

The Relationship between Nonverbal Affect Decoding and Shyness:

Does Attentional Bias Play a Role?

By

Jaclyn Spiegel, M.S.Ed.

A Doctoral Project Submitted in Partial Fulfillment of
the Requirements for the Degree of Doctor of Psychology
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PROJECT ADVISOR: Dr. K. Mark Sossin
Name

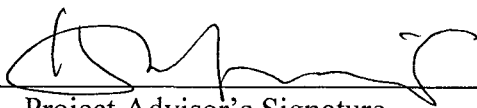
Professor of Psychology Pace University
Title Affiliation

PROJECT CONSULTANT: Dr. Anastasia Yasik
Name

Associate Professor of Psychology Pace University
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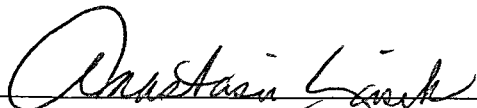
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Project Consultant's Signature

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Abstract

This study investigates factors corresponding to shyness by exploring the relationships among shyness, nonverbal affect decoding, and attentional bias in a non-clinical undergraduate population. Relevant research is reviewed, including literature exploring the conceptualization of shyness and its relationship to social phobia, the biological underpinnings of emotional recognition, the link between shyness and social competence, and the evidence for attentional bias in those with anxiety disorder. Previous studies have suggested that shy individuals tend to demonstrate poorer nonverbal emotional decoding skills than non-shy individuals (e.g., Strand, Cerna, & Downs, 2008). Additionally, it has been found that those with social phobia and shyness demonstrate an attentional bias for information related to their area of difficulty (e.g., Mattia, Heimberg & Hope, 1993). Based on previous findings, it was hypothesized that those higher in shyness would have more difficulty with tasks of nonverbal emotional decoding, and that attentional bias for shyness-related words would moderate this relationship. The final sample consisted of 88 undergraduate students from Pace University. Participants completed two subtests of the Diagnostic Analysis of Nonverbal Accuracy – 2, a measure of nonverbal affect decoding; the Social Reticence Scale, a measure of shyness; and an emotional Stroop task, a measure of attentional bias. It was found that there was a significant relationship between shyness and nonverbal emotional decoding of vocal cues, both for general shyness and for shyness related to social isolation. This relationship did not exist for nonverbal emotional decoding of faces. Further, it was found that while attentional bias was not directly associated with shyness or nonverbal emotional decoding, it moderated the relationship between these factors. The

relationship between shyness and nonverbal affect decoding of vocal cues existed for those with a low level of attentional bias, but not for those with a high level of attentional bias. Additionally, shyness involving isolation from others was specifically related to errors decoding happy voices and high intensity vocal stimuli. Overall, findings from this study suggest that difficulty with nonverbal decoding of vocal cues contributes to social discomfort in shyness, with those whose shyness involves isolation from others demonstrating more specific decoding difficulties.

PREVIEW

CHAPTER I

Introduction

Shyness is a broad construct that describes a personality characteristic that presents itself as withdrawal or behavioral inhibition during social interactions. A shy person may experience anxiety when confronted with a social event, particularly with less familiar people. Research suggests that shyness is a characteristic demonstrating continuity from childhood to adulthood (e.g., Caspi, Elder, & Bem, 1988). The manner in which shyness relates to the frequency and quality of social interaction has been the subject of considerable study, as reviewed below, however, questions remain about the variables that influence how shyness may impact an individual over the lifespan. For example, is someone who has more difficulty with social skills more likely to be shy, or are there specific social interaction skills that are lacking in people with a higher degree of shyness? Shy people are likely to have had more limited social experiences than their more outgoing counterparts, and may have had fewer opportunities to hone their social interaction skills. On the other hand, it is possible that those who are shy have spent more time observing or considering social interactions, with a desire to become involved that is hindered due to anxiety, as the approach-avoidance hypothesis (Asendorpf, 1986) suggests. Additionally, shy people may be more alert for potentially threatening social cues, such as an angry facial expression, that might trigger anxiety. The current study aims to explore how certain social skills, namely the ability to decode emotions from nonverbal cues, relate to shyness.

