Cultural Factors in the Dysregulation of Shame and Embarrassment: Emotions in Social Anxiety and Taijin Kyofusho

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ABSTRACT

The present study examined the role of emotion regulation (ER) in individuals who endorsed social anxiety symptoms found in taijin kyofusho (TKS) and social anxiety disorder (SAD) in a young adult sample. More specifically, the study sought to examine the role of self-conscious emotions of shame and embarrassment with respect to TKS and SAD. Participants were administered a series of questionnaires during the first phase of the study and, during the second phase, a diagnostic clinical interview and additional questionnaires were administered along with an experimental social evaluative task and recording of electrical cardiac impulses. Descriptively, social anxiety symptoms were expected to be associated with less adaptive ER strategies. Additionally, differences between individuals who endorsed TKS and SAD symptoms were expected such that TKS would be associated more so with shame and SAD with embarrassment. It was hypothesized that ER would mediate the relationship between embarrassment and shame and their hypothesized anxiety counterparts (SAD or TKS). Findings revealed an association between shame and TKS, and embarrassment and SAD. However, less adaptive ER strategies were not related to social anxiety symptoms and ER did not mediate the relationship between self-conscious emotions and social anxiety. The present findings suggest that shame and embarrassment can play a role in the clinical manifestations of SAD and TKS. Implications regarding the role of these emotions and ER were examined.

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INTRODUCTION

In social situations, some individuals experience high levels of anxiety that cause considerable distress and interference resulting in social phobia or social anxiety disorder (SAD). SAD is one of the most prevalent anxiety disorders among children and adults (Heimberg, Stein, Hiripi, & Kessler, 2000; Magee, Eaton, Wittchen, McGonagle, & Kessler, 1996; Ollendick & Hirshfeld-Becker, 2002; Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992), making the disorder ideal for examining developmental psychopathology trajectories. Similar to SAD, *Taijin Kyofusho* (TKS) exists as a form of social anxiety commonly found in Japan and some other Asian countries where individuals fear offending other people. Both SAD and TKS have been considered to have debilitating effects on people's interpersonal and psychological functioning. Effective emotion regulation (ER), however, may mitigate the effects of different forms of psychopathology including SAD and TKS. Because emotions assist in organizing human functioning and have regulatory influences on processes such as attention and communication (Cole, Michel, & Teti, 1994), effective emotion regulation allows individuals to more competently interact with and respond to social and contextual demands.

Researchers have posited ER deficits to underlie various forms of child and adult psychopathology including anxiety disorders (Bradley, 2000; Mennin, Heimberg, Turk, & Fresco, 2005; Turk, Heimberg, Luterek, Mennin, & Fresco 2005). In particular, studies have shown associations between ER and various childhood anxiety disorders (e.g., Southam-Gerow & Kendall, 2002; Zeman, Shipman, & Suveg, 2002), as well as SAD and generalized anxiety disorder in adults (e.g., Mennin et al., 2005; Mennin et al., 2009; Turk et al., 2005). These

studies suggest that anxious individuals generally have greater difficulty with emotion processes (e.g., modulating, expressing, describing emotions) than non-anxious individuals. However, developmental psychopathology research has yet to fully examine the specific linkages between SAD and ER. Inasmuch as ER is related to psychosocial functioning (Rydell, Thorell, & Bohlin, 2007), it is likely that socially anxious individuals who exhibit difficulty adapting to and interacting in social situations will possess ER deficits. The specific nature of ER deficits remains unclear however, with research indicating deficiencies in the regulation of negative emotions, and some basic emotions such as happiness, anger, and worry (Zeman, Shipman, & Suveg, 2002). While some specific emotions have been examined, the role of self-conscious emotions in social anxiety has yet to be thoroughly examined. Similarly, while social anxiety has been examined across cultures (e.g., Heinrichs et al., 2006; Hofmann, Asnaani, & Hinton, 2010), studies have yet to examine social anxiety with respect to emotions, ER, and culture.

The individualism-collectivism dimension (e.g., independence and interdependence) represents one frequently used method of examining cultural influences. Some researchers have examined social norms and social anxiety with respect to independence and interdependence (Heinrichs et al., 2006), while some have compared SAD to TKS symptoms (e.g., Kleinknecht, Dinnel, Kleinknecht, Hiruma, & Harada, 1997; Nakamura, 2006). However, SAD and TKS research has not yet incorporated the role of emotions and ER while being mindful of cultural influences. Emotions serve a functional purpose (Campos, Mumme, Kermoian, & Campos, 1994) and help humans navigate within their culture (Mesquita & Leu, 2007), while social anxiety is dependent on cultural and social norms of a society (Heinrichs et al., 2006). Taking these influences into consideration, we can postulate that emotions and ER likely play a different role in individualist and collectivist cultures. As researchers strive to increase evidence-based

treatments (e.g., Ollendick & Davis, 2004) and emotion-based interventions to treat various forms of psychopathology (e.g., Leahy, 2007; Mennin & Farach, 2007; Suveg, Kendall, Comer, & Robin, 2006; Suveg, Southam-Gerow, Goodman, & Kendall, 2007), the examination of the role of emotions across cultures becomes increasingly important in understanding the etiology and manifestation of psychopathology. Thus, the cultural investigation of ER and SAD represents a step towards developing more comprehensive and efficacious treatment programs for children, adolescents, and adults.

Given these limitations in research, the present study investigated social anxiety, taijin kyofusho, self-conscious emotions, emotion regulation, and culture in a young adult sample.

Social Anxiety

Social Anxiety Disorder

The Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition , Text Revision (DSM-IV-TR; American Psychiatric Association, 2000) identifies social phobia or social anxiety disorder (SAD), as a persistent, irrational fear of social, performance, or evaluative situations where an individual may experience possible humiliation or embarrassment. SAD follows a chronic course without effective interventions (Heimberg et al., 2000; Kashdan & Herbert, 2001; Magee et al., 1996; Ollendick & Hirshfeld-Becker, 2002) and is often comorbid with a variety of other anxiety disorders (Magee et al., 1996). With an early onset age of approximately 15.5 years (Schneier et al., 1992), results from the National Comorbidity Survey reveal that the lifetime prevalence rate of SAD is 13.3% among adults (Kessler et al., 1994).

Two subtypes of social anxiety have been identified: the generalized subtype and the nongeneralized subtype. The generalized subtype as identified by the DSM-IV-TR (APA, 2000) is often considered to be more severe than the nongeneralized form (Kessler, Sein, & Berglund,

1998). Generalized social anxiety cuts across different social settings and the social fear exists in many, if not most, situations that involve social interactions. Due to the extensive nature of generalized SAD, this subtype is considered to be highly socially impairing, leading to progressively worse outcomes in the absence of effective interventions. Although not identified in the DSM-IV-TR, researchers have identified another form of SAD often referred to as "discrete", "specific", or the "nongeneralized" subtype (Kessler et al., 1998; Ollendick & Hirshfeld-Becker, 2002; Stein & Chavira, 1998). With nongeneralized SAD, individuals generally have one or a few specific social situations that make them anxious (e.g., public speaking, performing in public, evaluative situations). This type of social anxiety is not considered to be as disabling as the generalized type, but the anxiety in these situations may impair functioning and result in underachievement in work or school (Stein & Chavira, 1998). Apart from specific situations, individuals with the nongeneralized subtype are able to deal with social situations without experiencing a high level of anxiety. Accordingly, people identified with the nongeneralized specifier have a better prognosis than those identified with the generalized specifier.

Taijin Kyofusho

Although the DSM-IV-TR (APA, 2000) only identifies SAD within its multiaxial system, a disorder identified as taijin kyofusho, a “culturally distinctive phobia in Japan, in some ways resembling social phobia in DSM-IV,” is also described in the glossary of culture-bound syndromes (p. 903). Taijin kyofusho translates as a fear (kyofu) disorder (sho) of interpersonal relations (taijin). Research suggests TKS to be a culture-bound variant of SAD that primarily exists in Japanese culture but studies suggest their presence in Korea as well (Lee & Oh, 1999). TKS has been identified as a form of social anxiety where individuals fear that their appearance

(e.g., blemish or physical deformities) or behaviors (e.g., body odors, staring inappropriately, or facial expressions) will bring shame or offend others (Kleinknecht et al., 1997; Maeda & Nathan, 1999; Nakamura, 2006).

Similar to SAD, four TKS subtypes have been identified based on symptom severity (Kasahara, 1988; Sasaki & Tanno, 2006). The first is the "transient" subtype found in youth and associated with developmental life changes. The second subtype, referred to as the "neurotic" subtype, is associated with a general nervous temperament and most resembling SAD. The third subtype, often referred to as "offensive", is associated with delusions of offending others. Finally, the "secondary" subtype has been found to be associated with schizophrenia (Kasahara, 1988). Most research in the TKS literature has largely focused on two of the most common subtypes: the neurotic and the offensive.

In the "neurotic" TKS subtype, people think they possess behavioral, physical, or attitude-related inadequacies that may manifest themselves in social situations (Nakamura, 2006; Nakamura, Kitanishi, Miyake, Hashimoto, & Kubota, 2002). Because of these cognitions, individuals not only experience negative emotions such as shame, embarrassment, and anxiety in social situations, but they also worry that they are incapable of maintaining interpersonal relationships. This worry further perpetuates their negative cognitions as they think that they are unacceptable, despised, and avoided by others. These experiences lead people to avoid social situations, even though they prefer to engage in social interactions. This "neurotic" variant has been found to correspond to SAD as defined by the DSM-IV (Kim et al., 2007; Nakamura, 2006, Nakamura et al., 2006; Sasaki & Tanno, 2006).

The "offensive" subtype encompasses all of the characteristics of the neurotic subtype but includes additional features. People with offensive TKS believe they might offend, embarrass, or

hurt others through behaviors such as blushing, speaking in a trembling voice, emitting bodily odors, subjecting others to see bodily or physical deformities, or through their facial expressions such as eye contact or gaze (Choy et al., 2008; Clarvit, Schneier, & Liebowitz, 1996; Kim et al., 2007; Nakamura, 2006; Nakamura et al., 2002). In addition to the "neurotic" cognitions and worry, these individuals carry with them a belief that they might somehow offend or cause discomfort to others due to their perceived inadequacies. With offensive TKS, individuals think people avoid contact with them and fear further isolation from others due to the thought they might offend others with these imagined behaviors. At the same time, people with offensive TKS recognize these unreasonable fears and their delusional thinking is often limited to interpersonal situations. Because of the limited scope of these delusions, the offensive TKS type has been differentiated from the more severe psychotic subtype. This offensive TKS subtype is what the DSM-IV-TR (APA, 2000) describes as a culture-bound syndrome. Offensive TKS will simply be referred to as TKS in the remainder of this paper.

