; Latham, Saari, Pursell, & Campion, 1980; Schmitt, 1976). Currently, the selection interview remains an important and popular component of many organizations' selection process, along with other common selection procedures such as bio-data, assessment centers, and testing (Schmidt & Hunter, 1998).

Over the years, a few seminal reviews of research on the interview have been published (Wagner, 1949; Mayfield, 1964; Ulrich & Trumbo, 1965; Schmitt, 1976; Arvey & Campion, 1982). The earlier works by Wagner, Mayfield, and Ulrich and Trumbo were rather pessimistic in their conclusions of the interview, arguing that it is neither a reliable or valid predictor of future job performance. Over the years, advances in research methods led to a more complex understanding of the selection interview, and

both Schmitt (1976) and Arvey and Campion (1982) concluded that when certain structural procedures are followed, reliability and validity estimates can improve. Both articles argue that basing interview questions on a job analysis, structuring the interview format to keep interviewers systematic and objective across all applicants, and using multiple raters instead of just a single interviewer are just some of the ways to increase the reliability and validity of an interview. More recently, using meta-analytic techniques to compare the predictive validity for overall job performance of 19 commonly used selection procedures (e.g., general mental ability tests, work sample tests, integrity test etc), Schmidt and Hunter (1998) showed that the structured job interview, with an average corrected predictive validity coefficient of .51, is one of the most effective selection tools.

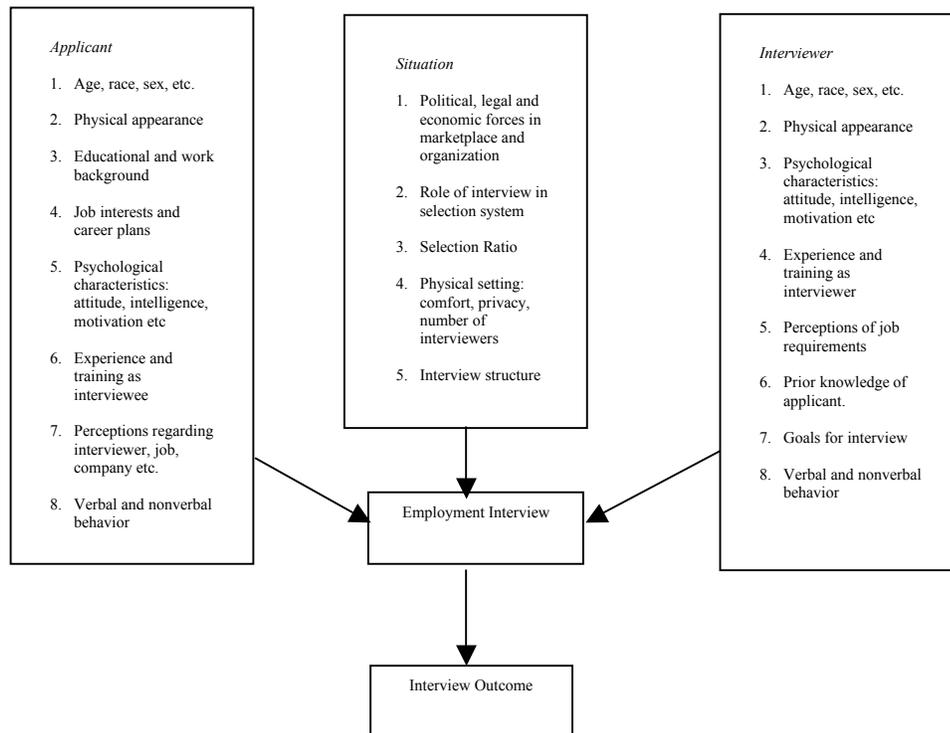
The term “structured interview” refers to the concept of using systematic, predetermined rules for questioning, observation, and evaluation that are applied to all job applicants in the same manner. There are three general ways to structure an interview. The situational interview, first described by Latham et al. (1980), asks applicants to respond how they might behave in future hypothetical situations, while the patterned behavior description interview (Janz, 1982) focuses on applicants’ descriptions of past behavior. Motowidlo, Carter, Dunnette, Tippins, Werner, Burnett, and Vaughan (1992) introduced a third type of structured interview, called the structured behavioral interview, in which all questions about past behavior are the same for all applicants. This last approach was utilized in the videotaped interviews used in the current study.

Schmitt (1976) and Arvey and Campion (1982) provided a model organizing the variables that potentially affect selection decisions into three general groups, reproduced

here in Figure 1. The general groups are a) applicant variables, b) situation variables, and c) interviewer variables. Within each of these general groups lie more specific variables, which, as both Schmitt and Arvey and Campion argue, interact to first affect the interview decision and then the subsequent employment decision. Factors such as applicant age, applicant job interest and career plans, the physical setting of the interview, the selection ratio, and the interviewer's experience and training all contribute variance to the selection interview. Of particular relevance to the current study are applicant verbal and nonverbal behaviors, physical appearance, and applicant age, race, and sex, which, according to this model, are variables that do affect selection decisions. Of all the variables presented below, these seem to be the only ones that could potentially provide information to produce hiring recommendations if a rater is given 12 seconds of silent behavior to work with. Given the context of the current research, it becomes important to consider to what extent these variables affect thin sliced hiring recommendations.

*Nonverbal Behavior and Personnel Selection.* As mentioned previously, nonverbal behavior (NVB) has been of particular interest to those studying personnel selection. The relationship between NVB and selection outcomes has been studied to a great extent over the past few decades (see Dipboye, Arvey & Terpstra, 1977; Gifford, Ng, & Wilkinson, 1985; Imada & Hakel, 1977; Young & Beier, 1977). Most of these studies focused on a particular type of NVB. Results have shown that visual cues such as applicant physical attractiveness (Dipboye, Arvey, & Terpstra, 1977; Dipboye, Fromkin, & Wiback, 1975; Heilman & Saruwatari, 1979; Raza & Carpenter, 1987) and NVBs such as smiling, gesturing, and posture (Forbes & Jackson, 1980; Gifford et al., 1985; Hollandsworth, Kazelskis, Stevens, & Dressel, 1979; Imada & Hakel, 1977; Parsons &

Figure 1. *Variables and Processes involved in the Selection Interview* (Adapted from Arvey & Campion, 1982, pg. 283)

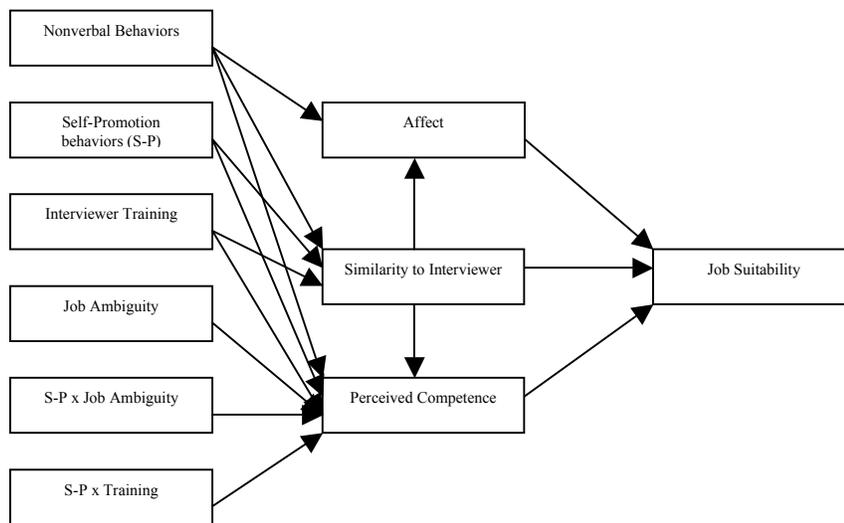


Liden, 1984; Wexley, Fugita, & Malone, 1975; Young & Beier, 1977) do in fact influence interviewers' impressions of the applicant and the subsequent employment decisions.