The current body of research suggests that shyness shares characteristics with social phobia (e.g., Turner, Beidel, & Townsley, 1999); however, shyness is a non-clinical phenomenon that is experienced by a greater number of people than social phobia. Social

phobia impacts 3% - 13% of the population. In order to be diagnosed with social phobia, individuals must experience anxiety or avoidance that leads to clinically significant impairment or marked distress (American Psychiatric Association [APA], 2000). Overlap between the constructs of shyness and social phobia includes fear of negative evaluation, somatic responses and social skills deficits. For example, it has been found that those higher on measures of social phobia and shyness have more difficulty accurately decoding others' nonverbal emotional cues (e.g., Battaglia et al., 2004).

This study aims to extend the current body of research by exploring whether shyness in young adults is associated with nonverbal affect decoding ability. While there are studies linking these two constructs, it is unclear what mechanisms impact the link between shyness and nonverbal emotional decoding. By using a non-clinical sample, it is believed that this study will be more applicable to the general population than the majority of the previous research, which mainly focuses on those with the clinical diagnosis of social phobia. There is limited research (e.g., Strand, Cerna, & Downs, 2008) that focuses specifically on shyness and how it relates to nonverbal affect decoding, and it is hoped that this study will further explicate this relationship.

The role that nonverbal affect decoding plays in social interactions is important because in one's day-to-day interactions there is a high demand to be able to take in, process, interpret, and accurately respond to nonverbal cues. In order to function successfully both personally and professionally, it is important for one to possess a certain level of interpersonal skill. In today's high-tech and fast-paced society, face-to-face interactions are often brief, and one needs to be able to understand not only what is being said by someone with whom they are communicating, but also what that person is expressing with his or her nonverbal behavior. The same statement can mean different things, depending on the tone of voice in which it is spoken, and the accompanying facial expression and body language.

Those who are shy may have more difficulty with nonverbal emotional decoding due to a variety of factors, including preoccupation with one's presentation, hypervigilance about potential threat, and self-regulation needs. Additionally, nonverbal affect decoding difficulties may amplify shyness and social anxiety because of a repeated lack of success in social interactions. For some people, nonverbal decoding of emotional cues comes naturally and automatically. For others, however, difficulty interpreting the emotional cues of others may lead to inaccurate assumptions, and unsuccessful social interactions. The current body of research indicates that difficulty with nonverbal affect decoding is associated with a number of psychiatric symptoms, such as schizotypal personality characteristics (Shean, Bell, & Cameron, 2007), depression (Carton, Kessler, & Pape, 1999), and social anxiety (Melfsen & Florin, 2002), and beliefs about one's own social competence (e.g., Nowicki & Carton, 1997).

One factor that may pertain to the relationship between nonverbal emotional decoding and shyness is attentional bias for potentially threatening information. Attentional bias is seen as spending a longer time focused on the content of threatening stimuli, resulting in a slower response time to other aspects of the stimuli, such as color. It has been suggested that those with clinical levels of social anxiety, or social phobia, have a vigilant-avoidant approach in response to emotional stimuli. Simply put, this means that at first, those with social phobia may focus on a potential threat, such as an angry face, but then, may quickly avoid that stimulus, as it is anxiety provoking (e.g., Mogg, Philippot, & Bradley, 2004). This phenomenon has not yet been supported in regard to a non-clinical population, and one goal of this study is to explore whether attentional bias plays a role in the relationship between nonverbal decoding and shyness. It is possible that if one avoids potential threat, one may not spend the time needed to fully take in and interpret the communicative intent of the nonverbal cues. The relationship between nonverbal affect decoding and attentional bias has only been briefly mentioned in the research literature by Ashwin, Wheelwright, and Baron-Cohen

(2006), who found that adults with Asperger's Syndrome, who typically have difficulty with social interaction and nonverbal decoding, displayed an attentional bias for facial pictures versus pictures of objects. This suggests an attentional bias for potentially threatening information, as facial pictures are suggestive of social interactions, which may cause anxiety or distress for those with Asperger's Syndrome.