Due to this fear of offending other people, TKS has been characterized as an interpersonal disorder marked by an obsession of shame (Kleinknecht et al., 1997) and anxiety (Maeda & Nathan, 1999), which leads to a tendency to avoid social situations, a feature shared with SAD. Although sharing similarities, a major distinction between TKS and SAD lies in the interpersonal focus of the two disorders. SAD is characterized by the disordered individual experiencing embarrassment in the presence of others, while TKS is influenced by fears of offending or causing distress to others. The sensitivity to offending or embarrassing other people in TKS may perhaps be a reflection of the desire to maintain group cohesion and harmony evident in collectivist cultures (Markus & Kitayama, 1991). This distinction has led researchers to suggest TKS as an anxiety disorder of an interdependent manifestation and SAD as an

independent manifestation of social anxiety (Dinnel, Kleinknecht, & Tanaka-Matsumi, 2002; Kleinknecht et al., 1997).

Although considered to be a culture-bound variant of social anxiety found in Japan, instances of TKS symptoms have been identified in other cultures including the United States and Canada (Clarvit et al., 1996; McNally, Cassiday, & Calamari, 1990), Australia (Kim, Rapee, & Gaston, 2007), China (Clarvit et al., 1996), and Korea (Choy, Schneier, Heimburg, Oh, & Liebowitz, 2008; Lee & Oh, 1999). The presence of TKS or TKS symptoms in other cultures may partially be accounted by the fact that an individual must also meet criteria for SAD to meet diagnostic criteria for TKS (Maeda & Nathan, 1999). There may be SAD individuals in other cultures who believe their appearance or behaviors offend others and meet criteria for TKS. Similarly, because the basis of TKS is SAD symptoms, SAD has been found in Japanese culture (e.g., Sakurai et al., 2005; Shindo et al., 2006) and individuals with a TKS diagnosis can also meet diagnostic criteria for SAD (Nakamura et al., 2002). Thus, the existence of TKS symptoms across various cultures suggests that TKS might be more prevalent than research indicates.

Cultural Considerations

Research findings revealing the presence of TKS symptoms outside of Japan suggest that TKS may be more prevalent than initially thought. However, due to the large prevalence of TKS in Japan in comparison to Western cultures, the cultural component of this disorder should not be overlooked. Culture can provide context to various social situations - what people may consider to be appropriate behavior in one culture may not necessarily hold true for another culture. In providing this context, culture can moderate or determine adaptive and maladaptive functioning. Researchers often investigate culture in terms of dimensions with the most commonly used dimension being “Individualism” identified by Hofstede (2001). Hofstede identified five

dimensions by which culture could be examined: Power Distance, Individualism, Masculinity, Uncertainty Avoidance Index, and Long-Term Orientation. Each of these five dimensions has a counterpart that anchors the dimension. Individualism, with collectivism serving as the counterpart, identifies the degree to which people define themselves and their relationships with respect to how people interact in groups (Brewer & Chen, 2007; Triandis, McCusker, & Hui, 1990). This Individualism-Collectivism relationship has been frequently used to measure cultural influences.

Individualist cultures, characterized as autonomous and independent, make a distinction between the *self* and *others*. On the opposite spectrum, collectivist cultures emphasize characteristics such as social harmony and interdependence (Brewer & Chen, 2007; Brewer & Yuki, 2007; Hofstede, 2001; Triandis et al., 1990). Collectivist individuals focus more on the distinction between the in-group and out-group, seeking to act in concert with one another rather than attempting to differentiate within an in-group. With respect to goals and values, individualist cultures prioritize personal or self-serving motives while collectivist cultures prioritize the group interest before personal interest. Although this bipolar classification of individualism and collectivism may be useful in broadly identifying cultural differences, this perspective can overly simplify differences in culture (Brewer & Yuki, 2007). Indeed, there may be variability within these dimensions. For instance, one study found that American collectivists emphasize connection and a sense of belonging to a group while East Asian collectivists were characterized more by a sense of duty to the group and group harmony (Brewer & Chen, 2007). Thus, there is a need to be cautious in examining cultural aspects based on these dimensions as differences within a construct (e.g., collectivism) may exist.

In examining the individualism-collectivism relationship, it is beneficial to explore the psychological manifestations of individualism (i.e., independence) and collectivism (i.e., interdependence) by way of research on the self-construal, the way in which people perceive themselves in relation to their social environment and other people. The examination of the self-construal is critical because how people perceive themselves in relation to others captures the relationship among cognitive, emotional, and motivational systems within a culture (Markus & Kitayama, 1991). Cultural research has focused on the notion of the "self" because the self is a sociocultural product and a result of interactions among people within a culture (Kitayama, Duffy, & Uchida, 2007; Triandis, 1989). Researchers have often identified Western cultures such as America as representative of individualism and the independent self, while Eastern cultures such as Japan have been identified as being collectivist and interdependent. Thus, individualism and collectivism with respect to America and Japan is examined.

Western-European Cultures and Independence

Western-European societies such as America emphasize independent values like the autonomous self, self-actualization, being different from others, and asserting oneself (Markus & Kitayama, 1991). According to this independent view, the individual "self" is central and other people serve as a reference point. Individualists seek behaviors such as standing out in a crowd and personal accomplishments that produce ego-focused emotions (e.g., pride), while reducing unpleasant self-based emotions (e.g., frustration). Self-enhancement effects represent one example of American individualism and how people evaluate themselves in comparison to others. Alicke and colleagues found that most American college students believed themselves to be better than the average person on positive attributes by engaging in downward social comparison (Alicke, Klotz, Breitenbecher, Yurak, & Vredenburg, 1995). These students

attempted to maintain positive opinions of themselves by augmenting their positive views and minimizing negative assessments of the self. This self-enhancement effect suggests that people of independent orientation seek to elevate and prioritize themselves before others (Markus & Kitayama, 1991). Self-enhancement effects such as those found by Alicke et al. would not exist if individualists did not refer to others to evaluate themselves.

Self-enhancement not only characterizes individualist cultures, self-enhancement can be associated with maintenance of a culture's independent orientation. Studies suggest that self-enhancement effects tend to be positively associated with good mental health. For instance, Americans with high levels of self-enhancement have been found to be better psychologically adjusted than people with low levels of self-enhancement (Taylor, Lerner, Sherman, Sage, & McDowell, 2003). In this respect, self-enhancement may operate as an internal mechanism that helps people maintain a positive sense of independence (Heine, Lehman, Markus, & Kitayama, 1999). By placing the focus on themselves instead of others, people of independent orientation may be able cope with social threats by enhancing their self-view.

Asian Cultures and Interdependence

Opposite of individualism and independence is collectivism and interdependence, often represented by Japanese and other Asian cultures. In a collectivist culture such as Japan, people view themselves in relation to and in context of others (Brewer & Yuki, 2007; Markus & Kitayama, 1991). People view behaviors as situationally bound instead of inherent predispositions, where other people are able to perceive their thoughts, feelings, and behaviors (Markus & Kitayama, 1991). As such, people see themselves as part of an ongoing social relationship. Collectivists seek out pleasant other-focused emotions such as belongingness,

harmony, and connectedness, which in turn diminish unpleasant emotions such as shame and anxiety.

Although self-enhancement plays a significant role in constructing the self in individualist cultures (e.g., Alicke et al., 1995; Taylor et al., 2003), self-enhancement effects do not play a central role in collectivist cultures. For instance, in a cross-cultural study, Japanese and American participants completed questionnaires rating the accuracy of negative and positive personality traits as applied to themselves (Heine & Renshaw, 2002). Results revealed that the Japanese were more self-critical, whereas Americans were self-enhancing in their ratings. Additionally, Heine and Renshaw found that Japanese participants became more self-critical as they recognized desirable traits. The opposite finding held true for Americans who responded in a more self-enhancing manner in response to traits that were desirable. This finding suggests that for the Japanese, self-criticism plays a more prominent role in constructing the self than self-enhancement (Heine et al., 1999; Heine & Renshaw, 2002). Behavioral observational research examining self-enhancement between Canadian and Japanese students further indicate that Japanese participants are more self-critical than their North American counterparts (Heine, Takata, & Lehman, 2000). In this study, Japanese students were found to be more reluctant to believe they could have outperformed their average classmates, while Canadian students were reluctant to believe the average classmate could outperform them.

The collective findings by Heine and colleagues highlight how self-criticism plays a larger role than self-enhancement in the construction of the self in Japanese culture. Viewing oneself in a more positive manner than others, self-enhancement is a form of positive self-regard most often seen in Western cultures (Heine et al., 1999). However, creating and maintaining a positive self-regard may conflict with interdependent values. In a collectivist culture, the key

component to the construction of the self is through relationships with other people. Self-criticism represents a way for individuals to restrain themselves to maintain harmonious relationships and promote in-group welfare (Triandis et al., 1990). In this sense, the Japanese people's self-critical tendencies reflect their interdependent values – the desire to maintain the status quo and not "stand out."

Extant research on Western-European and Asian cultures highlights the importance of internal self-attributions in maintaining a culture's independent or interdependent identity. Values such as self-enhancement and positive self-regard may help construct the identity of the independent self, while self-criticism plays a more prominent role in constructing the interdependent self. Thus, individualist and collectivist cultures differentially reinforce self-attributes such as self-enhancement and self-criticism, respectively. Self-attributes in turn influence how individuals respond to a given situation (Heine et al., 1999) and reflect how people value and perceive relationships. However, self-attributions represent only one aspect in the differences observed between individualist and collectivist cultures. Other differences such as differences in the expression and regulation of emotion can affect the manner in which individuals respond to a situation.

Regulation of Emotions

From a developmental psychopathology framework, the investigation of emotion regulation (ER) serves as a useful tool in mapping trajectories of potential behavioral and emotional problems (Cicchetti, 1993; Cicchetti, Ackerman, & Izard, 1995). These trajectories, in turn, aid in understanding the etiology of different forms of psychopathology and inform advances in the development of more effective interventions (Keenan, 2000; Mennin & Farach, 2007). As a result, research on ER continues to grow because it has been recognized as a critical

component in developmental and psychosocial functioning. Many researchers view ER from a functionalist theoretical perspective as it may be flexible, bound to the situational context, goal directed, and serving a functional purpose (Campos et al., 1994). In this end, ER influences the quality, intensity, duration, and dynamics of emotional experience (Thompson, 1994), making it a critical component of psychological functioning in humans, regardless of cultural background.

Definitional Issues

Researchers have identified problems in the conceptualization of ER and in its definition (e.g., Bridges, Denham, & Ganiban, 2004; Cole, Martin & Dennis, 2004; Thompson, 1994). Cole and colleagues (2004) note that ER has been studied in a variety of ways including how emotions affect other psychological processes, viewing ER in terms of relationships and public behavior, and investigating individual differences in the regulation of emotions. Likewise, some researchers have viewed ER as a trait, while others have investigated it as a transitory state phenomenon. Due to the numerous ways in which researchers have defined ER, Cole and colleagues note that research often does not clearly define ER and fails to distinguish between emotion and ER.