A more recent study examined the role NVB as a whole plays during an interview, combining all forms of NVB into one general variable (Howard & Ferris, 1996). These authors utilized another general model of the interview as a framework for their investigation (Figure 2). This model begins with six situational or interviewee characteristics (e.g. interviewer training, self-promotion behaviors) which influence three intermediate variables that relate to the interviewer's impressions of the candidate (e.g. affect, perceived competence, and similarity to the interviewer). These three perceptions

then interact to form an overall impression of job suitability of the applicant, which is used to make the subsequent interview ratings or decision. In brief, Howard and Ferris' examination found that NVBs by the interviewee such as direct eye contact, smiling, and nodding influenced the perceived competence of the interviewee ( $r = .14$ ), which in turn was highly correlated with job suitability ( $r = .74$ ).

Figure 2: *Model of social and situational context of employment interview decisions (adapted from Howard & Ferris, 1996, pg. 114)*



Clearly, research has shown that applicant NVB does affect interviewers during the employment interview, and thus researchers have more recently turned their attention to examining whether this source of information is in fact a valid predictor of future job performance. If interviewers are making decisions using cues other than spoken content, one should hope these cues are both valid and reliable predictors of job performance. Early research on this topic by Imada and Hakel (1977) and Gilmore and Ferris (1989) hypothesized that NVB is not a valid source of information. They argued that since

interviewees can manipulate their non-verbal behavior, in a form of impression management, such cues cannot be valid sources of information and therefore are not accurate or valid predictors of future job performance.

More recent research has begun challenging this belief, using more advanced technology and research methodology. For instance, DeGroot and Motowidlo (1999) found that the vocal and visual cues an interviewee exhibits during an interview may in fact predict interview outcomes, as mediated by interviewer personal reactions to the job applicant. These authors showed that a composite variable of vocal cues during the interview (comprised of pitch, pitch variability, speech rate pauses, and amplitude variability) correlated significantly with both supervisory job performance ratings ( $r = .18$ ) and with actual interviewers' judgments ( $r = .20$ ). A visual cue composite variable (comprised of physical attractiveness, smiling, gaze, hand movement and body orientation) showed similar significant correlations with job performance ( $r = .14$ ) and interviewers' judgments ( $r = .21$ ). Moreover, all of these relationships were mediated by interviewer personal reactions to the applicant, such as liking, trust and attributed credibility. The authors suggest this provides evidence that "interviewers react to visual and vocal cues by developing affective reactions related to the extent to which the applicants, as future employees, might be willing to help them, accept their suggestions, [and] cooperate with them" (p. 991). In sum, those interviewees who are able to elicit such favorable personal reactions from their interviewers with their visual and vocal cues are more likely to be hired, and will tend to have favorable supervisory performance ratings once they begin working.

Additional research by Motowidlo and Burnett (1995) and Burnett and Motowidlo

(1998) provide further evidence that visual and vocal cues provide valid sources of information during the interview. Motowidlo and Burnett (1995) found that ratings based on aural information only and visual information only were correlated with one another ( $r = .53$ ), and these ratings were significantly correlated with supervisor job performance ratings ( $r = .33$  and  $r = .32$  respectively).

Burnett and Motowidlo (1999) investigated these findings further and concluded that visual information has an effect on interview ratings, even when content information is also available. In this study, groups of students watched videotapes of 60 managers answering structured interview questions. One group of raters watched the tapes without sound (visual information only), another group read transcripts of the interview (content only), or watched and listened (complete information). Hierarchical linear regression analysis showed that visual information has an effect on interview ratings above and beyond the content of responses. An integration of nonverbal cues (such as gaze and physical attractiveness) and verbal information had the strongest correlation with performance ratings, indicating that it is some combination of both content and visual information that results in the interview's predictive ability of job performance.

In response to early researchers who discounted the idea, Motowidlo and Burnett (1995) and Burnett and Motowidlo (1999) showed that variability of visual and vocal cues portrayed during the interview reflect true differences in job performance, and that this correlation can be interpreted as evidence that visual and vocal nonverbal cues are indeed valid sources of information. However, it must be noted an alternative explanation for these results is that both interviewers and supervisors are making similar systematic rating errors, resulting in the high correlations, and that the validity of NVB during

employment interviews can still not be established.

In sum, research shows that NVBs do affect selection decisions, and they may in fact be a valid predictor of job performance. This study extends research on NVB and hiring decisions by examining whether NVBs correlate with decisions made using thin sliced interviewee behavior. The focus of this introduction now shifts to a review of literature relevant to thin-slicing.

### *History of Thin-Slice Ratings*

The ability to form impressions of strangers based on very little available information - referred to as thin-sliced, zero-acquaintance, or stranger ratings - is a remarkable human capacity documented by a considerable amount of research, dating back to the early parts of the 20<sup>th</sup> century (Cleeton & Knight, 1924; Passini & Norman, 1966; Albright, et al., 1988; Kenny et al., 1992; Paunonen, 1991; Watson, 1989). The earliest works tended to focus on stranger ratings of personality. Cleeton and Knight (1924) were among the first researchers to investigate this topic, finding similar amounts of agreement between both acquaintance's ratings and self report measures of personality and intellect, and non-acquaintance's ratings and these same self reports. In this case, the non-acquaintance provided personality ratings in a thin sliced condition, after interacting with the target for only a few minutes. Passini and Norman (1966) also report findings of similar factor structures between ratings by strangers and of highly acquainted subjects on certain measures of the Big Five. More recently, Albright et al. (1988) examined this surprising finding more closely, and concluded that at zero-acquaintance, strangers used physical appearance to produce similar correlations between the stranger reports and self reports of personality. These authors report that interpersonal consensus of stranger

ratings of extraversion and conscientiousness is mediated by physical attractiveness, which they argue results from shared stereotypes about physical appearances. Albright et al. reason that in order for complete strangers to make any type of judgments of a target, they would use the cues that are readily available to them -- in this case physical appearance. Therefore, consensus of such stranger ratings would indicate that there are some shared stereotypes about these physical cues.

Other research has produced similar findings, providing support that ratings at zero-acquaintance correlate significantly with self and acquaintance ratings (Borkenau & Liebler, 1992; Kenny et al., 1992; Watson, 1989). Watson (1989) used 250 unacquainted participants split into small same-sex groups who rated both themselves and others in their group. Significant stranger-self correlations for extraversion and conscientiousness were obtained. Funder and Colvin (1988) included acquaintance ratings (participants who knew the targets), and found that acquaintance and self-ratings were more similar than stranger-self ratings, but that both acquaintance-self *and* stranger-self ratings agreed with one another beyond chance. Finally, a study examining how competent people believed congressional candidates looked in a photograph provides surprising evidence for this phenomenon (Todorov, Mandisodza, Goren, & Hall, 2005). Participants were asked to view a head-shot of an unknown congressional candidate of the 2004 election, and rate his or her competence. The results showed that almost 69% of the eventual 2004 Senate election results could be significantly predicted by competence ratings based on only a one-second viewing of a photograph.

*Predicting Interview Decisions after 12 seconds.* Early studies examining self-stranger correlations were considered very surprising by researchers, who were expecting

acquaintanceship and self-other correlations to co-vary (i.e., raters who knew the target the longest would also produce the highest self-other correlations). In an article attempting to explain these surprising correlations, Paunonen (1991) argues there are three reasons why thin slice ratings may correlate with subsequent ratings based on more complete sources of information. The first is that targets in such studies are likely to present themselves in a favorable light, and that raters pick up on these often salient cues. For instance, if an interviewee is presenting him/herself in a socially desirable manner, this should come across to raters who only see 12 seconds of the interview *and* those who see the entire interview, resulting in thin slice selection decisions that correlate with actual selection decisions.