The main goal of this research is to further explore and clarify the relationship between nonverbal emotional decoding ability, shyness, and attentional bias in order to gain better understanding about shy individuals and to further distinguish between shyness and social phobia. It is hoped that the findings from this study will replicate the findings of previous studies that have suggested a relationship between shyness and nonverbal affect decoding skills (Battaglia et al., 2004; Schroeder, 1995), as well as contribute to understanding of how attentional bias for, or increased focus on, potentially threatening information, or information that may induce anxiety, influences this relationship. While there is literature that suggests a relationship between nonverbal affect decoding and shyness as well as a relationship between shyness and attentional bias, there are no studies in the existing literature that look at the relationship among these three factors. It is also hoped that findings from this study will contribute to understanding about whether intervention might be useful for shy individuals. Shyness has not historically been considered a condition that required intervention, and as such, there is limited discussion in the literature about clinical treatment for shy individuals. However, the findings of Caspi et al. (1988) strongly suggest that shyness impacts one's life-course. As such, it would be helpful to have greater understanding of the social implications of shyness, in order to develop useful therapeutic strategies for addressing shyness at a younger age for those who find their shyness troublesome and seek intervention. Understanding whether and, if so, how, nonverbal affect decoding and shyness influence one another in a non-clinical population can be applicable to the development of interventions for

shy adults, adolescents, and children who wish to improve their comfort level during social interactions, by providing clinicians with information that would guide treatment by addressing the underlying correlates of shyness in hopes of alleviating the social discomfort of shyness itself.

PREVIEW

CHAPTER II

Literature Review

Shyness

Shyness is considered to be a non-clinical social phenomenon that is seen across cultures and developmental stages. For some who experience shyness, it is considered troublesome, and an aspect of themselves that they would like to change. For others, it is a personality characteristic that they have accepted and learned to deal with in their everyday lives (Crozier, 2002). Some experience shyness as children and not as adults, while others develop the behavioral inhibition that is associated with shyness later in life.

The construct of shyness is defined in several different ways. Eggum et al. (2009) define shyness as an inhibited approach in a social context. Shyness is also thought to combine social anxiety with behavioral responses such as inhibition and withdrawal in response to social and novel situations (Henderson & Zimbardo, 2001). According to Asendorpf (1986), shyness can be conceived of as an approach-avoidance conflict in which one wants to interact with others, but is inhibited by fear or anxiety. This is considered state shyness, and it varies depending on context. Asendorpf (1989) discusses that state shyness is thought to be experienced in regard to elevated anxiety in response to specific aspects of current or future social interactions. In contrast, trait shyness reflects “interindividual differences in state shyness that are stable over time and across a wide variety of social situations” (p.481). Both state shyness and trait shyness are characterized by elevated anxiety, but only state shyness also involves the experience of positive affect, resulting in an emotional ambivalence, or an approach-avoidance conflict. Another key feature of shyness involves a biological response to anxiety provoking situations, characterized by increased

heart rate, enlarged pupils, and increased muscle tension (Kagan, Reznick, & Snidman, 1988). Asendorpf (1989) found that shyness toward strangers is characterized by a closed body posture, and evaluative shyness, involves blushing.

Behaviorally, the inhibited approach displayed by shy people may be seen as being slower to produce the first utterance in conversation with a stranger, production of shorter utterances, and speaking for a smaller proportion of the conversation than their partner (Eggum et al., 2009). Additionally, shy people typically make less eye contact and touch their face and body more with their hands (Crozier, 2002). Shyness is also thought to combine social anxiety with behavioral responses such as inhibition and withdrawal in response to social and novel situations (Henderson & Zimbardo, 2001).

Clearly, there are different behavioral presentations of shyness, and as such, this concept has been conceptualized in many different ways. Zimbardo (1977) describes “shy introverts,” or publically shy people, as individuals who prefer to be alone, have less social skill, and are reluctant to approach others. “Shy extraverts,” or privately shy people, in contrast, have social skills, but struggle internally with social expectations and rules while maintaining friendships and sometimes even engaging in public performances. Zimbardo also discusses a continuum of shyness presentation, from those at the mild end who are more comfortable with things such as books, ideas, objects or nature than people, to the extremely shy who experience extreme dread when faced with demands that involve them performing in front of other people. It is noted that the majority of shy people fall in a middle group, characterized by feeling intimidated and awkward in certain situations or with certain types of people. Zimbardo states that people in this group generally are shy because they lack social skills and/or self-confidence.