From a biological perspective, Cole and colleagues (2004) define emotion as the biological processes of evaluating experiences that allows for the appraisal of the situation and prepares the individual to respond accordingly. Defined from a functionalist perspective, emotions are characterized by the relation between the person and significant events that are important to the person, where by the individual attempts to “establish, maintain, change, or terminate” the relation with the environment (Campos et al., 1994, p. 285). Regardless of the perspective, emotions serve to appraise and prepare the individual for action. Emotion regulation has frequently been defined through Thompson's definition (1994, pp.27-28), which states it as

"the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals." Therefore, ER acts as a process that influences the quality of emotion experience, using emotion to obtain an individual's objectives. Because ER is inherently linked to an individual's context-specific goals, ER serves a functional purpose and can be examined through the use of ER strategies (e.g., Gross & John, 2003).

Psychopathology and Emotion Regulation

Research on emotion regulation suggests that most forms of psychopathology are associated with deficits in emotion regulation (Bradley, 2000; Gross, 2002). In many cases, studies have linked emotion regulatory deficits to specific forms of psychopathology (Kring & Werner, 2004). The development of psychopathology in youth has even been conceptualized primarily as a failure in emotion regulation (Bradley, 2000). Bradley contends that vulnerabilities exist in individuals who consistently experience high levels of arousal. These individuals may experience situations as more threatening compared to other people due to their susceptible predisposition to arousing situations. As a result, they tend to avoid or withdraw from these situations in an attempt to manage their arousal. However, this strategy prevents them from learning more adaptive coping strategies. As this behavioral cycle continues, existing maladaptive coping methods prevent individuals from developing more effective social interaction skills, resulting in incompetent or maladaptive behavior that may eventually result in disorders.

Placed in the context of anxiety, some individuals may be more susceptible to anxiety, frequently experiencing situations as threatening because they perceive ambiguous contexts negatively due to selective interpretation biases (Hadwin, Frost, French, & Richards, 1997).

These anxious individuals tend to avoid anxiety provoking situations in an attempt to control and decrease their negative arousal. This attempt to manage their anxiety may be maladaptive because they are not confronting their fears and anxieties but avoiding them. As this behavioral cycle persists over time, Bradley's theory suggests that anxiety symptoms develop into anxiety disorders (e.g., generalized anxiety disorder, social anxiety disorder, specific phobia).

In this manner, the dysregulation of emotions may be indicative of developmental psychopathology and may play a critical role in the development of adaptive functioning and well-being. However, what determines adaptive and maladaptive emotion regulation may depend on cultural and contextual factors.

The Interaction of Culture and Emotion

Culture and Emotion

The functionalist perspective of emotions highlights the importance of the person-environment link. Humans function within a specific culture while emotions assist humans in functioning within that culture (Mesquita & Leu, 2007), making emotions and culture inherently linked. The impact that emotions have on relationships, however, depends on how cultures encourage and reinforce emotional responding. Moreover, cultures vary in how they value emotions and their expression (Kitayama, Markus, & Kurokawa, 2000; Markus & Kitayama, 1991; Mesquita & Leu, 2007). In this sense, certain emotions can affirm a culture's independence, whereas other emotions can encourage interdependence (Kitayama, Markus, & Matsumoto, 1995). In short, humans require emotions in order to navigate successfully through culture.

As emotions guide human functioning within a society, culture provides further meaning to emotional experiences. Although culture shapes emotions, not all emotions originate from

culture. Researchers postulate that emotion-based mechanisms such as physiological and reflexive responses are hard-wired and biological in nature (Mesquita & Leu, 2007). At the same time, culture can influence emotional processes by reinforcing certain ways of expressing or providing specific meaning to emotions. In this regard, culture influences an individual's knowledge, understanding, and regulation of emotions (Butler, Lee, & Gross, 2007). Emotion regulation is of particular interest because differences in individualism-collectivism may influence how people manage their emotions, which varies in the meaning, expression, and interpretation.

The Intersection of Culture and Emotion Regulation

Despite the important influence of culture on psychosocial functioning, much of the existing research has not investigated the intersection of cultural influences and emotion regulation (Butler et al., 2007). Research has largely examined emotion regulation *within* the mono-cultural level. The exploration of emotion regulation *across* culture, however, can expand on the current findings by providing evidence of how cultural meanings, values, and practices relate to the regulation of emotions. Available literature on ER and culture are largely conceptual and theoretical (e.g., Kitayama, Karasawa, & Mesquita, 2004; Mesquita & Albert, 2007), and empirical investigation is sparse (e.g., Butler et al., 2007). Given the scarcity of research, it will be important to synthesize cultural and ER literature to understand how they intersect and relate to one another.

Thompson's (1994) definition of ER, which consists of intrinsic and extrinsic processes through which an individual monitors, evaluates, and modifies emotional reactions to accomplish goals, represents a culturally adaptive description of how individuals regulate emotions. The definition does not restrict itself to a specific cultural norm or goal. Rather, Thompson defines

ER through the internal and external processes associated with context-dependent goals. This definition flexibly adapts to culturally divergent construal of the independent or interdependent self. Because emotions serve a functional role to guide people within culture and society (Campos et al., 1994; Thompson, 1994), emotion regulation is inherently relational where individuals strive to establish and maintain healthy relationships with others. However, culture often prescribes the specific goal for these relationships because culture shapes emotional experience through its values and principles (Markus & Kitayama, 1991). In this sense, culture regulates people's emotion by making emotional responses align with the values of the culture. Accordingly, maladaptive or ineffective ER strategies correspond to people whose emotional responses deviate from culturally defined norms. By identifying specific relational goals, culture provides meaning to emotional experience and contextualizes normative emotional expression and regulation (Mesquita & Albert, 2007), which in turn helps us understand non-normative behavior including diverse forms of psychopathology.

Furthermore, culture and emotion regulation reciprocally act on one another. People internalize cultural values by continually engaging in cultural practices through routine rituals that reinforce appropriate emotion regulatory practices. In this respect, humans engage in a continuous cycle of reinforcement and internalization of emotions guided by cultural values and principles. Due to this cycle, cultural characteristics such as independence and interdependence do not easily change. In a collectivist culture for instance, people view individuals who continuously maintain in-group harmony as acting adaptively to the culture. By responding in synchrony with their culturally defined in-groups, these individuals experience positive other-focused emotions such as connectedness and respect (Markus & Kitayama, 1991). These positive

emotions in turn reinforce these individuals to perform in a similar fashion in the future, thereby creating a cycle of reinforcement.

Emotion Regulation and Social Anxiety

Although divided by cultural differences, individuals with SAD and TKS both experience high levels of anxiety within the social context. This anxiety in turn compromises the ability to respond effectively to social situations due to an increase in anxiety symptoms, including physiological (e.g., fast-beating heart, sweating, shaking, trembling), cognitive (e.g., distorted or biased perceptions and thoughts, overestimation of threat), and behavioral symptoms (e.g., avoidance, withdrawal, lashing out, freezing). As represented in Rapee and Heimberg's (1997) cognitive-behavioral model, social anxiety disorder consists of an interplay of anxiety symptoms along with social factors such as perceived internal cues, a person's mental representation as seen by others, and external indicators of negative evaluation. Combined, these components create a continuous cycle of maladaptive behaviors that feed into one another. However, this model does not take culture, the role of emotions, and emotion regulation into account despite the important role that emotion plays in psychopathology (e.g., Mennin et al., 2005; Zeman et al., 2006) and treatment of psychopathology (e.g., Mennin & Farach, 2007).

Some studies have examined cultural differences in TKS and SAD, but research has yet to examine emotion mechanisms such as ineffective regulation of emotions in relation to the clinical expression of these disorders. Additionally, self-conscious emotions such as shame and embarrassment that play a role in social anxiety have not been fully examined. Due in part to fears of experiencing shame and embarrassment, people with SAD and TKS avoid social situations. And according to Bradley's (2000) hypothetical model, socially anxious individuals

should also possess emotion regulation deficits that make it difficult for them to manage their emotional experiences.

Regardless of culture, one of the fundamental hypothesized human goals is to maintain healthy relationships (Baumeister & Leary, 1995). In accordance with this goal, within a given situation, individuals need to modulate their emotions flexibly to the demands of the social context in an attempt to maintain healthy relationships with others (Halberstadt et al., 2001). Ineffective emotion management such as the nonconstructive expression of negative emotions may cause rifts in social relationships or prevent development of healthy relationships. Consequently, humans need to manage emotions effectively. For socially anxious individuals who have difficulty in social situations, ER plays an ever-important role in adaptive functioning.

Findings from studies suggest that individuals with internalizing difficulties and anxiety disorders in particular possess an assortment of emotion related deficits both in youth (Southam-Gerow & Kendall, 2002; Suveg & Zeman, 2004; Zeman, et al., 2002) and adults (e.g., Mennin, McLaughlin, & Flanagan, 2009; Spokas, Luterek, & Heimberg, 2009). For instance, anxious youth who met DSM-IV anxiety disorder criteria (i.e., separation anxiety disorder, generalized anxiety disorder, and social anxiety disorder) tend to exhibit poor understanding of emotions, possessing less developed understanding of hiding and changing emotions compared to children without an anxiety disorders (Southam-Gerow & Kendall, 2000). These children also reported fewer and less effective emotion regulation strategies, indicative of their limited ability to effectively manage emotions within the social context. In adults, socially anxious individuals have reported greater emotional suppression in contrast to non-socially anxious individuals, with socially anxious individuals reporting ambivalence towards emotional expression and maladaptive beliefs of emotional expression (e.g., emotional expression as a sign of weakness;

Spokas et al., 2009). Other studies have found that poor emotional understanding predicts a social anxiety disorder diagnosis (e.g., Mennin et al., 2009). These findings across children and adults provide evidence of not only ER deficits in individuals with anxiety disorders, but also a "lag" in their emotional development. Indeed, researchers have considered these lags or deficits in emotion-related domains as indicative of risk factors in the development of psychopathology (Gross, 2002; Keenan, 2000; Weems & Silverman, 2006; Zeman et al., 2002).

Emotion Regulation and Social Anxiety with Respect to Cultures

Interface of Individualist Cultures

As evidenced by the differential manifestations of social anxiety in America and Japan, culture provides the context for adaptive functioning. Cultural research can help to explain the processes involved in the development and maintenance of ER and SAD. In an individualist culture such as America, social anxiety exists as a disorder where individuals have persistent, irrational fears of social situations and also fear experiencing embarrassment or humiliation that leads to avoidance of social situations (APA, 2000). This manifestation of SAD is characteristic of individualist cultures because the focus is on the "self" – the fear lies within the individual potentially experiencing negative events and references one's internal attributes as opposed to referencing other people's attributes (Markus & Kitayama, 1991). Additionally, the DSM-IV-TR identifies embarrassment, a self-conscious evaluative emotion where the focus lies within the individual, as a clinical feature. The DSM also identifies humiliation, another self-conscious emotion that is similar to embarrassment but includes the added condition of being the victim of hostile intent (Elison & Harter, 2007). Other researchers further identify humiliation as a response of perceived insult that leads to a survival response that can include emotional appraisals and behavioral responses (Trumbull, 2008) and that this experience is a dysphoric

feeling where one's identify has been demeaned and compromised (Hartling & Luchetta, 1999). Thus, humiliation can play a role in social anxiety (e.g., an individual is fearful of being ridiculed and demeaned and avoids giving public presentations). Viewed in relation to SAD, however, humiliation is a result of other people's potential behaviors and reactions that can lead to anxiety with less emphasis placed on the internal self. Because embarrassment lies at the basis of humiliation, the focus in this paper will remain on the self-conscious emotion of embarrassment.