The second possible reason is that there are sex and other stereotypical differences in normative behavior. In the selection interview context for example, there are common gender stereotypes that men are more aggressive than women, and interviewers could be using such stereotypical information to make rating attributions based on nothing else but the interviewee's sex. The interviewee's sex is readily apparent in the first few seconds of the interview, and thus might predispose the interviewers in both short exposure and longer exposure conditions to make similar ratings.

According to Paunonen, a final possible reason for significant thin slice and complete interview correlations is that raters may use previous experiences to make inferences about a target's personality. For instance, imagine an interviewer observes that all job applicants who are neatly dressed and groomed and have all their papers organized also score very high on the conscientiousness factor of a personality inventory. The interviewer may very well begin to use the observable cue of physical tidiness to make

inferences about future applicants' personalities. Moreover, observing whether someone is neatly dressed and organized can occur almost instantaneously upon first seeing someone, so it seems plausible that an interviewer can make thin-sliced ratings of an applicant that correlate with ratings made after the entire interview. Paunonen's research provides support for the idea that ratings of very short interview videos may indeed correlate with full interview ratings, due to any of the reasons discussed above.

Other research from the field of social psychology also provides reason to believe that thin-sliced interview selection decisions could be predictive of entire interview decisions. First, a meta-analysis by Ambady and Rosenthal (1992) examined the accuracy of predictions of various outcomes based on very short observations of behavior. A total of 38 studies were included in the analysis, with observations ranging from 3.5 seconds to five minutes. The authors only included studies that used either objective criteria or ecologically valid criteria which were correlated with stranger ratings. An example of an objective criterion is whether or not a target was lying in a deception-detection experiment, and an example of an ecologically valid criterion is supervisor ratings of performance. The overall effect size ( $r$ ) for accuracy of predictions was .39. No difference in accuracy was found when studies using observations four to five minutes long were compared to studies using observations less than 30 seconds. However, of the 38 studies, only three approached the extremely short observation time planned in the current study (3.5 seconds, 20 seconds, and 20-40 seconds).

More recent research has provided reason to believe 12 seconds is sufficient to produce high interviewer-stranger correlations. Ambady, Hallahan and Conner (1999) found that when unacquainted raters were asked to categorize whether a videotaped target

responding to the question “Please discuss how you balance your extracurricular and academic activities” was gay or not, homosexuals were accurately categorized by strangers as being gay in both 10 second silent video-clips ( $r = .82$ ) and 1 second video-clips ( $r = .53$ ). Babad, Avni-Babad, and Rosenthal (2004) replicated Ambady and Rosenthal’s (1993) earlier work, and showed that end-of-semester teacher evaluations were predicted by ratings based on only 9 seconds of nonverbal classroom behavior. Also, Babad (2005) showed high school students 10 second clips of teachers lecturing their class, and asked participants to rate the extent to which the target teacher would behave differentially toward high-achieving students versus low-achieving students (otherwise known as ‘teacher differential behavior,’ or TDB). Although the raters did not see any teacher-student interaction, they significantly predicted teachers’ differential behavior (TDB). Most recently, Ambady, Krabbenhoft, and Hogan (2006) showed that stranger judgments of sales managers on interpersonal traits (e.g., collaborative, empathic, understanding etc) correlated significantly ( $r = .51$ ) with supervisor ratings of sales performance (nominations of the target as “outstanding” or “average”). These examples of zero-acquaintance ratings lend support to the idea that 12 seconds of interviewee behavior is enough to predict complete selection interview decisions.

Borkenau and Liebler (1992) examined the effect of *how* information is portrayed to zero-acquaintance raters would have on ratings. Strangers were asked to rate physical attributes and personality traits based on either a video with sound, a silent video, a still shot of the target, or just an audiotape of the target reading a script. Validity was influenced by the mode of information (for instance, self-stranger ratings of extraversion was highly correlated for video with sound and silent film [ $r = .51$  and  $.47$  respectively],

but lower for still and audiotape only [ $r = .33$  and  $.33$ ]); however reliability remained the same for all modes. Overall, stranger ratings were most valid for extraversion and conscientiousness. Of importance to the current study is these authors' discussion of certain conditions that allow these zero-acquaintance ratings to correlate with self-ratings. The authors conclude that some traits (such as extraversion and conscientiousness) are more likely to be inferred validly than others because a) the available cues are valid correlates of the trait (e.g. talkativeness correlates with extraversion), b) the cues are easily detected by strangers (e.g. talkativeness is easily observed by a stranger, while sympathy is not), and c) the cues are validly interpreted by the stranger (e.g. the stranger actually interprets talkative behavior as representative of an extravert).

In an interview setting, similar conditions must exist for significant interviewer-stranger correlations to occur. First, there must be cues that are valid correlates of behavior. Second, the cues must be easily observed by the interviewer, and third, the cues must be interpreted correctly by the interviewer. If these conditions are met in the current study, then it can be expected that ratings based on only 12 seconds of interviewee behavior will correlate with entire interview ratings.

### *Hypotheses*

Based on the previously reviewed literature, the current study proposes eight hypotheses to be tested. The first five concern themselves with the sources of information raters use to form hiring recommendations. First, based on the findings of Ambady and Rosenthal (1994), we expect that molecular NVBs will not correlate with hiring recommendations made in any of the three viewing conditions.

*H1: Molecular nonverbal behaviors will not be associated with the pictures-only,*

*the thin-sliced, and the entire interview hiring recommendations.*

We expect that molar NVBs on the other hand will correlate significantly with hiring recommendations made in the thin-sliced and entire interview conditions, but not the picture-only viewing condition. These NVBs will be readily apparent to an interviewer when they first observe interviewee behavior (which occurs in both the thin-slice and entire-interview conditions), helping them make first impressions that we believe is associated with eventual hiring recommendations. Because those viewing still-frame photos are not exposed to these NVBs, we do not expect there to be any correlation between molar NVB and picture-only hiring recommendations.

*H2: Molar non-verbal behaviors will not predict picture-only interview hiring recommendations.*

*H3: Molar non-verbal behaviors will predict thin-sliced interview hiring recommendations.*

*H4: Molar non-verbal behaviors will predict entire interview hiring recommendations.*

Next, we expect physical attractiveness to correlate moderately with hiring recommendations made in all three groups. Previous research leads the belief that despite the participants' best intentions, applicant attractiveness will be somewhat associated with selection decisions (e.g. Dipboye, Arvey, & Terpstra, 1977; Dipboye, Fromkin, & Wiback, 1975; Heilman & Saruwatari, 1979; Raza & Carpenter, 1987), especially when raters are asked to produce their decisions after 12 short seconds.

*H5: Physical attractiveness will be moderately correlated with the pictures-only, the thin-sliced, and the entire interview hiring recommendations.*

The final three hypotheses concern themselves with the correlations between hiring recommendations produced by raters in the three viewing conditions. We predict that ratings made in the thin-sliced and entire interview conditions will correlate significantly with one another, expecting that the molar NVBs observed by raters in both groups will produce similar patterns of hiring recommendations. Again, because these molar NVBs are not observed by raters in the pictures-only group, we do not expect hiring recommendations made by these individuals to be associated with those in either of the two remaining groups.