It has also been proposed that there is one type of shyness that appears early in life, and another type that emerges later in development. According to Buss (1986), the shyness

that appears earlier is called “fearful shyness,” and the latter is called “self-conscious shyness.” Fearful shyness is social fear (i.e., anxiety or wariness when confronted with social interaction). This type of shyness may be displayed in response to social novelty, intrusion into one’s personal space, or fear of rejection. Self-conscious shyness can only occur when one has developed a theory of mind and is able to reflect on one’s own behavior as a social being. It may be related to having a low self-concept or lacking social confidence (Beer, 2002). These two types of shyness may also be conceptualized as an earlier-developing shyness that is more biological in nature, and a later-developing shyness that emerges while as a result of one’s experiences, essentially presenting as a group of learned behaviors. Schmidt, Polak, and Spooner (2001) suggest a diathesis-stress model that incorporates both biological and environmental theories of shyness. In order to begin to understand how shyness may impact one’s everyday experiences, it is important to have some understanding and insight into the competing views of the biological and environmental theories of shyness development, more commonly referred to as the nature versus nurture debate.

Origins of shyness. Biological models, such as those posited by Kagan (1994), state that the origins of shyness in some children may be linked to individual differences in early infant reactivity. Kagan, Reznick, and Snidman (1988) studied three cohorts of Caucasian children from working and middle-class Boston homes. They found that children aged 21 or 31 months who exhibited behavioral inhibition (i.e., clinging to or remaining near their mother; cessation of verbalization; reluctance to approach or actual retreat; or long latencies to play, speak and interact with an unfamiliar child) in reaction to an unfamiliar situation were quiet, cautious, and socially avoidant with peers and adults at seven years of age. Similarly, children who were noted to be extremely sociable and affectively spontaneous at 21 and 31 months were talkative and socially interactive at seven years of age. Additionally, a positive association was found between inhibition and both heart rate acceleration to mild

stress and high early morning levels of salivary cortisol. The children labeled as “inhibited” were more likely to show an increased heart rate, by about 10 beats per minute during cognitive tests, and their maximal heart rate occurred early in the testing session. Additionally, when children’s posture changed from sitting to standing, inhibited children showed a larger increase in mean heart rate, despite a slightly higher heart rate during the sitting baseline. These results suggest that the inhibited children maintained a brisker sympathetic response to the drop in blood pressure that accompanies the rise to a standing position. Based on these biological findings, Kagan et al. suggest that most of the children labeled as “inhibited” belong to a distinct category of infants who were born with a lower threshold for limbic-hypothalamic arousal to unexpected changes in the environment or novel events that cannot be assimilated easily. Additionally, Theall-Honey and Schmidt (2006) found that shy children showed greater relative right central EEG activation at rest and during a presentation of a fear-eliciting video clip than non-shy children. These findings were supported by Beaton, Schmidt, Ashbaugh, et al. (2008), who found that individuals who reported a higher level of shyness were likely to exhibit greater relative right frontal EEG activity at rest, when controlling for depressive mood. These findings, taken together, suggest that shy children may have stronger biological and neurological reactions than non-shy children when confronted with anxiety provoking situations.

Another biological model of shyness implicates the amygdala, the part of the brain responsible for processing fear and other emotions. It has been found, in comparing shy and bold adults, that when viewing pictures of the faces of strangers, shy adults exhibited significantly greater bilateral amygdala activation (Beaton, Schmidt, Schulkin, et al., 2008). When presented with pictures of familiar faces, shy adults showed greater left amygdala activation than bold adults. The authors propose that bilateral activation during the presentation of neutral stranger faces in shy adults reflects the processing of general social

cues conveyed by stranger faces rather than the specific cues conveyed by the valence (i.e., positive or negative) of an emotion. The left amygdala activation is likely due to previous experience of positive emotion and approach-related emotions associated with the familiar person. It makes sense that a shy person would have a different biological response to the presentation of a familiar face, where one may have a sense of what to expect, than to a novel person, with whom an interaction would be less predictable.