Embarrassment often occurs when an individual becomes self-aware in the presence of others, failing to fulfill some standard of social expectation, decreasing an individual's public- and self-esteem (Lewis, 1995). Miller (2007) characterizes embarrassment as involuntary and fleeting, striking without warning, evoking feelings of exposure and awkwardness. Despite the startling and awkward nature of this emotion, embarrassment serves an adaptive function as it helps to maintain social order. By experiencing embarrassment, an individual recognizes misbehavior, communicates regret, and reassures good intentions, helping to alert others of personal unbecoming behaviors. However, Miller also describes embarrassment often leading to undue fears where an individual assumes one's action to be more prominent than it actually is, becoming overly self-conscious, overestimating the transparency of one's feelings, and becoming excessively concerned with others' (negative) evaluation. Within this characterization of embarrassment is the notion of using other people for social comparison, a characteristic of the independent self-construal. When an individual compares oneself to others and realizes a violation in social standards, that person experiences heightened self-awareness that leads to embarrassment and social anxiety.

When we examine embarrassment with respect to ER and SAD, we can hypothesize SAD to be associated with poor regulation of embarrassment. From a functional perspective, social

situations provide a salient context for regulating emotions (Thompson, 1994). A person's specific emotion regulatory goals in these social contexts vary, but effective ER entails monitoring, evaluating, and modifying one's reactions by adapting to situational demands. However, this adaptation to situational demands does not effectively occur in people with SAD because of their fear of embarrassment. As individuals continually experience cognitive, physical, and behavioral symptoms of anxiety in the social context (Rapee & Heimberg, 1997), their fear of embarrassment also persists and leads to emotion dysregulation. Their attempt to regulate their emotions (e.g., trying not to embarrass oneself during a presentation) can be hindered by cognitive symptoms (e.g., overestimation or exaggeration of social threat), physical symptoms (e.g., sweating or fast-beating heart), and behavioral symptoms (e.g., freezing, shaking or trembling) (see Ollendick & Hirshfeld-Becker, 2002). This cycle of behavior can lead individuals to deviate from an adaptive developmental pathway (Cicchetti, 1993) and adopt less effective emotion management strategies such as attempting to overcontrol the intensity of negative emotions (e.g., Plutchik, 1993) or continuously suppressing emotions (e.g., Gross & John, 2003).

Interface of Collectivist Cultures

In a collectivist culture such as Japan, social anxiety largely exists in the form of taijin kyofusho (Kleinknecht et al., 1997; Nakamura et al., 2002). In contrast to SAD where the focus lies in the self, individuals with TKS fear other people will be embarrassed or offended. This focus on "others" makes TKS a disorder that is illustrative of interdependent values.

In Japanese culture, people place emphasis on how they relate to others (Markus & Kitayama, 1991). Viewing themselves in terms of interpersonal relationships, these collectivists strive to fit in, becoming interdependent with their in-group (e.g., family, co-workers, and social

circle) and establishing other relations (Kleinknecht et al., 1997). Taijin kyofusho derives its fear from this interdependent characteristic. In TKS, individuals realize that others construe their behaviors and think that they are needlessly standing out in the crowd. Deviating from the crowd and standing out is not a desirable social action in Japan because "the nail that stands out gets pounded down" (Markus & Kitayama, 1991, p. 224). Put another way, the Japanese consider the self to be part of a larger social unit. In order to prevent disruption to this unit, they strive to maintain harmony and connectedness. Consequently, the Japanese avoid behaviors that make them stand out of the crowd, particularly in the presence of familiar people that can cause shame to their in-group. On the extreme end, we see Japanese peoples' interdependent values through the offensive TKS subtype, where people fear that behaviors such as blushing, trembling voice, bodily odors, physical deformities, and facial expressions may offend or embarrass others. Due to this concern of disrupting in-group harmony and bringing distress upon others, TKS can be considered to be a disorder representative of interdependent cultural values.

The Japanese also place importance on self-conscious emotions such as shame, guilt, shyness, and embarrassment. Among these emotions, shame is thought to play the most significant role in Japanese culture (Miyake & Yamazaki, 1995). Indeed, Kleinknecht et al. (1997) described TKS as "an obsession of shame." Shame consists of complex cognitive activities that involve the evaluation of oneself vis-à-vis social standards and rules (Lewis, 1995). A product of a person's interpretation of a given situation, shame is an intense, negative, painful state that results in the disruption of behavior and often results in individuals attempting to rid themselves of it. In contrast to embarrassment, researchers consider shame more powerful in its both intensity and duration.

The Japanese term for shame is *haji*, which has taken on numerous derivatives including shame in front of others (*haji-o-kaku*), acting shy (*hajirau*), a person who is shameless (*haji-shirazu*), disgrace (*haji-sarashi*), feeling ashamed (*hajiru*), and being embarrassed (*hazukashii*). As seen from these derivatives, the Japanese experience *haji* in various contexts, not just when they are ridiculed and rejected by others (e.g., hajiru, haji-o-kaku), but also when they experience less shameful emotions such as embarrassment in the presence of others or in comparison to other people (e.g., hajirau, hazukashii; Miyake & Yamazaki, 1995). The ways in which shame manifests itself in Japanese culture reflects the importance the Japanese place in how they are perceived by other people. In essence, the emotion of shame is a reflection of the desire to be interdependent and avoid unwanted attention from other people (Markus & Kitayama, 1991). Thus, shame is an undesirable yet important emotion for the Japanese. For some individuals, however, the importance of avoiding shame becomes so paramount that it transforms into an obsession, culminating in the manifestation of taijin kyofusho.

The ineffective regulation of shame appears to be a critical characteristic of TKS. Japanese people strive to integrate themselves into their in-group. Viewed from a functional perspective of emotion (Thompson, 1994), the cultural goal in regulating emotions would be to maintain this interdependent value of harmony and cohesion. In regulating emotions, the competent Japanese individual effectively monitors, evaluates, and modifies his or her reactions to adapt to the situation so as to not stand out. However, TKS individuals, due to their fear of causing shame or distress to others, may have difficulty adapting to the situation and modulating their emotions. A comparison of TKS and SAD research suggests that those with TKS experience a similar cycle of symptoms encountered by SAD individuals (Nakamura et al., 2002). Thus, similar to the pathway in which SAD individuals develop ER problems, those with

TKS experience physical, cognitive, and behavioral symptoms that stand in the way of effective ER. In their attempt to cope with shame, they likely adopt less effective ER strategies.

Given the intense nature of shame (Lewis, 1995), it is unlikely that individuals with TKS will regulate their emotions by under-controlling or ignoring them. Instead, they may attempt to over-regulate or suppress these powerful negative emotions. Thus, in many respects, TKS appears to be a result of a combination of shame and maladaptive views of interdependence. Indeed, Dinnel et al. (2002) found TKS symptoms higher among Japanese individuals who construed themselves to be high on interdependence and low on independence. Dinnel's findings suggest that TKS may be a function of possessing maladaptive perspectives on interdependent values. By looking towards other people to define themselves (Markus & Kitayama, 1991), other people's perceptions play a significant role in the Japanese individual's self-construal. Unfortunately, the constant use of others as a barometer of social functioning may be maladaptive and unhealthy as a great deal of energy might be spent taking into consideration other people's feelings for which the individual may not have control. In this manner, it is surmised that shame plays a significant role in the clinical manifestation of TKS.

Current Study

Collectively, research on social anxiety suggests that TKS and SAD individuals experience relational fears associated with the dysregulation of emotions. However, research studies have yet to jointly examine emotion regulation and its underlying mechanisms with respect to TKS and SAD. Furthermore, research on TKS in Western cultures is lacking as TKS symptomatology is not frequently examined. As such, it remains unclear as to the prevalence of TKS and its symptoms in a Western individualistic culture. Understanding the role of shame and

embarrassment in these disorders may provide insight into the development of social anxiety across cultures.

The present study was conducted in two phases, examining emotion regulation and self-conscious emotions of shame and embarrassment in young adults with and without the social anxiety symptoms of TKS and SAD. The study also examined possible cultural influences of independence and interdependence, as well as differences in physiological responses during an experimental task by examining electrical cardiac impulses. During the first phase, participants completed a series of questionnaires on a website that assessed for emotion regulation strategies, SAD symptoms, TKS symptoms, degree to which they identified with individualism or collectivism, and dispositional embarrassability. Based on their responses, select participants were then invited to participate in the second part of the study, a laboratory phase. During this laboratory phase, participants were administered a diagnostic clinical interview, additional questionnaires, and participated in an experimental singing task designed to elicit self-conscious emotional responding (Sturm et al., 2008) while their electrical cardiac impulses were recorded.

Overall, it was hypothesized that individuals who reported greater social anxiety symptoms (SAD or TKS) would report more maladaptive ER strategies relative to people who do not report elevated social anxiety symptoms. Furthermore, it was hypothesized that individuals who reported social anxiety symptoms would endorse a greater degree of embarrassment and shame compared to non-socially anxious individuals. With respect to individuals who reported TKS and SAD symptoms, it was expected that individuals who endorsed high levels of TKS symptoms would also report experiencing high levels of shame relative to individuals who reported low TKS symptoms. Similarly, people who reported high levels of SAD were expected to report high levels of embarrassment relative to those who

reported low SAD symptoms. Several culturally relevant hypotheses were made as well. Inasmuch as research suggests that TKS is largely found in Asian countries while SAD is found more typically in Western cultures (Kleinknecht et al., 1997), it was hypothesized that a cultural difference would be observed among individuals who report TKS symptoms and SAD symptoms, such that TKS symptoms were likely to be reported by Asians and individuals with greater levels of interdependent orientation, while SAD symptoms were more likely to be reported by Caucasians and individuals of independent orientation.

Due to the role that embarrassment is thought to play in SAD and shame in TKS, it was expected that these self-conscious emotions would be mediated by the ability to regulate these emotions. Specifically, it was hypothesized that ER would mediate the relationship between embarrassment and SAD symptoms, as well as the relationship between shame and TKS. In the laboratory task, it was expected that participants would exhibit elevated heart rate during the singing task compared to a baseline measure, with those who report high levels of SAD and TKS exhibiting greater elevation in heart rate than those who report low levels of SAD and TKS.

METHOD

Participants

Participants were 1475 university students (n = 436 men; n = 1034 women; 5 individuals did not identify their gender) primarily recruited through the Virginia Tech SONA system, but also from flyers and postings throughout campus (see Appendices A through E). The majority of the sample (n = 1440) were between the ages of 18 and 22 years old. The sample was largely homogenous with respect to race and ethnicity with approximately 80% identified as Caucasian (n = 1169), 8% as Asian (n = 124), 4% as African-American (n = 61), 3% as Hispanic, Latino, or Spanish Origin (n = 51), and 3 % as Other (n = 42). Less than one percent identified themselves

as American Indian/Alaska Native (*n* = 3), Native Hawaiian or Other Pacific Islander (*n* = 11), or chose not to respond (*n* = 14).