*H6: Thin sliced hiring recommendations based on 12-second silent video clips will correlate significantly with hiring recommendations made based on the entire interview.*

*H7: Thin sliced hiring recommendations based on 12-second silent video clips will not correlate significantly with hiring recommendations made based on still-frame pictures of job applicants.*

*H8: Hiring recommendations made based on the entire interview will not correlate significantly with hiring recommendations made based on still-frame pictures of job applicants*

## Chapter Two

### Method

#### *Overview*

Undergraduate and graduate students from the University of South Florida were assigned to one of three conditions, in which they were asked to watch entire videotaped interviews and make hiring recommendations about each interviewee. Participants either viewed the interview in its entirety, including sound, a thin-sliced silent videotaped version of the interviews consisting of a total of 12 seconds of interviewee behavior, or a still-frame taken from the videotaped interview. Ratings from all three conditions were compared to one another, and separate ratings of molar and molecular nonverbal behaviors were correlated with each set of hiring decisions to determine whether specific forms of NVB predict interview outcomes.

#### *Participants*

A total of 177 participants took part in this study, the majority of whom were selected using a university-wide online participant screening tool, and were awarded course extra credit in exchange for their contribution to the study. The remaining participants were recruited through personal communication, and were provided with a meal as they completed their portion of the study. A total of 35 undergraduates (24 females, average age: 19.69) were assigned to the first condition, in which they viewed a still-frame of each of the interviewees, and provided hiring decisions. Of the 35 records obtained from this group, a total of six were excluded from any analyses because of

incomplete data or response patterns that showed they were not putting thought into their ratings (e.g. responding 1-5-1-5-1-5... for all responses). A second group of 123 undergraduates (92 females, average age: 20.34) were assigned to the second condition, in which they viewed the thin-sliced video clips before making their hiring recommendations. After screening the data in a similar fashion as described previously, 98 records were retained for further analysis. The third condition was comprised entirely of Industrial-Organizational psychology graduate students (N=11, 4 females, average age: 26.5), recruited through personal communication by the researcher, to view and provide ratings based on the entire videotaped interview. I/O psychology graduate students were targeted for this condition as they all had previous academic or applied training concerning personnel selection, performance appraisal, or more specifically, interviewing, and should behave most like actual hiring managers trained in structured interviewing. All records in this third condition were retained for further analysis.

A small focus group (N=4, 3 females) comprised of both undergraduate and graduate students was then asked to provide ratings of each interviewee's molar nonverbal behavior based on the thin-sliced videos. A second focus group (N=5, 5 females) viewed the tapes as well, and rated the frequency of molecular nonverbal behaviors and applicant physical attractiveness during the thin-sliced interviews.

After the data were screened according to the criteria described previously, a total of 138 graduate and undergraduate participants' records were retained for further analysis.

### *Materials*

*Original Interviews.* Thirty-four previously recorded interviews (Fox & Spector

2000; Menhart, 1999) were used as the primary stimuli for this study. Participants in the interviews were previous students at the University of South Florida, from a wide range of academic majors, including psychology, biology, chemistry, communications and speech, health sciences, and business. Work experience of these students averaged 47 months (S.D. = 46), with over 70 percent having worked at least two years.

To create the original video tapes, Fox and Spector had the participants report to the University Career Resource Center to be introduced to the selection interview procedure, where they were instructed by the primary researcher to assume the role of a job applicant. Each participant was given a job description that included a summary and detailed task requirements for an entry-level management position as assistant store manager in a national drug store chain. The description focused on general supervisory and customer service responsibilities, as well as entry into the healthcare/pharmaceutical industry. See Appendix A for the complete job description.

After being briefed on the job, the interviewees were led to the interview room where a confederate, playing the role of company interviewer, conducted a 5-10 minute videotaped structured interview. The structured interview consisted of a total of 13 questions, following the structured behavioral interview format (Motowidlo et al, 1992) (See Appendix B for a complete copy of the interview questions). Research assistants were trained interviewers, instructed to remain neutral, but respond appropriately to the interviewees' communication style. For example, the interviewers did not initiate smiling, but were told to respond to an interviewee's smile with a smile. In general, each videotaped interview begins with the candidate sitting down or shaking hands with the interviewer, and ends with the interviewer telling the candidate there are other applicants

who need to be interviewed, and that they are excused. The camera is positioned so that only the candidate sitting on a chair in front of a desk is visible to the viewer.

*Stimuli videos.* Each videotaped interview was digitally edited to create stimuli for each of the three conditions in this study. To create still-frames of the original videos, the author took screen shots of each video, and saved them in *.jpeg* format. A slideshow was then created in which a photo of each interviewee presented for a total of 12 seconds.

To create the thin-sliced videos, a total of 3 randomly placed four-second sections of each of the original interviews were identified. Each segment was first screened to ensure consistency across all interviewees (i.e. if the randomly selected clip involved the interviewee packing up his/her stuff at the end of the interview, that clip was dropped in favor of another one that involved the interviewee listening or responding to the interviewer). Next, these three segments were spliced together to form one 12 second clip, and all audio information was removed from the videos. The final result were 34 silent twelve-second clips of the interviewee, separated by inter-trial slides designed to provide the raters enough time to provide their ratings.

In the third condition, participants viewed each of the 34 videos in their entirety, including the audio. Some videos were edited slightly once again to ensure consistency, as some of the taped interviews included footage of the interviewee entering the room in the beginning, or packing up their belongings at the end, while others did not. Such footage was removed, and in general, each video began with the interviewer introducing them self and ended with the interviewer explaining the next steps in the hiring process.

All 34 interviews were presented in the same order to all participants, regardless of condition. Although randomization would have eliminated order effects and other

similar threats to internal validity, it was the author's choice to maintain the same order across conditions. Organizations often do not have the luxury of randomizing their own interviews, and as such, the current study did not do so either.

*Hiring recommendations.* Raters in all three viewing conditions used the same set of rating dimensions. First, on a scale of 1-3, raters were asked, based on the interview, if they recommended the candidate should (1) be outright rejected, (2) put on a reserve list, (3) or offered a job. Second, each candidate was rated on a scale from 1 (not at all qualified) to 5 (highly qualified), reflecting how qualified the interviewee is for the position of assistant store manager. A third question was asked to measure the extent to which the rater believed the interviewee was actually offered a job (1- "Not at all likely" to 5- "Extremely likely"). The rating form included a confidence measure after each of the three aforementioned hiring recommendation measures, which was provided in an attempt to determine whether participants were more (or less) confident providing ratings for particular interviewees. Data from these measures are not included in this experiment however, as a majority of participants either circled one response for all confidence measures or skipped the confidence measures all together. Overall, it was determined the data obtained by these measures would not be reliable or complete, thus all confidence measures were excluded from analyses. See Appendix C for a complete copy of the interview rating form.

*Molar and molecular nonverbal measures:* Two separate focus groups reviewed the thin-sliced videotapes to generate non-verbal ratings of the interviewees. Using Ambady & Rosenthal (1993) as a model, the first focus group rated each 12 second clip on the number of occurrences of 15 molar non-verbal behaviors, on a scale ranging from

1 (does not occur at all) to 7 (occurs all the time). Again, the molar behaviors rated were accepting, active, attentive, competent, confident, dominant, empathic, enthusiastic, honest, likable, anxious (reverse scored), optimistic, professional, supportive, and warm. See Appendix D for a complete copy of the molar non-verbal behavior rating form.

The second focus group produced ratings of molecular non-verbal behaviors. Once again using Ambady & Rosenthal (1993) as a model, the number of occurrences of the following molecular nonverbal behaviors were rated by the focus group: head nods, head shakes, smiles, laughs, yawns, frowns, biting of the lips, downward gazes, self-touches, fidgets (hands, legs or objects), emphatic gestures (pointing, clapping etc), weak gestures (using hands while talking), position of the hands (symmetrical or asymmetrical, folded or open), position of the leg (crossed or open), and position of the torso (leaning forward, neutral or back). These raters then rated each interviewee on a 7 point scale for physical attractiveness (1= extremely unattractive, 7 = extremely attractive). See Appendix E for a complete copy of the molecular NVB rating form.