In contrast to biological models, environmental models of shyness implicate factors such as attachment, parental sensitivity, and maternal personality as influences on shyness. Bowlby (1969) suggests that social competence is developed via a secure attachment between mother and child. Secure attachment leads to a sense of trust, which then allows the child to explore his or her social world and develop social skills. Conversely, insecure attachment is said to be predictive of social incompetence. In addition, several theorists have discussed parental sensitivity as a factor in the development of shyness (e.g., Hetherington & Martin, 1986; Maccoby & Martin, 1983). It is suggested that warm parents who support their children and provide clear expectations are more likely to raise socially competent children. Eggum et al. (2009) found that shyness was most stable between 18 and 30 months for sons of insensitive mothers. For girls however, shyness was most stable when mothers were sensitive. According to Coplan, Arbeau, and Armer (2008), the kindergarten-aged children of parents who possessed a higher level of “fretful parenting” characteristics (i.e., maternal neuroticism, Behavioral Inhibition System sensitivity, overprotective parenting) had a stronger association between shyness and internalizing problems and social dissatisfaction than parents with a lower level of fretful parenting behavior. In contrast, those parents who displayed a higher level of warm and supportive parenting characteristics had children with a weaker association between shyness and internalizing problems and peer difficulties. As such, parental characteristics may not only influence the development of shyness in children, but also how

the shyness manifests itself in other behaviors. Certain parents might model anxious behaviors or point out risks and dangers in the environment to their children, whereas parents who have a more warm and supportive parenting style may moderate their children's innate shyness by promoting self-confidence and social skills development.

O'Connor, Croft, and Steele (2000) discuss the debate between nature versus nurture regarding the nature of the development of attachment between child and parent. They propose that it is an interaction between genetics and parental characteristics that impact the formation of parent-child attachment. Some parents might display more sensitivity to one child than another because they are able to differentiate between the level of each child's individual and specific needs for warmth and maternal contact. Furthermore, a child with a negative temperament might elicit non-secure parenting from an otherwise secure parent, while an easy going child might elicit secure parenting from an insecure parent. Therefore, it is not a linear relationship between a child's temperament and parental characteristics in the formation of attachment style, but rather an interaction between these factors.

Schmidt et al. (2001) posit that a similar interaction between biology and the environment determines whether one will be shy. For example, infants born with the early characteristics of shyness such as those described by Kagan (1994) are more likely to grow up to be shy children and adults if they also have insecure attachments to their parents, whereas children born with similar characteristics who have warm, supportive parents and who have developed secure attachments are less likely to be shy children and adults. This theory is supported by Hane, Cheah, Rubin, and Fox (2008), who examined the role of maternal behavior in the development of shyness in children. They examined social reticence, defined as "solitary onlooking and unoccupied behavior during peer interaction," in preschoolers, and its relation to social solitude in middle childhood. It was found that children who were rated high on shyness during play interactions at four years of age, and who had

mothers who displayed low levels of positivity, were the most likely to be socially withdrawn at the age of seven. Children who were perceived as shy at four years of age and whose mothers were high in positivity did not demonstrate high frequencies of withdrawal at the age of seven. Children whose mothers displayed higher levels of negativity, including hostility and negative control, displayed higher degrees of social withdrawal at age seven. It is postulated that children who have a history of socially withdrawn behavior might be more highly influenced by their mothers' negative behaviors because they have a restricted social network, and as such, limited opportunities to experience positive social feedback.

Parental shyness may also impact the development of shyness in a child. Alden and Cappe (1988) found that adults who reported an early onset of shyness described their parents as shy. This may be due to biological traits passed from parent to child or modeling of parental anxious social behavior. Those reporting later onset of shyness were less likely to describe their parents as shy and were more likely to report a childhood history of physical or emotional abuse.