Participants were offered extra credit for completing the first phase of the study if they were currently taking an undergraduate course in psychology. Recruitment occurred over two consecutive semesters. Participants who took part in the second phase received additional extra credit along with a raffle entry for one of ten $25 amazon.com gift certificates (5 raffles each semester). Students were only eligible to complete the study once - duplicate responses from the same individual were removed from the sample.

During the fall 2009 semester, 987 students completed the first phase of the study. However, approximately 20% of the responses were invalid (*n* = 193), resulting in 794 participants who provided valid responses and who were eligible for the second phase of the study. Responses from six individuals were removed because they listed their age as 17 - below the age criterion required to participate as stated on the informed consent form (see Appendix F). An additional 10 responses were removed because these students had already completed the study earlier in the semester and received credit. Furthermore, 45 subjects were not included because they did not identify their email address to be eligible for extra credit and to be contacted for the second phase of the study. Finally, 132 students were not eligible due to careless responding (e.g., failed to respond correctly on validity check questions, skipped large portions of the questions or entire questionnaires).

During the spring 2010 semester, 879 students completed the first phase of the study. Approximately 23% of the responses were invalid (*n* = 198), which resulted in 681 participant responses that were valid and eligible for the second phase of the study. Two students did not identify their email, making their data invalid and ineligible for the second phase of the study.

An additional 58 responses were omitted because these students had previously completed the study. Finally, 138 student responses were not eligible due to careless responding

From the 1475 eligible participants, 143 participated in the second phase of the study. Women (n = 106) outnumbered men (n = 36) by a 3 to 1 ratio, consistent with the overall response ratio of women to men. The majority of the sample (n = 137) were between the ages of 18 and 22 years old. One participant was excluded because her age of 43 was 19 years higher than the next highest age in this sample. Thus, the total sample for the second phase was 142 participants. Because part of the study aim was to examine symptoms of TKS in a large sample, a disorder most often seen in Japan and other Asian countries, efforts were made to recruit participants from Asian backgrounds. However, Asians still represented a small portion of this sample. Similar to the overall sample, the sample from the second phase was largely homogenous with 75% identified as Caucasian (n = 107) and 11% as Asian (n = 15). The remainder of the sample represented less than 10% of the sample with 8 individuals identified as Hispanic, Latino, or Spanish Origin, 5 as African-American, 1 as Native Hawaiian or Other Pacific Islander, and 6 as Other.

Measures

Measures were administered across two different time points, during the initial online screening phase and during the laboratory portion where select participants were administered a series of measures in person. For each of the online measures described below, validity check items (e.g., “Please select Not at all”, “For this item, choose option number two”) were interspersed within questionnaires to prevent respondents who respond carelessly from being included. Within the instructions for each questionnaire, a sentence explicitly stated that “For

quality inspection purposes, there may be a few questions where you will be asked to endorse a predetermined response."

Online Measures

Demographics Form. A demographics form (Appendix G) developed by the researcher was administered online. Demographic data obtained included gender, age, country of birth, race and ethnicity, primary and secondary language(s), and education level, along with several questions on mental and medical health history.

Auckland Individualism and Collectivism Scale (AICS; Shulruf, Hattie, & Dixon, 2007). The AICS (Appendix H) is a relatively new measure of cultural orientation compared to the traditionally used Self-Construal Scale (SCS; Singelis, 1994). The AICS was used for the current study because it addresses some limitations that are present in existing measures (see Oyserman, Coon, & Kemmelmeier, 2002). Measures such as the SCS can be susceptible to contextual factors because values associated with interdependence or independence in one context might vary in another context. Additionally, measures making use of anchors based on intensity of beliefs (e.g., "Strongly Agree," "Strongly Disagree") might be susceptible to cultural differences in how people understand and respond to these anchors. For instance Shulruf et al. noted that African Americans and Hispanics tend to respond more extremely than to non-African Americans and non-Hispanics, suggesting that differences in the frame of reference make it difficult to compare across different populations. The AICS addresses these influences of context and anchors by evaluating the frequency of the values as opposed to the intensity of values.

The AICS is a 20 item self-report questionnaire that examined the respondent's identification with individualism and collectivism. The AICS assessed for three dimensions of individualism (Competitiveness, Responsibility, Uniqueness) and two dimensions of collectivism

(Advice, Harmony), with each subscale comprising of 4 questions. Items were rated on a 6 point scale ranging from 1 (*Never or Almost Never*) to 6 (*Always*). Sample items included "I consult my family before making an important decision," "I hate to disagree with others in my group," "I define myself as a competitive person," and "I enjoy being unique and different from others." Shulruf et al. (2007) reported the five dimensions to have acceptable internal consistency as measured by Cronbach's alpha, which ranged from .62 to .77. Internal consistency scores for the current study were largely acceptable as well: .82 for Competiveness, .54 for Responsibility, .82 for Uniqueness, .78 for Advice, and .62 for Harmony.

Emotion Regulation Questionnaire (ERQ; Gross & John, 2003). The ERQ (Appendix I) is a 10 item self-report questionnaire that assessed the respondent's use of two types of emotion regulation strategies. Specifically, the ERQ assessed the strategies of suppressing emotions (e.g., "I control my emotions by not expressing them") and reappraising the situation (e.g., "I control my emotions by changing the way I think about the situation I'm in"). The items were rated on a 7 point scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). The ERQ has been found to have acceptable internal consistency for the Reappraisal factor (α = .75 to .82) and the Suppression factor (α = .68 to .75). Gross and John (2003) reported that high scores on the Reappraisal subscale were associated with greater ability to reassess the situation and correspond to greater affective functioning, interpersonal functioning, and well-being. Conversely, high scores on the Suppression subscale were associated with greater degree of suppressing emotions and lesser affective functioning, interpersonal functioning, and well-being. However, these findings did not take into account potential cultural differences in values. Some research indicates that ERQ responses are associated with cultural values (Masumoto, Yoo, Nakagawa, Alexandre, Altarriba, Anguas-Wong, et al., 2008), suggesting that higher scores for suppression

may not necessarily indicate lesser psychosocial functioning. For the current study, the internal consistency for Reappraisal was .86 and .78 for Suppression.

Social Phobia Inventory (SPIN; Connor et al., 2000). The SPIN (Appendix J) is a self-report measure of social anxiety based on the Brief Social Phobia Scale (Davidson et al., 1997). Although various measures of social anxiety exist that are wider-ranging in scope (e.g., Liebowitz Social Anxiety Scale, Liebowitz, 1987; Social Interaction Anxiety Scale and the Social Phobia Scale, Mattick & Clarke, 1998), these measures are often lengthy with less focus on physiological symptoms. The SPIN was chosen due to both its brevity and assessment of physiological symptoms. The SPIN consists of 17 self-report items that assessed the degree of social anxiety that individuals typically experience. Specifically, the SPIN assessed for fear, avoidance, and physiological symptoms. Each item was rated on a 5-point scale ranging from 0 (*Not at all*) to 4 (*Extremely So*). Sample items included "Being criticized scares me a lot," "Fear of embarrassment causes me to avoid doing things or speaking to people," and "Trembling or shaking in front of others is distressing to me." The SPIN has been found to have good internal consistency estimates (α = .87 to .94). High scores on the SPIN indicate greater levels of social anxiety with a cutoff score of 19 differentiating clinical and non-clinical populations (Connor et al., 2000). The internal consistency of the SPIN for the current study was .90.

Susceptibility to Embarrassment Scale (SES; Kelly & Jones, 1997). The SES (Appendix K) is a dispositional measure of embarrassability. The SES consists of 25 items to which respondents are asked to rate on a 7 point scale ranging from 1 (*Not at all like me*) to 7 (*Very much like me*). Sample items include "I feel unsure of myself," "Sometimes I just feel exposed," and "I am concerned about what others think of me." High scores on the SES indicate greater susceptibility to embarrassment. The SES has been found to have good internal consistency,

ranging from .90 (Kelly & Jones, 1997) to .96 (Maltby & Day, 2000). For the current study, the SES was used as a measure to assess the tendency of participants to experience embarrassment with respect to social anxiety. The internal consistency for the SES was .94.

Taijin-Kyofu-Sho Questionnaire (TKSQ; Choy, Schneier, Heimberg, Oh, & Liebowitz, 2008). The TKSQ (Appendix L) measures the severity of taijin kyofusho symptoms on three interpersonal dimensions. The TKSQ is comprised of 30 items, with 10 physical and behavioral symptoms rated on three interpersonal dimensions of embarrassing the self, causing discomfort to others, and offending others. Respondents were asked to rate each item on a 4-point scale ranging from 0 (*Not fearful at all*) to 3 (*Extremely fearful*). Sample items included "How fearful are you that you may blush in front of others, such as turning red when someone asks you a question," "How fearful are you that you will sweat or perspire in front of others," and "How fearful are you that you will have body odors around others." For each of these physical and behavioral items, respondents were asked to rate their fear pertaining to embarrassment of oneself, causing discomfort to others, and causing offense to others.

The TKSQ includes six subscales including Fear of embarrassment due to common symptoms (E-CS), Fear of discomfort to others due to common symptoms (D-CS), Fear of offense to others due to common symptoms (O-CS), Fear of embarrassment to self due to offensive TKS symptoms (E-TKS), Fear of discomfort to others due to offensive TKS symptoms (D-TKS), and Fear of offense to others due to offensive TKS symptoms (O-TKS). Each of these subscale scores consist of the sum of five items that comprise the subscale. Choy et al. (2008) note that symptoms of TKS are considered to be present if respondents report either moderate or extreme fear in any of the three interpersonal dimensions of self-embarrassment, discomfort to others, and offending others. Therefore, clinical scores on the TKSQ were defined as responses

where moderate or extreme fear was endorsed. Choy et al. reported the six subscales of the TKSQ to have acceptable to good internal consistency, ranging from .65 to .83. Internal consistency estimates for the current study indicated good reliability with Cronbach's alphas: .77 for E-CS, .87 for D-CS, .91 for O-CS, .78 for E-TKS, .84 for D-TKS, and .85 for O-TKS.

Laboratory Measures

Anxiety Disorders Interview Schedule for DSM-IV, Adult Version: *Client Interview Schedule* (ADIS-IV; Di Nardo, Brown, & Barlow, 1994). The ADIS-IV (Appendix M) is a diagnostic structured clinical interview that allows for differential diagnoses among anxiety disorders in the DSM-IV. The ADIS-IV was used to assess whether participants exhibiting social anxiety symptoms based on the SPIN (Connor et al., 2000) had a diagnosable condition of social anxiety disorder. Thus, the Social Anxiety module of the ADIS-IV was administered to assess the degree of interference and distress that social anxiety had among participants. The Social Phobia module of the ADIS-IV has been found to have good interrater reliability for social phobia as the principal diagnosis (k = .77; Brown, Di Nardo, Lehman, & Campbell, 2001). For the present study, the administration of the ADIS-IV Social Anxiety module was digitally recorded in order to obtain inter-rater reliability. Reliability was obtained for approximately 25% of the laboratory sample (n = 37) and good interrater reliability was obtained (k = .94) in identifying clinical and non-clinical levels of social anxiety.