### *Procedure*

*Groups 1 ratings- photograph condition.* The first set of ratings was obtained using 35 undergraduates who viewed one still frame taken from the videotaped interview. Participants were seated in a classroom with a projector and screen, attached to a computer, and asked to complete consent forms. Participants were then briefed on the job description that the interviewees were “applying” for, and given a cover story that management at the Drug Store chain was experimenting with a new way of hiring candidates. They were told the company was spending too much time and labor on interviewing new hires, and found that accurate hiring recommendations may be

produced by simply looking at pictures of candidates, and that this study was designed to test this. Everyone was then given a packet containing a separate hiring recommendation sheet for each of the interviews, and given a chance to familiarize themselves with the rating dimensions. Next, the experimenter began projecting the still-frame photos, beginning with 3 “training” photos designed to help participants get used to the task and to provide some baseline for what they should attend to in the photos. These training sessions were not scored or used in the analyses. Each photo was displayed for 12 seconds, the same duration of the thin-sliced videos. Ample time was provided between each slide, allowing time for participants to complete their ratings. At the conclusion of the session, rating packets were collected, and the experimenter verbally debriefed the participants.

*Group 2 ratings- thin-sliced videos* The second set of ratings was generated by a separate group of undergraduate students (N= 123), who viewed the thin-sliced videos. The same procedure described above was followed with this group of participants, except they were told that management of the drug store company was hoping that 12 second silent clips would be sufficient to produce accurate hiring recommendations. Participants were shown three training video clips, followed by the 34 thin-sliced videos presented in the same order as in the pictures-only condition. Data was collected over the course of five separate sessions, with no single session containing more than 40 participants. Again, subjects were released after a verbal debriefing by the experimenter.

*Group 3 ratings- entire interview videos.* The final set of hiring recommendations was generated by a group of 11 graduate students, who watched each of the 34-videotaped interviews in their entirety across two data collection sessions. These

participants were not given any cover story, and were simply asked to provide hiring recommendations using whatever knowledge they had about performance appraisal and interviewing techniques. No formal interviewer training was provided in an attempt to be as realistic as possible for this type of position, where the store manager would not have much interviewing training.

*Focus groups- molar and molecular NVB ratings:* To obtain ratings of molar and molecular NVBs, two focus groups (N=4 and N=5 respectively) were shown the thin-sliced video tapes, and asked to complete the ratings described previously. Videos were shown individually, and participants were given the freedom to repeat each interview as much as they needed to produce the most accurate ratings they could.

## Chapter Three

### Results

#### *Reliabilities*

*Molecular Nonverbal Behaviors.* The reliabilities of judge's ratings of the molecular nonverbal behaviors were computed by means of intraclass correlations for all judges averaged together, as well as for a typical, single judge. In accordance with previous research, hand symmetry was scored such that an interviewee with symmetrical hand placement received higher scores than one with asymmetrical. Interviewees with folded hands and legs received lower scores, and torso position was scored such that a forward leaning torso received the highest rating while neutral and leaning back received increasingly lower scores. A total of three judges rated the frequency of the molecular nonverbal behaviors exhibited by the interviewees during the thin-sliced videos, and the effective reliabilities of the mean of their ratings ranged from .16 to .83. Laughs, yawns, lip biting and emphatic gestures were all observed less than three times across all interviews and raters, and were dropped from all subsequent analyses. The remaining molecular NVB ratings were then averaged to form a composite variable ( $M= 1.07$ ,  $SD=.24$ , average  $ICC = .89$ ), which was used in subsequent analyses. The means along with the reliabilities of judges' molecular nonverbal behavior ratings are displayed in Table 1 and were based on silent videos just 12 seconds long.

*Molar nonverbal behaviors.* The means and reliabilities of four judges' ratings of the molar nonverbal behaviors exhibited by the interviewees in all 34 interviews are

Table 1

*Reliabilities (ICC) of Judge's Ratings of Applicants' Molecular Nonverbal Behaviors*

Variable	Mean	SD	Mean of 1 Judge	Mean of 5 Judges
<b>Molecular NVB</b>				
Head Nods	.80	.82	.66	.40
Head Shakes	.73	.86	.78	.54
Smiles	.54	.82	.40	.18
Laughs*	.09	.29		
Yawns*	.00			
Frowns	.23	.87	.16	.06
Lip Biting	.09	.36		
Downward Gaze	.87	1.14	.62	.35
Fidgets	.87	.88	.78	.54
Emphatic Gestures*	.08	.52		
Weak Gestures	1.24	1.26	.83	.62
Hand Symmetry	.76	.74	.32	.15
Hands Folded	1.01	.71	.42	.20
Legs Folded	1.49	.79	.45	.22
Torso Position	1.55	1.04	.70	.45
<i>Composite Variable**</i>	.92	.45	.89	.74

Note: \* These behaviors were observed 3 or less times across all interviews and raters, and were dropped from subsequent analyses. \*\* Composite Variable is made up of all Molecular NVBs except Laughs, Yawns, Lip Biting, and Empathic Gestures.

depicted in Table 2. These molar NVBs were rated on a scale of 1 (not at all descriptive) to 7 (very descriptive) the extent to which each individual molar NVB was descriptive of the interviewee. Means ranged from 3.44 to 4.51. Mean intraclass correlation reliability estimates for 4 judges ranged from .17 to .78. Once again a composite variable was computed by averaging all molar NVB ratings ( $M = 4.15$ ,  $SD = .55$ , average  $ICC = .90$ ), to be used in subsequent analyses.

#### *Molecular Nonverbal Behavior and Hiring Decisions.*

Table 3 depicts the correlations between the composite molecular NVB rating and the mean hiring decisions across all three viewing conditions. The hiring decision variables were computed by averaging the ratings across the three items asked of each applicant: “Based on this interview I recommend the candidate should be...[rejected outright, put on a reserve list, or offered a job]”, “Based on this interview how qualified was this candidate for the job?”, and “Based on this interview, how likely is it that this candidate got the job?” All analyses discussed from this point forward were computed first for each of these items individually and then once again using a mean hiring decision variable combining all three items. No differences were found in the number or approximate size of significant correlations. The composite molecular NVB rating did not correlate significantly with any of the three viewing conditions (Pictures:  $r = -.16$ ,  $p > .05$ ; Thin-Sliced:  $r = -.03$ ,  $p > .05$ ; Entire Interview:  $r = -.07$ ,  $p > .05$ ), indicating support for Hypothesis 1.

Each molecular NVB was then considered individually. In the pictures-only condition, only one of the molecular NVBs, “weak gestures” correlated significantly ( $r = .43$ ,  $p < .05$ ) with the criterion variable of a successful hiring decision. No molecular NVB ratings

Table 2

*Reliabilities (ICC) of Judge's Ratings of Applicants' Molar Nonverbal Behaviors*

Variable	Mean	SD	Mean of 1 Judge	Mean of 5 Judges
<b>Molar NVB</b>				
Accepting	4.21	.64	.17	.05
Active	4.11	1.08	.56	.24
Attentive	4.47	.73	.44	.17
(not) Anxious	4.39	1.06	.52	.21
Competent	4.19	.93	.67	.34
Confident	4.33	1.36	.77	.46
Dominant	3.44	1.21	.78	.46
Empathetic	3.98	.68	.49	.20
Enthusiastic	3.79	1.06	.66	.32
Honest	4.51	.63	.30	.10
Likable	4.32	.70	.51	.21
Optimistic	4.32	.83	.63	.30
Professional	3.94	1.29	.78	.47
Supportive	4.13	.69	.32	.11
Warm	4.09	.75	.34	.11
<i>Composite Variable</i>	4.15	.55	.90	.73

Table 3

*Descriptive Statistics and Intercorrelations for Hiring Recommendations across all Interview Conditions*