Clinical issues related to shyness. The studies discussed above suggest that shyness is a non-clinical descriptor of a pattern of behavioral inhibition, anxiety in response to social situations, and biological reactivity. Shyness shares behavioral and subjective features with several clinical diagnoses, including social phobia and avoidant personality disorder (Rettew, 2000), and has been found to be a risk factor for other interpersonal difficulties. From a developmental perspective, Hayward et al. (2008) found that parent-reported childhood shyness is associated with adolescent social anxiety.

While shyness was historically considered as a character trait rather than a matter of clinical concern, there is support that shyness is predictive of later emotional difficulties and clinical issues. St. Lorant, Henderson, and Zimbardo (2000) studied the records of 114 individuals seeking treatment at the Palo Alto Shyness Clinic between 1991 and 1997. They

found that 111 of the 114 patients (97.4%) were assigned a diagnosis of generalized social phobia based on the Anxiety Disorders Interview Schedule – Revised (ADIS-R) or ADIS-IV. Sixty-five patients (55%) met criteria for a second Axis I diagnosis, with 35% meeting criteria for dysthymia, 33% meeting criteria for generalized anxiety disorder, and 20% meeting criteria for specific phobia. Results from the Milton Clinical Multiaxial Inventory (MCMI) and the Minnesota Multiphasic Personality Inventory (MMPI) revealed that personality disorders were commonly associated with chronic shyness. On the MCMI, 67% of patients met criteria for avoidant personality disorder, 35% of patients met criteria for schizoid personality disorder, and 23% of patients met criteria for dependent personality disorder. The findings from the MMPI indicated that dependent personality disorder (24%) was the most common co-morbid personality disorder, followed by compulsive (21%), passive aggressive (15%), and schizoid (10%). Similarly, Heiser et al. (2003) found that out of 96 shy participants, 55% met criteria for an Axis I disorder, and 50% met criteria for at least one Axis II disorder. Shy persons were significantly more likely to have any type of disorder compared with non-shy persons (66.7% vs. 42.3%). Specifically, in regard to Axis I diagnoses, 26 shy participants met criteria for a mood disorder, 22 subjects met criteria for an anxiety disorder other than social phobia, and 18 subjects met diagnostic criteria for a substance-related disorder. In terms of Axis-II diagnoses, the most prevalent comorbid diagnoses were avoidant personality disorder (34 subjects), obsessive-compulsive personality disorder (15 subjects), borderline personality disorder (13 subjects), and paranoid personality disorder (13 subjects). The authors take a medical view of psychopathology and suggest that shyness may be an effect of one or more psychiatric conditions rather than the cause of pathology. Alternatively, a developmental perspective might suggest that shyness is a risk factor for psychopathology, depending on an individual's environment and experiences. Shyness may present a range of cognitive, behavioral, and somatic features that are

characteristic of multiple disorders, most notably Social Phobia and Avoidant Personality Disorder.

Hayward et al. (2008) examined social anxiety disorder in adolescents using a developmental framework. High school students completed an annual structured clinical interview and self-report measure, the Social Phobia and Anxiety Inventory. Additionally, the students' parents were administered structured telephone interviews regarding their child's history, including asking whether they experienced childhood loss due to divorce or death and chronic childhood illness. Parents also completed the Emotionality Activity Sociability Scale and portions of the Kiddie Schedule for Affective Disorders and Schizophrenia. It was found that social anxiety symptoms were stable across time, and that both childhood characteristics and parent characteristics predicted adolescent social anxiety. As may be expected, childhood shyness was a predictor of adolescent social anxiety, with those with higher childhood shyness scores having a 52% chance of being in the high adolescence social anxiety group. This finding was stronger for boys than for girls. This may be because shyness or reticence is more socially acceptable for girls than boys, whereas boys are more likely to be encouraged to be loud and gregarious. Chronic childhood illness was the strongest predictor of high social anxiety. Participants with this history had a 31% chance of experiencing high social anxiety. Parent characteristics that predicted social anxiety disorder in adolescents included the presence of panic disorder and agoraphobia. These findings support the theory that there may be a biological predisposition for anxiety that is influenced by environmental factors.

Overall, research supports the idea that children are born with a biological predisposition toward shyness or social reticence and that the developmental trajectory of this characteristic is influenced by various social factors. On a clinical level, it has been found that even when engaged in interactions with close friends, children with social phobia