Brief Symptom Inventory (BSI; Derogatis, 1993). The BSI (Appendix N) is a 53 item clinical self-report questionnaire that assessed for psychological symptom patterns by asking respondents to rate how much a problem has been distressing or bothering them during the past seven days. The BSI taps into nine primary symptoms and also provides clinical indices of distress including the Global Severity Index, Positive Symptom Distress Index, and the Positive

Symptom Total. Statements on the BSI were rated on a 5-point scale ranging from 0 (*Not at all*) to 4 (*Extremely*). The BSI was used as a global indicator of distress to assess the degree to which the present sample exhibited symptoms other than social anxiety. The BSI supplemented the absence of diagnostic measures on the laboratory sample. Internal consistency for the BSI has been reported to be range from .71 to .85 for the nine dimensions (Derogatis, 1993). For the current study, the internal consistency scores were acceptable: .78 for the Somatization subscale, .78 for the Obsessive-Compulsive subscale, .85 for the Interpersonal Sensitivity subscale, .85 for the Depression subscale, .78 for the Anxiety subscale, .72 for the Hostility subscale, .68 for the Phobic Anxiety subscale, .72 for the Paranoid Ideation subscale, and .71 for the Psychoticism subscale.

Internalized Shame Scale (ISS; Cook, 1994, 2001). The ISS (Appendix O) is a 30 item self-report questionnaire that assessed for dispositional shame in individuals. The ISS is comprised of two subscales including the Total Shame score and the Total Self-Esteem score. The items were rated on a 5-point scale from 0 (*Never*) to 4 (*Almost Always*). Sample ISS items included "I feel insecure about others' opinions of me," "I would like to shrink away when I make a mistake," and "At times I feel so exposed that I wish the earth would open up and swallow me." High scores on the ISS indicated frequent negative affect associated with the self (e.g., poor self-esteem or high shame). The ISS has been found to have good internal consistency that ranged from .95 for nonclinical samples and .96 for clinical samples (del Rosario & White, 2006). The internal consistency for the current sample was .96 for the Total Shame subscale and .91 for the Total Self-Esteem subscale.

State Susceptibility to Embarrassment Scale (SSES). A modified version of the SES (Appendices P and Q) was administered to participants during the laboratory phase. This

modified version contained 15 of the 25 original SES items developed by Kelly and Jones (1997). The SSES was administered as a state-based questionnaire inquiring about the present state of embarrassment of the participants during an experimental task at two different points in time (see below). Items on the SSES were modified with the addition of the phrase "in situations like this" at end of the original SES statements. The internal consistency of the SSES was .88 during the first administration and .89 during the second administration.

State Shame and Guilt Scale (SSGS; Marschall, Sanftner, & Tangney, 1994). The SSGS (Appendix R and S) is a brief 15 item questionnaire that assessed for the respondent's present self-conscious emotional state by inquiring about shame, guilt, and pride. The SSGS was rated on a 5 point scale ranging from 1 (*Not feeling this way at all*) to 5 (*Feeling this way very strongly*). Five items comprised the shame subscale including "I want to sink into the floor and disappear," "I feel small," "I feel like I am a bad person," "I feel humiliated, disgraced," and "I feel worthless, powerless." The SSGS scale items were slightly modified from the original version and included the phrase "…in situations like this" at the end of each statement because the measure was administered at two points in time during an experimental task. The shame scale has been found to have good reliability ($\alpha = .89$; Marschall et al., 1994). For the current study, the internal consistency was .85 during the first administration and .88 during the second administration.

Laboratory Equipment

Polar RS800CX Heart Rate Monitor (Polar Electro). The Polar RS800CX heart rate monitor (HRM) measured and recorded electrical cardiac impulses during the laboratory phase. Two electrode sensors were embedded in an elastic belt that sensed and transmitted data to a receiver watch that converted interbeat intervals into heart rate (HR) data. The part of the skin

covered by the electrode sensors were cleaned with alcohol rubs to reduce impedance. Electrode gel was placed on the electrode sensors and the HRM belt was positioned across the participant's sternum. The receiver watch allowed the researcher to sample heart rate at various intervals.

The Polar RS800CX HRM was used to measure changes in HR during an experimental task. Past research on social anxiety has produced mixed results regarding cardiovascular effects of social anxiety and socially anxious traits. Some research indicate increased reactivity in socially anxious individuals (e.g., Larkin, Ciano-Federoff, & Hammel, 1998), while other studies have found no differences between socially anxious and non-socially anxious individuals (e.g., Edelmann & Baker, 2002). Still, other studies have found reduced cardiovascular reactivity in socially anxious individuals (e.g., Gramer & Sprintschnik, 2008). Given these mixed results, the extent to which HR differed between high socially anxious and low socially anxious individuals, as well as between individuals who endorsed SAD symptoms and TKS symptoms were examined.

Heart rate data obtained from the Polar RS800CX were analyzed with Kubios HRV, version 2.0 analysis software (Biosignal Analysis and Medical Imaging Group, Department of Physics, University of Kuopio, Finland). The Kubios HRV application calculated commonly used time-domain and frequency-domain measures of HR.

SuperLab Pro 4.0 (Cedrus Corp.). SuperLab Pro 4.0 is programmable stimulus presentation software that allows experimenters to play video and audio files at specific points in time, present stimulus lists, receive participant input, among other functions. SuperLab Pro was used as the primary method to present instructions, video, and audio to the participants during the experimental task (See Appendices T and U for the experimental task flowchart).

Logitech QuickCam Pro 9000 (Logitech International). The Logitech QuickCam Pro 9000 is a 2.0 megapixel webcam with resolutions up to 1600 x 1200 with a frame rate of 30fps. The QuickCam Pro records both video and audio, has an autofocus, zoom, lens shift, and a universal monitor clip to attach the camera on top of computer monitors. The webcam was used to record behaviors of participants during the experimental task.

Latitude E6400 (Dell Inc.). A Dell Latitude E6400 laptop running a 64-bit version of Windows Vista Enterprise was controlled by the experimenter during the experimental task. The Latitude E6400 was connected to the QuickCam Pro 9000 through a six foot USB cable. The Debut Video Capture Software (version 1.47; NCH Software) recorded portions of the experimental task from the webcam into an .AVI file. A multimedia editing software, Any Video Converter (version 2.7.7; FFMpeg Project), was used to trim video clips recorded by the webcam. Any Video Converter allows users the ability to edit video files at specific points in time and enables uniform editing of videos across all participants. Additionally, a Virtual Network Computing system, VNC Viewer (RealVNC Ltd.), was used to remotely view graphical screen updates of the experimental computer in real time. The Latitude E6400 laptop was connected to the experimental computer through cross-over Ethernet cables to transfer video files from the Latitude E6400.

ThinkPad T400 (Lenovo Group Ltd.). A Lenovo ThinkPad T400 running Windows XP Professional was used as the experimental computer that administered the SuperLab Pro experiment. The QuickCam Pro webcam connected to the Latitude E6400, was mounted on top of the ThinkPad screen to record the participants' behaviors during the experimental task. The ThinkPad T400 ran the VNC Server (RealVNC Ltd.) that allowed the Dell Latitude E6400 to connect to the ThinkPad through the VNC Viewer. This allowed real-time updates of the

ThinkPad screen to be seen by the experimenter's Latitude E6400 laptop. The ThinkPad was connected to the Latitude E6400 through cross-over Ethernet cables to unobtrusively receive video files from the experimenter's computer.

Online Procedure

During the first phase of data collection, self-report questionnaires were administered online through the Virginia Tech Psychology Department's SONA system. Upon signing up for the study, participants were directed to the study website at survey.vt.edu where they reviewed the informed consent before completing the questionnaires. Please refer to Appendix A for the informed consent form. During the fall 2009 semester, participants completed questionnaires in the following order: Demographics Form, SPIN, ERQ, AICS, SES, and the TKSQ. During the spring 2010 semester, participants were administered questionnaires in the following order: Demographics Form, TKSQ, SES, AICS, ERQ, and SPIN.

Responses from the Online Phase were reviewed to determine participant eligibility for the Laboratory Phase. Although the survey.vt.edu website provides basic data collection functions, it is susceptible to careless responding and participant error. To counteract possible unreliable or careless responses, validity check questions (e.g., "Select number four for this response") were interspersed among the questions in each of the measures. Participants who incorrectly responded to any of the validity check responses were removed from consideration for the Laboratory Phase; these responses were also excluded from the total sample. Participants who failed to complete all questionnaires were also excluded. Furthermore, participants who did not provide their contact information for extra credit and Laboratory Phase eligibility were omitted from the study. Finally, responses from participants who previously completed the questionnaire (same semester or previous semester) were also omitted.

Within the valid sample of 1475 participants, eligibility for the Laboratory Phase was determined by scores on the SPIN. Connor et al. (2000) report that SPIN total scores of 19 or greater indicate a clinical sample. All individuals who scored at or above the clinical cut-off were invited to participate in the Laboratory Phase. For individuals who scored below the SPIN cut-off score, approximately half of the sample was randomly chosen to participate in the Laboratory Phase. E-mail messages were sent out to participants to schedule the Laboratory Phase.

Laboratory Procedure

Participation in the second phase of this study consisted of an individual hour long laboratory session with the experimenter. Qualifying participants received an email from the experimenter that allowed them to sign up for a study time slot through the Psychology Department SONA System. Participants reviewed a hard copy of the informed consent form and were given an opportunity to ask questions. Two individuals withdrew from the laboratory session upon learning about the experimental singing task and one individual opted to participate in all but the experimental task.

Interview and Questionnaires. After signing the informed consent, participants were given a brief overview of the laboratory session and administered the ADIS-IV Social Phobia module. The audio for the interview was digitally recorded for later reliability analyses. After completing the interview, participants completed the BSI and ISS. The administration of the BSI and ISS were counterbalanced - half of the sample completed the BSI first and ISS second, and the other half completed the ISS first, followed by the BSI. Then the experimenter provided a brief overview and setup of the Polar RS800CX HRM. Participants were taken to a private restroom to put on the HRM and were escorted to a private laboratory space to complete the experimental task.

Laboratory Setup. The laboratory space was a small private room with a table and a chair situated in the middle of the room. The ThinkPad T400 running SuperLab Pro was placed 6 inches away from the edge of the table. A cross-over Ethernet cable connected the ThinkPad to the Latitude E6400 laptop that was outside the laboratory room and controlled by the experimenter. The Logitech QuickCam Pro 9000 webcam was placed on top of the ThinkPad screen and controlled by the experimenter. Two clipboards marked "A" and "B" were placed face down to the right of the ThinkPad computer. Clipboard A included the SSES and SSGS forms that were to be completed after the first half of the experimental task and Clipboard B contained SSES and SSGS forms that were to be completed after the second half of the experimental task. The order of these forms was counterbalanced across all laboratory participants.