Variable	M	SD	1	2	3	4	5	6
1. Pictures	2.32	.73	(.94)					
2. Thin-Sliced	2.43	.68	.65**	(.99)				
3. Entire Interview	2.19	.77	.28	.54**	(.95)			
4. Molar NVB	4.15	.55	.51**	.62**	.31	(.90)		
5. Molecular NVB	.92	.45	-.16	-.03	-.07	.06	(.89)	
6. Attractiveness	2.87	1.61	.32	.33	.24	.39*	.16	(.83)

Note: **Pictures**= ratings produced by participants viewing still-frames only; **Thin-Sliced**= ratings produced by those viewing 12-second silent video clips only; **Entire Interview**= ratings produced by those viewing entire interview, including sound; **Molar NVB**= global molar NVB ratings of applicants; **Molecular NVB**= global molecular NVB ratings of applicants; **Attractiveness**= physical attractiveness ratings of applicants

N= 34, \*\* p<.01, \* p<.05

correlated significantly with either of the two remaining conditions- thin-sliced video and entire interview conditions. See Table 4 for the remaining correlations. On the whole, these results indicate support for Hypothesis 1, which predicted that molecular NVBs would not be associated with hiring decisions in any of the three viewing conditions.

#### *Molar Nonverbal Behavior and Hiring Decisions.*

The composite molar NVB rating correlated significantly with hiring recommendations in the pictures only condition ( $r = .51, p < .001$ ) and the thin-sliced condition ( $r = .62, p < .001$ ), but not with the hiring recommendation from the entire-interview condition ( $r = .31, p > .05$ ). See Table 3 for the remaining correlations. These results indicate support for Hypothesis 2 and 3, which predicted molar NVBs would be associated with thin-sliced and picture-only viewing conditions. Hypothesis 4, which predicted molar NVBs would predict entire interview rating decisions, was not supported.

Once again, molar NVBs were considered individually. Correlations between individual molar NVBs and the mean hiring recommendation from each viewing condition are depicted on Table 5. In the pictures only condition, attentiveness ( $p = .52, r < .01$ ), less anxiety ( $r = .39, p < .01$ ), competence ( $r = .65, p < .01$ ), confidence ( $r = .49, p < .01$ ), dominance ( $r = .43, p < .05$ ) and professionalism ( $r = .83, p < .01$ ) were positively associated with the mean hiring recommendation. Similar patterns of positive correlations were found in the thin-sliced condition. Attentiveness ( $p = .59, r < .01$ ), less anxiety ( $r = .61, p < .01$ ), competence ( $r = .80, p < .01$ ), confidence ( $r = .66, p < .01$ ), dominance ( $r = .55, p < .05$ ), professionalism ( $r = .77, p < .01$ ), as well as optimism ( $r = .43, p < .05$ ) were significantly and positively correlated with hiring decisions based on 12 seconds of silent video. In the entire interview condition, fewer molar NVBs were correlated with hiring

Table 4

*Correlations of Molecular Nonverbal Behaviors with hiring decisions across all interview conditions*

Variable	Pictures-Only Condition	Thin-Sliced Condition	Entire-Interview Condition
<b>Molecular NVB</b>			
Head Nods	.06	.25	.33
Head Shakes	-.11	.04	.02
Smiles	-.05	-.23	-.40
Frowns	.07	.10	.07
Downward Gaze	.05	-.17	-.05
Fidgets	.27	.13	.02
Weak Gestures	.43*	.11	.32
Hand Symmetry	-.18	-.30	-.32
Hands Folded	.06	.23	.18
Legs Folded	-.26	-.26	-.18
Torso Position	-.21	-.10	-.19

Note: \*  $p < .05$

Table 5

*Correlations of Molar Nonverbal Behaviors with hiring decisions across all interview conditions*

Variable	Pictures-Only Condition	Thin-Sliced Condition	Entire-Interview Condition
<b>Molar NVB</b>			
Accepting	-.01	-.19	-.17
Active	.01	.30	.14
Attentive	.52**	.59**	.27
(not) Anxious	.39**	.61**	.29
Competent	.65**	.80**	.43*
Confident	.49**	.66**	.34*
Dominant	.43*	.55**	.14
Empathetic	.32	.18	.28
Enthusiastic	.04	.30	.09
Honest	.34	.26	.12
Likable	.19	.24	.22
Optimistic	.18	.43*	.28
Professional	.83**	.77**	.39*
Supportive	.13	.10	.07
Warm	.27	.18	.00

Note: \*\*  $p < .01$ ; \*  $p < .05$

recommendations. Only competence ( $r = .43, p < .05$ ), confidence ( $r = .34, p < .05$ ), and professionalism ( $r = .39, p < .05$ ) were positively associated with hiring decisions after watching the entire interview.

#### *Attractiveness and Hiring Recommendations*

Hypothesis 5 predicted that ratings of candidates' attractiveness would correlate moderately with hiring recommendations in all three viewing conditions. In general this hypothesis was not supported, with correlations between attractiveness ratings and hiring decisions in the pictures only, thin-sliced, and entire interview conditions producing non-significant values. See Table 3 for more complete results.

#### *Relationships Between Hiring Recommendations*

The final three hypotheses concerned themselves with the relationships between hiring recommendations made by participants in the three viewing conditions. Correlations were computed between the mean hiring recommendations in all three groups, and results are presented in Table 3. Support was found for Hypothesis 6, which predicted that hiring recommendations made in the thin-sliced and entire interview conditions would be positively correlated ( $r = .54, p < .01$ ). The remaining two hypotheses were not supported. Hypothesis 7 predicted no significant association between ratings made in the thin-sliced and picture-only conditions; but the two hiring recommendations were found to correlate positively ( $r = .65, p < .01$ ). Hypothesis 8 expected no association between the pictures-only condition and the entire-interview condition, and the two hiring recommendations were not correlated ( $r = .28, p > .05$ ).

#### *Hierarchical Regression*

Unlike previous research (Dipboye, Arvey, & Terpstra, 1977; Dipboye, Fromkin,

& Wiback, 1975; Heilman & Saruwatari, 1979; Raza & Carpenter, 1987), in the current study, physical attractiveness ratings of the applicants were not associated with hiring recommendations in any of the groups. It seems odd that physical attractiveness was not correlated even in the pictures-only condition, where participants had limited amounts of information to base their hiring recommendations on. In addition, although the previously reported results indicated that molar NVBs were correlated with hiring recommendations in the thin-sliced and pictures-only conditions, we felt it would be interesting to explore these associations further. As such, we decided to compute a series of hierarchical linear regressions, in which we controlled for physical attractiveness and entered both the molecular and molar NVB composite variables into Step II of the equation. Three separate regression equations were created, each using hiring recommendations from the three viewing conditions as the respective dependent variable.

Results of the three regressions are presented in Tables 6-8. Overall, results of the three hierarchical regression analyses support the results reported earlier. In Step I and Step II, attractiveness was not significant across all three viewing conditions. In both the thin-sliced and picture-only conditions, the molar NVB composite variable produced a significant beta weight, but was not significant for the entire-video viewing condition. The change in  $R^2$  was significant for the thin-slice and picture-only conditions, but not for the entire-video condition.