Experimental Task. Upon entering the laboratory space, participants were provided with a brief overview of the experimental singing task. Participants were informed that their HR would be recorded during the session and they were given instructions on the usage of the event marker button on the Polar RS800CX HRM watch. The experimenter then stepped outside the room and participants followed prompts displayed by SuperLab Pro and completed the experimental task. Participants were instructed to put on a pair of noise-cancelling headphones, informed they would be instructed to periodically press the HRM event marker button, and notified that their first task was to quietly watch a 3 minute video clip.

Baseline HR. Participants saw a 3 minute "vanilla baseline" video clip while their initial heart rate was recorded. This baseline video clip, a segment from a documentary titled *Powaqqatsi: Life in Transformation*, has been used by past research (Vella & Friedman, 2007) because the stimulus is neutral and does not portray people under stress. Research suggests that

the use of neutral tasks or videos have the same effect as obtaining resting HR for longer durations (e.g., Jennings, Kamark, Stewart, Eddy, & Johnson, 1992). After the vanilla baseline video presentation, participants saw instructions for the singing task.

Singing Task. A singing task paradigm derived from a study by Sturm, Ascher, Miller, and Levenson (2008) was used. A similar paradigm has been used previously with socially anxious individuals (Hofmann, Moscovitch, & Kim, 2006). This paradigm tapped into the participant's self-conscious emotional responding including potential displays of shame and embarrassment. Self-conscious emotional responding was elicited with a karaoke-like singing task that past research has used reliably (Sturm et al., 2008; Shearn et al., 1990). In this task, participants were instructed to sing along with a song they were listening to through their headphones while they read the lyrics displayed on the screen. Similar to Sturm et al.'s study, "My Girl" by The Temptations was used as the stimulus song. Lyrics were displayed on a computer screen and participants heard the song in its entirety (2 minutes 44 seconds) while the QuickCam Pro 9000 webcam recorded their singing. Participants were instructed to sing out loud and along with the song to the best of their ability for the entire song. Instructions also stated that their singing would be evaluated by trained research assistants at a later time.

Post-Singing Task. After completing the singing task, participants were instructed to sit quietly in front of the computer for 3 minutes while their HR was obtained. No video or audio played during this time. During this recovery HR period, the experimenter trimmed the participant's singing video to a one minute clip on the Latitude E6400 and uploaded it to the ThinkPad T400. Following this 3 minute period, participants were prompted by SuperLab Pro asking whether or not they were familiar with the song they sung. This question was followed by instructions to complete the SSES and the SSGS forms on Clipboard A. While participants were

completing these forms, the experimenter entered the room to set up the second half of the laboratory phase. The SSES and SSGS forms were collected by the experimenter before the participants continued with the second half of the laboratory phase.

Second Baseline HR. Once the second half of the experiment began, participants were asked to watch the vanilla baseline video clip again for 3 minutes while their HR was recorded. After the second baseline HR was recorded, participants saw instructions for the second half of the experiment.

Watching Self Sing Task. Following the vanilla baseline video clip, participants were instructed to watch another video clip but told that there was no need to sing along to the video; these instructions were similar to Sturm et al.'s (2008) study. Participants then saw a one minute video clip of their singing and their behavioral responses were recorded by the QuickCam Pro 9000 webcam. Participants were not previously aware they would be watching their own singing. Furthermore, participants only heard themselves sing without the background song and vocals by the Temptations. To ensure consistency across all subjects, participants were presented with the same segment of the song.

Post-Watching Self Sing Task. Following the watching task, participants were again instructed to sit quietly in front of the computer for 3 minutes while the HRM obtained their recovery HR levels. This was followed by two stimulus check questions inquiring if participants remembered if their singing was going to be recorded and another question asking if they knew that they would be watching themselves sing. After answering these questions, participants saw instructions to the SSES and SSGS forms on Clipboard B. Upon completion, prompts on the SuperLab Pro notified that they had completed the study and the experimenter returned to the room, debriefed the participants, and thanked them for their participation.

Behavioral Coding

A behavioral coding system for identifying displays of embarrassment and shame was created. All behaviors identified in the coding system have been found by past research to be indicative of embarrassment and shame. Four undergraduate research assistants (RAs) assisted in creating and testing the behavioral coding system. The coding system consisted of 15 specific behaviors along with spaces for two "Other" behaviors (Appendix V). The frequency of each behavior was not counted but instead, the coding focused on the presence or absence of these behaviors during the coded interval of time. To assist in the coding of these behaviors, coders were provided with definitions of each behavior (Appendix W). Additionally, after coding for the specific behaviors, an Overall Embarrassment Rating was provided by the coder that was rated on a 5 point scale ranging from 1 (*None*) to 5 (*Very Much*). A non-technical definition of embarrassment was included to assist in the Overall Embarrassment Rating process.

Videos of participants singing and participants watching their selves sing were coded by four additional trained RAs who were blind to the aims of the study. Two RAs were assigned to the singing task and the other two RAs were assigned to the watching self sing task. RAs did not code across tasks to prevent potential biases from affecting the coding. All coding assignments were randomly assigned to the RAs. Although 143 participants took part in the Laboratory Phase, there were discrepant numbers of singing and watching task videos because one participant declined to participate in the singing task and technical malfunctions for a few participants also prevented the recording or playback of the videos. Reliabilities were obtained for approximately 20% of both coding tasks. Each coding team met with the experimenter during the coding process to review reliability videos and to rectify any errors. The experimenter served as the criterion coder to which the RAs had to obtain reliability.

For the Singing Task, the one minute singing video clip was coded instead of the entire song. A total of 34 videos were coded for reliability out of 141 singing videos. For this task, the intraclass correlation coefficients for the behavioral coding ranged from .86 to .90, suggesting good reliability among the coders. The reliability for the Overall Embarrassment Rating was somewhat lower and in range of .81 to .84, however still acceptable. For the Watching Self Sing Task, the one minute video of the participants reacting to themselves singing was coded. A total of 30 videos were coded for reliability from 139 videos. The reliability for the Watching Self Sing Task was high, ranging from .90 to .93, indicating excellent reliability. Reliability for the embarrassment rating was slightly lower, ranging from .89 to .90, but still good.

RESULTS

Missing data were imputed using a multiple imputation method on JMP 8.0. There were 142 participants included for analyses during the Laboratory Phase.

Descriptive Statistics

Means and Standard Deviations. Table 1 shows the means and standard deviations of the various measures for the overall laboratory sample. An examination of the score ranges for the measures reveals that participants in this sample reported variable responses to most measures. On the SPIN, scores ranged from the minimum score of 1 to the maximum score of 58. For the ERQ Reappraisal subscale, scores can range from 6 to 42 – reappraisal scores for this study ranged from 15 to 40. Scores can range from 4 to 28 on the ERQ suppression subscale – for the current study, scores ranged from 9 to 28. The AICS Individualism subscale has a range of 12 to 72 and for the current study, scores ranged from 36 to 71. The AICS Collectivism subscale has a range of 8 to 48 – scores ranged from 13 to 48 for the current study. On the SES, scores can range from 25 to 175 – for the current study, scores ranged from 37 to 168. For each of the three

TKSQ subscales of E-TKS, D-TKS, and O-TKS, scores ranged from the minimum score of 0 to the maximum score of 15. Finally, scores can range from 0 to 96 on the ISS Shame subscale. Actual scores ranged from the minimum score of 0 to 78 for the current study.

Correlations. Correlations among the major variables of social anxiety, emotion regulation, shame and embarrassment, taijin kyofusho, and cultural orientation are presented in Table 1. Social anxiety was not related to reappraisal but was found to be negatively related to suppression. Social anxiety was positively associated with embarrassment and shame, as well as fear of embarrassment, discomfort, and offense due to TKS. Emotion regulation strategies were largely unrelated to the variables – reappraisal was positively related to suppression and individualism, while suppression was positively related to individualism and collectivism, and negatively associated with embarrassment. Unlike emotion regulation, embarrassment was related to most variables with the exception of collectivism and reappraisal. Similarly, shame was not related to emotion regulation and collectivism but was associated with the other variables. TKS was found to be largely correlated with social anxiety, embarrassment, and shame, but not related to the emotion regulation and most of the individualism and collectivism factors.

Three measures of social anxiety were used for the current study including the TKSQ (Choy et al., 2008), the SPIN (Conner et al., 2000), and the ADIS-IV (DiNardo et al., 1994). As such, it was possible to divide the laboratory sample into socially anxious and non-socially anxious groups through the use of three different measures. Descriptive analyses are presented for each of the social anxiety measures.

Taijin Kyofu-Sho Questionnaire (TKSQ). Respondents were categorized into socially anxious (SA, $n = 113$) and non-socially anxious groups (NSA, $n = 29$) based on the TKSQ. The

discrepancy between the number of participants in the SA and NSA groups is a result of how the TKSQ was tabulated. Similar to the procedure followed by Choy et al. (2008), individuals who provided any response of "moderately fearful" or "extremely fearful" to any questions were included in the SA group. Thus, the number of individuals endorsing TKS symptoms does not indicate high prevalence of TKS, but a way to categorize those who endorse at least one TKS symptom and those who do not endorse any TKS symptoms.

The BSI was used to identify psychological symptoms of distress. Based on the TKSQ categorization, significant differences on all subscales of the BSI were observed with SA individuals reporting more symptoms than NSA individuals. Table 2 presents a comparison of the mean scores for five of the BSI subscales. Additionally, a comparison of means for the ADIS-IV, SPIN, and TKSQ based on the TKSQ categorization is shown in Table 3. Among the 113 participants who were classified as socially anxious on the TKSQ, 61 participants also qualified for an SAD diagnosis based on the TKSQ categorization. Conversely, among the 29 categorized as nonsocially anxious on the TKSQ, 7 participants qualified for an SAD diagnosis. The breakdown of SAD diagnosis by social anxiety measure is presented in Table 4.

After individuals were divided into SA and NSA groups, differences in ER were examined between respondents who endorsed increased social anxiety symptoms and those who did not report elevated social anxiety symptoms. Differences between SA and NSA participants were not observed with respect to ER strategies. Specifically, no group differences were found with respect to the Reappraisal strategy on the ERQ between NSA ($M = 25.36$, $SD = 4.27$) and SA groups ($M = 25.46$, $SD = 4.88$), $F(1, 140) = .01$, $p = .92$. Similarly, no differences were found with the use of Suppression strategy between the NSA ($M = 19.69$, $SD = 3.69$) and SA groups ($M = 18.69$, $SD = 4.33$), $F(1, 140) = 1.30$, $p = .26$.

With respect to the self-conscious emotions of shame and embarrassment, differences in dispositional embarrassability on the SES were found with the SA group (M = 108.38, SD = 28.52) reporting greater levels of embarrassment than the NSA group (M = 69.15; SD = 22.17), F(1, 140) = 47.42, p = .001. Similarly, on the ISS, differences were found with the SA group (M = 30.46, SD = 17.92) reporting greater dispositional shame than the NSA group (M = 14.34, SD = 10.65), F(1, 140) = 21.44, p = .001.