Table 6

*Regression of Molar and Molecular NVBs on Thin-Sliced Interview Decisions*

Variable	Dependent Variable: Thin-Sliced Decisions	
	Step 1 ( $\beta$ )	Step 2 ( $\beta$ )
<b>Control Variables</b>		
Attractiveness	.06	.16
<b>Independent Variables</b>		
Molar NVB		.60**
Molecular NVB		-.12
F	.13	6.74
df	(1,32)	(2,30)
Overall R <sup>2</sup>	.00	.40
$\Delta$ in R <sup>2</sup>		.40**

$p < .05$ , \*\*  $p < .01$

Table 7

*Regression of Molar and Molecular NVBs on Entire Interview Decisions*

Variable	Dependent Variable: Full-Video Decisions	
	Step 1 ( $\beta$ )	Step 2 ( $\beta$ )
<b>Control Variables</b>		
Attractiveness	.28	.30
<b>Independent Variables</b>		
Molar NVB		.31
Molecular NVB		-.01
F	2.75	2.18
df	(1,32)	(2,30)
Overall R <sup>2</sup>	.08	.18
$\Delta$ in R <sup>2</sup>		.10

Table 8

*Regression of Molar and Molecular NVBs on Picture-Only Interview Decisions*

Variable	Dependent Variable: Picture-Only Decisions	
	Step 1 ( $\beta$ )	Step 2 ( $\beta$ )
<b>Control Variables</b>		
Attractiveness	.04	.30
<b>Independent Variables</b>		
Molar NVB		.42**
Molecular NVB		-.36
F	.04	4.60
df	(1,32)	(2,30)
Overall R <sup>2</sup>	.00	.32
$\Delta$ in R <sup>2</sup>		.31**

\*  $p < .05$ , \*\*  $p < .01$

## Chapter Four

### Discussion

These results were striking. First, it was found that hiring recommendations made by complete strangers based on only 12 seconds of interviewee behavior were significantly correlated with similar recommendations made by another group of strangers who viewed the entire interview, including content. Second, hiring recommendations made by strangers viewing still-frame pictures of the interviewee were positively correlated with those same ratings made after viewing the entire interview. These findings help demonstrate the remarkable wealth of information that is communicated and attended to in the visual domain. Even when verbal content is available, individuals viewing thin-sliced 12-second clips of applicant behavior produce similar hiring recommendations as those observing an entire interview.

To explain these results, the impact of NVB on hiring decisions was examined. Molecular NVBs, consisting of specific applicant behaviors such as head nods or torso position, did not correlate with mean hiring recommendations in any group. Molar NVBs, or those capturing more macro-level behavioral descriptions such as applicant confidence and competence, did correlate highly with the hiring recommendations in the thin-sliced and picture-only viewing conditions, but not with those based on the entire interview. More specifically, if applicants appeared attentive, not anxious, competent, confident, dominant and professional, they were more likely to receive positive hiring recommendations in both the pictures-only and the thin-sliced conditions. In the thin-

sliced viewing condition only, ratings of interviewee optimism correlated significantly with hiring recommendations. Fewer applicant molar NVBs were associated with hiring recommendations in the entire interview viewing condition, with interviewee competence, confidence and professionalism the only behaviors producing significant correlations.

These results show some support for the idea that NVB plays an important role in hiring recommendations made by interviewers. Even when presented with contextual information in a structured interview, interviewers seem to be influenced by certain impressions that are readily apparent in extremely short amounts of time. Although the molar composite variable did not correlate significantly with hiring recommendations made in the entire-interview condition, a few individual molar NVBs did. In addition, the hiring recommendations made by participants in this group were highly correlated with the recommendations made in the thin-sliced viewing conditions, despite the fact that thin-sliced videos contained drastically less information. These significant correlations suggest that something- whether it is those few molar NVBs or some other source of information- was cueing raters in all three conditions. Earlier it was argued that three conditions need to exist for raters in three conditions to produce similar hiring recommendations: 1) there must be cues present in all three conditions that are interpreted as indicators of future performance, 2) the cues must be easily observed by the rater, and 3) the cues must be interpreted similarly by all three groups of raters. Based on the results presented in this study, it appears the cues were not what the applicants said in response to the structured interview questions, but rather had something to do with the way they looked or behaved- an important finding in its own right. Raters in all three

conditions observed this information, and when asked to do so, made similar assumptions based on this information about how hire-able the individual was. In sum, molar NVB cues appeared to have been observed and subsequently similarly interpreted by raters in all three viewing conditions as indicators of future job performance.

Although structured interviews are designed to direct the interviewer's attention away from such subjective sources of information, this study shows how easily and consistently humans do so naturally. Without any instructions to attend only to content, use behaviorally anchored ratings scales, combine ratings mechanically and compare to a cut score, I/O Ph.D. graduate student raters in the entire interview condition produced similar subjective hire-ability assumptions as undergraduates looking at pictures of the candidates. One can only imagine the extent to which real-life high-stakes selection decisions are also based on similar potentially non-job-related criteria.

One issue that arises based on these findings concerns the validity of these selection decisions. Even when following many of the recommendations presented by Schmitt (1976) and Arvey and Campion (1982) to increase validity of selection decisions, such as structuring the interview, interviewers may still be influenced by nonverbal behaviors that are sometimes assumed to be non-reliable sources of information (e.g. Gilmore & Ferris, 1989). As mentioned previously, more recent research (e.g., Motowidlo & Burnett 1995, Burnett & Motowidlo, 1999; DeGroot & Motowidlo, 1999) argued otherwise, and showed that nonverbal information can be a valid predictor of job performance. Although one might be tempted to argue that there is no way ratings made after 12 seconds of silent applicant behavior could be a valid predictor of future job performance, one can not be certain since the current study did not examine whether the

selection decisions made in any of the three conditions accurately identified high performing individual. However unpleasant it may be to think about, perhaps the way someone looks or behaves actually does predict their future job performance. All speculation aside, further research is clearly necessary to examine the predictive validity of these thin-sliced hiring recommendations.

One problem that may have affected these results concerns the difficulty of rating nonverbal behaviors. The focus groups were asked to view the short 12-second clip, and provide ratings of molar or molecular non-verbal behaviors, as well as ratings of attractiveness and professional appearance. This seemed to be a challenging task for most raters (especially those asked to tally the number of molecular NVBs), and even with the opportunity to re-play the video, this may have been more difficult than expected. As such, the absence of positive correlations between molecular NVBs and hiring recommendations may be a misrepresentation of what actually occurred. It is quite possible the focus groups, given the difficult task of rating molar and molecular NVBs, instead used the professional appearance rating scale to represent a composite variable they created in their minds to describe the NVBs.

Improvements in the study design could be made to use actual interviewer hiring recommendations instead of simulated recommendations based on videotaped interviews. It is possible the participants in this current study, although instructed to listen carefully to the entire interview before making a recommendation, were not as invested or attentive as a face-to-face interviewer may be. Without any social pressure to appear interested and attentive by having an interviewee right in front of them, raters viewing the entire videos may have become distracted or bored by the nature of the rating task. Videos were

lengthy- averaging between 5-10 minutes each, and the interviews were obviously quite repetitive. It is possible these raters became fatigued, and, as mentioned previously, resorted to making similar snap-decisions as those viewing the thin-sliced video clips, despite the availability of additional interviewee information. The interviewers met on two separate sessions and were provided with breaks, but nonetheless, observations by the researcher as well as participant feedback indicated the difficulty in paying close attention to the task at hand. Future researchers should make every attempt to capture the hiring recommendations during the actual interview, when the participant (or actual interviewer) is more likely to be fully interested and attentive.

Another limitation of this study design involves the usage of students as raters in both the pictures-only and thin-sliced viewing conditions. Sessions were held with up to 50 participants at a time, and therefore the experimenter was unable to ensure the ratings made under these conditions were being taken seriously. It is possible some participants, knowing that they would receive extra credit regardless of whether they paid attention to the videos or pictures, simply filled out the rating forms and disengaged. The experimenter attempted to minimize the effect this had on the results by keeping a close eye on the raters to identify, and later examine, the ratings made by individuals who seemed not to be paying attention. If the ratings were suspect, they were dropped from the analyses. Before the experimenter carried out the analyses described in this report, extensive screening was conducted to drop any participant that exhibited a suspicious pattern to their results. At the risk of losing some valuable data, it was assumed that such rating patterns were symptomatic of a disengaged participant, and thus were dropped.

In addition, this study was limited by the lack of realism surrounding the rating

tasks. Despite the best efforts of the researcher to select similarly matched interviewees, participants were presented with videotaped interviews of individuals possessing a relatively wide range of qualifications, interviewing skills, dress, professional appearance, and demeanor. A possible consequence of such extensive variability between applicants is that it made it very easy to pick the “hire-able” and “not hire-able” candidates. For instance, some candidates showed up to their interview in cut-off jeans and tee-shirts, which likely put them at an immediate disadvantage when contrasted with others who wore business attire. The purpose of this study was to examine whether thin-sliced videos included any information that interviewers were also leveraging to produce their hiring recommendations, and a quick review of the results may suggest this was the case. However, it is also possible all participants, regardless of the viewing condition they were assigned to, were able to make their recommendations based on dress and professional presentation. Results do support this interpretation, and therefore, more research is needed to shed more light on what individuals in all the conditions were attending to when making their hiring recommendations. In a more realistic scenario, there would likely be less variance in applicant’s appearance and qualifications, and they would likely have passed through some sort of initial screening to get to the interviewing stage. When some students appeared in the videos wearing unprofessional attire, it may have prejudiced raters in all the viewing conditions, including those in the focus groups. A more realistic replication of this study involving real job applicants interviewing for a real position would ensure interviewees all take the interviewing process more seriously and perhaps force research participants to use less obvious non-verbal behaviors to base their hiring decisions upon.

Overall, the fact that humans only need 12 seconds of watching an applicant behave to produce hiring recommendations similar to interviewers who had access to the entire interview is striking. To our knowledge, this is the first examination of how quickly this NVB information can influence decision-making in the interview. The debate regarding the validity of non-verbal information aside, these results highlight the importance of creating a selection battery that encourages the rater to focus on objective, performance based criteria instead of allowing them to form more subjective impressions about the candidate's personality. Further research is necessary to examine whether these non-verbal ratings are valid predictors of job performance, but in the meantime, it seems more important to be safe, and take steps to focus interviewers on more valid and reliable information (e.g. past behavior or performance in a job simulation exercise) when making hiring recommendations.

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## Appendices

## Appendix A

### Job Description

#### INSTRUCTIONS TO SUBJECT

##### **Script**

“You’re about to participate in a simulated employment interview which will be videotaped. The purpose of the study is to examine various aspects of the employment interview. Your task is to assume the role of a job applicant for an assistant manager’s position in a large drug store. Here’s a brief description of the job.

#### Grove Drug Corporation Job Description Assistant Store Manager

Position involves assisting with store management duties, including maintenance of good customer relations and acceptance of responsibility for store operation in the absence of the Store Manager. Assistant Store Manager will direct and assist associates with merchandising, perform duties of subordinates as needed, supervise associates and assist with problems, questions, procedures, etc.

First, as in most job interviews, you’ll be asked to fill out a job application form. Then you’ll be called into the interview room, where an experimenter will play the role of the company interviewer. It is important that you perform to the best of your ability, as if this were a real interview for a job you were really applying to.

Before and after the interview, you’ll be asked to complete a series of additional selection screening tests. Finally, you’ll be offered constructive feedback on your interview performance, as well as suggestions which could be helpful to you in future interview situations. If you have brought a blank videotape, you’ll also be given a copy of your interview performance. Do you have any questions?

From this point on, please assume the role of job applicant.”

## Appendix B

### Structured Interview Protocol

1. Did you have any trouble finding this office?
2. What made you apply for this position at Grove Drug Corporation?
3. What special aspects of your work or school experience have prepared you for this job?
4. Can you describe for me one or two of the most important accomplishments in your work or academic career?
5. What kind of co-workers do you like best and why?
6. What kind of co-workers do you like least and why?
7. What kind of job do you see yourself holding five years from now?
8. What makes you feel that this is the best career path for you?
9. Everyone has strengths and weaknesses as workers. First, tell me what your special strong points for this job are.
10. What would you say are areas needing improvement?
11. Think of an incident you were involved in at work or in school where things didn't go so well. Describe the incident and what you did.
12. What did you learn from the incident?
13. Why should I hire you?

OK, I've got a few more candidates to interview. I'll be getting back to you in about a week. Please wait outside for the researcher.

*[Wait a moment to see if they thank you, shake your hand, etc. If not, stand up and show them the door.]*

## Appendix C

### Hiring Recommendation Rating Form

Based on this interview, I recommend the candidate should be... (Check one)		
<input type="checkbox"/> Rejected outright	<input type="checkbox"/> Put on a reserve list (may be hired if more employees are needed)	<input type="checkbox"/> Offered a job (accepted)

On a scale from 1-5, how confident are you with your hiring decision? (Check one)				
<input type="checkbox"/> Not at all confident	<input type="checkbox"/> Somewhat confident	<input type="checkbox"/> Confident	<input type="checkbox"/> Very Confident	<input type="checkbox"/> Extremely Confident

Based on this interview, how qualified is the candidate for this job? (Check one)				
<input type="checkbox"/> Not at all qualified	<input type="checkbox"/> Somewhat less qualified than most candidates	<input type="checkbox"/> About as qualified as most candidates	<input type="checkbox"/> Somewhat more qualified than most candidates	<input type="checkbox"/> Highly qualified

On a scale from 1-5, how confident are you with your rating of the candidate's qualification? (Check one)				
<input type="checkbox"/> Not at all confident	<input type="checkbox"/> Somewhat confident	<input type="checkbox"/> Confident	<input type="checkbox"/> Very Confident	<input type="checkbox"/> Extremely Confident

Based on this interview, how likely is it that this candidate got the job? (Check one)				
<input type="checkbox"/> Not at all likely	<input type="checkbox"/> Somewhat likely	<input type="checkbox"/> Likely	<input type="checkbox"/> Very likely	<input type="checkbox"/> Extremely likely

On a scale from 1-5, how confident are you with your rating of the candidate's qualification? (Check one)				
<input type="checkbox"/> Not at all confident	<input type="checkbox"/> Somewhat confident	<input type="checkbox"/> Confident	<input type="checkbox"/> Very Confident	<input type="checkbox"/> Extremely Confident

## Appendix D

### Molar NVB Rating Sheet

Please use the following scale, ranging from 1- 7, to rate the extent to which the behavior is descriptive of the candidate.							
Behavior	1 Not at all descriptive	2	3	4 Descriptive	5	6	7 Very Descriptive
Accepting	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Active	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Attentive	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Anxious	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Competent	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Confident	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Dominant	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Empathetic	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Enthusiastic	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Honest	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Likeable	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Optimistic	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Professional	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Supportive	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Warm	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

## Appendix E

### Molecular NVB Rating Sheet

<u>Behavior</u>	<u>Tally Up the number of times the behavior occurred during the Video Clip</u>	<u>Total Tally-count</u>
Head Nods		
Head Shakes		
Smiles		
Laughs		
Yawns		
Frowns		
Biting of the lips		
Downward Gazes		
Fidgets		
Emphatic gestures		
Weak gestures		

Were the applicant's hands predominantly ...		
<input type="checkbox"/> Symmetrical	<input type="checkbox"/> Asymmetrical	
<input type="checkbox"/> Folded	<input type="checkbox"/> Open	
Were the applicant's legs...		
<input type="checkbox"/> Folded	<input type="checkbox"/> Open	<input type="checkbox"/> Can not tell
Was the applicant's torso....		
<input type="checkbox"/> Leaning forward	<input type="checkbox"/> Leaning back	<input type="checkbox"/> Neutral

Now please rate the applicant's physical attractiveness. (Circle one)						
1	2	3	4	5	6	7
Extremely unattractive	Average				Extremely attractive	