Differences were not found with the independent cultural orientation as the NSA group (M = 56.76, SD = 7.03) reported similar levels of individualism compared to the SA group (M = 54.89, SD = 7.38), F(1, 140) = 1.50, p = .22. Similar findings were observed with respect to the interdependent cultural orientation, as the SA group (M = 36.12, SD = 6.12) did not differ in terms of levels of collectivism compared to the NSA group (M = 34.55, SD = 4.51), F(1, 140) = 1.64, p = .20.

Social Phobia Inventory (SPIN). Differences in ER were also examined between respondents who endorsed social anxiety symptoms and those who reported low levels of social anxiety on the SPIN. The sample was divided into NSA (n = 41) and SA (n = 101) based on the cutoff score of 19 and above as indicative of clinical levels of social anxiety as recommended by Conner et al. (2000). The discrepancy between the number of participants in the NSA and SA groups is likely a result of the selection method employed for the study. To ensure that enough SA individuals participated in the study, approximately half of the participants that fell into the NSA category were invited for the laboratory phase to allow for more SA individuals to participate. As a result, a discrepancy between SA and NSA participants appears to have emerged.

Based on the SPIN categorization, SA individuals exhibited greater distress in comparison to NSA on all BSI subscales. Table 5 presents a comparison of the mean scores for five of the BSI subscales. A comparison of means for the ADIS-IV, SPIN, and TKSQ based on the SPIN categorization is shown in Table 6. Among the 101 participants categorized as socially anxious on the SPIN, 63 participants qualified for an SAD diagnosis. Conversely, within the 41 participants categorized as nonsocially anxious on the SPIN, 5 participants met criteria for an SAD diagnosis. The breakdown of SAD diagnosis by social anxiety measure is presented in Table 7.

No differences were found with respect to the Reappraisal strategy on the ERQ between the NSA group (M = 26.44, SD = 5.01) and SA group (M = 25.03, SD = 4.60), $F(1,140) = 2.60$, $p = .11$. Similarly, no differences in Suppression strategies were found between the NSA group (M = 19.90, SD = 4.37) and the SA group (M = 18.49, SD = 4.10), $F(1, 140) = 3.35$, $p = .07$.

Regarding self-conscious emotions, differences were found in dispositional embarrassability with the SA group (M = 113.49, SD = 25.13) reporting greater levels of embarrassment than the NSA group (M = 68.03, SD = 20.57), $F(1, 140) = 105.31$, $p = .001$. Similarly, the SA group (M = 31.64, SD = 17.58) reported greater levels of shame than the NSA group (M = 16.14, SD = 13.42), $F(1, 140) = 25.72$, $p = .001$.

With respect to cultural orientation, differences were found such that the NSA group (M = 58.02, SD = 7.00) reported greater levels of individualism than the SA group (M = 54.16, SD = 7.18), $F(1, 140) = 8.57$, $p = .004$. However, no differences were observed in collectivism between the NSA group (M = 35.17, SD = 6.38) and SA group (M = 36.05, SD = 5.69), $F(1, 140) = .65$, $p = .42$.

Anxiety Disorders Interview Schedule for DSM-IV, Adult Version (ADIS-IV). Finally, the ADIS-IV was used to examine differences among questionnaires. Individuals who were given a CSR rating of 4 or greater on the ADIS-IV were placed in the SA group (n = 68) and those who received a rating of 3 or lower were placed in the NSA (n = 74) group.

Based on the ADIS-IV categorization, SA individuals exhibited greater distress in comparison to NSA on all BSI subscales. Table 8 presents a comparison of the mean scores for five of the BSI subscales. A comparison of means for the ADIS-IV, SPIN, and TKSQ based on the ADIS-IV categorization is shown in Table 9. Additionally, the breakdown of SAD diagnosis by social anxiety measure is presented in Table 10.

No differences were found in Reappraisal strategy between the NSA group (M = 25.62, SD = 4.45) and SA group (M = 25.24, SD = 5.07), $F(1, 140) = .22$, $p = .64$. Similarly, no differences were found in Suppression strategy between the NSA group (M = 19.43, SD = 3.92) and SA group (M = 18.31, SD = 4.47), $F(1, 140) = 2.55$, $p = .11$.

With respect to self-conscious emotions, the SA group (M = 118.23, SD = 24.01) reported greater embarrassability than the NSA group (M = 83.95, SD = 28.70), $F(1, 140) = 59.02$, $p = .001$. Similarly, the SA group (M = 37.06, SD = 16.71) reported greater shame than the NSA group (M = 18.08, SD = 13.68), $F(1, 140) = 55.20$, $p = .001$.

Regarding cultural orientation, differences in individualism were found with the NSA group (M = 56.81, SD = 6.82) reporting greater individualism than the SA group (M = 53.60, SD = 7.53), $F(1, 140) = 7.10$, $p = .009$. However, no differences were found with respect to collectivism with the NSA group (M = 35.84, SD = 5.93) and the SA group (M = 35.75, SD = 5.88), $F(1, 140) = .01$, $p = .93$.

Examination of Culture.

To further examine the relationship between symptoms of social anxiety (SAD or TKS symptoms) and culture (interdependent or independent orientation), further analyses were conducted through regression. To determine whether cultural orientation had an effect on the participant's reports of social anxiety, scores on the SPIN were regressed on AICS Individualism and AICS Collectivism factors using a hierarchical regression analysis. Similarly, scores on the TKSQ were regressed on AICS Collectivism and AICS Individualism factors.

For social anxiety scores based on the SPIN, the first variable entered into the regression, AICS Individualism, resulted in a statistically significant increase in explained variance (ΔR^2 = .101, F[1, 140] = 15.75, $p < .001$). However, the addition of AICS Collectivism did not result in an increase in variance on social anxiety (ΔR^2 = .002, F[2, 139] = .26, p = .61).

To examine TKS scores based on the TKSQ, three separate regression analyses were conducted, one for each of the TKS factors of E-TKS, D-TKS, and O-TKS. For the E-TKS factor, AICS Collectivism was entered first but did not result in a significant increase in explained variance (ΔR^2 = .005, F[1, 140] =.71, p = .40). The addition of AICS Individualism did not result in a significant increase in variance either (ΔR^2 = .027, F[2, 139] = .3.83, p = .052). Next, regression analysis for D-TKS was conducted with AICS Collectivism entered first, which did not result in a significant increase in explained variance (ΔR^2 = .015, F[1, 140] = 2.07, p = .15) and the addition of AICS Individualism did not yield a significant increase either (ΔR^2 = .019, F[2, 139] = 2.79, p = .10). Finally, regression analysis for O-TKS was conducted with AICS Collectivism entered first, which did not result in a significant increase (ΔR^2 = .007, F[1, 140] = 1.02, p = .32) and AICS Individualism did not result in an increase (ΔR^2 = .012, F[2, 139] = .1.67, p = .20).

Mediation Analyses

Due to the role that embarrassment was thought to play in SAD, it was hypothesized that ER would mediate the relationship between embarrassment as measured by the SES and SAD as measured by the SPIN. Similarly, it was hypothesized that ER would mediate the relationship between shame as measured by the ISS and TKS symptoms on the TKSQ. For theses analyses, participants were divided into SA (n = 68) and NSA (n = 74) groups based on the ADIS-IV interview due to the diagnostic accuracy and reliability of this measure.

Causal Steps Mediation. Baron and Kenny's (1986) causal steps approach to mediation was first used to test for mediation. According to Baron and Kenny, four conditions must be met in order for ER to be considered a mediator. First, the predictor variable (embarrassment) must be significantly related to the dependent variable (social anxiety; c path). Second, the predictor variable must be significantly related to the mediator variable (emotion regulation; a path). Third, the mediator variable must be significantly related to the dependent variable (b path). Finally, if the first three conditions are met, the initial significant relationship between the predictor variable and dependent variable will be expected to be significantly reduced or not significant once the impact of the mediator is controlled (c' path).

With respect to the relationship among ER, embarrassment, and social anxiety, the relation between embarrassment and social anxiety was significant (r = .80, p = .001). However, the relation between embarrassment and ER strategy of reappraisal was not significant (r = -.003, p = .48), as well as the relation between reappraisal and social anxiety (r = -.06, p = .23). Thus, the initial conditions for reappraisal as mediator were not met.

With respect to the ER strategy of suppression, the relationship between embarrassment and social anxiety was significant (r = .80, p = .001), as were the relationships between

embarrassment and suppression (r = -.19, p = .01), and suppression and social anxiety (r = -.20, p = .008). For suppression, the initial conditions for mediation as defined by Baron and Kenny (1986) were met. When suppression was regressed on the relationship of embarrassment and social anxiety, the effect of embarrassment on suppression was significant (a path; β =.20, p = .016). The effect of suppression on social anxiety was not significant (b path; β = -.05, p = .31) while the relationship between embarrassment and social anxiety was significant (c' path; β = .79, p = .001).

Using the Baron and Kenny (1986) causal steps approach, neither suppression nor reappraisal strategy mediated the relationship between embarrassment and social anxiety. However, the lack of significant findings may be due to low power or due to limitations of the causal steps approach to mediation. Thus, a more powerful method for mediation analysis was conducted as described below.

Bootstrapping. Although the most commonly used mediation analysis method is the causal steps approach of Baron and Kenny (1986), this method has been criticized on various grounds including low power and assumption of normality (e.g., Hayes, 2009; Preacher & Hayes, 2008). As a result, mediation was re-tested using the bootstrapping method recommended by Preacher and Hayes (2008), which does not assume normality of the sampling distribution and has higher power. Through bootstrapping, the population can be represented in miniature by repeatedly resampling to mimic the original sampling process; new samples that are resampled from the original sample can be resampled again. As recommended by Preacher and Hayes, bootstrap resamples were set to k = 5000 that yielded a bias-corrected and accelerated confidence interval (CI) estimates. Bootstrap results are interpreted by determining whether or not zero is between the lower and upper bound 95% CIs. Mediation is observed if zero is *not* between the

upper and lower CIs.

Results from the mediation analyses using the bootstrapping mediation analyses are presented in Table 11. Emotion regulation as measured by the ERQ did not mediate any of the relations between self-conscious emotions (shame and embarrassment) and social anxiety symptoms (SPIN, E-TKS, D-TKS, O-TKS).

Experimental Task and Physiological Data

Heart Rate. In the laboratory task, it was expected that participants would exhibit elevated HR during the singing task compared to the baseline phase, with SA individuals exhibiting greater elevation in HR than NSA individuals. As shown in Figure 1, no significant differences were observed between SA and NSA individuals during the pre-singing phase where participants watched a neutral video clip, $F(1, 137) = 2.01$, $p = .16$. Furthermore, although an increase in HR was observed for the singing task for both SA and NSA individuals as hypothesized, differences between the two groups were not significant, $F(1, 137) = .40$, $p = .53$. However, HR differences were observed in post-singing phase with SA individuals ($M = 77.76$, $SD = 11.15$) exhibiting greater HR than NSA individuals ($M = 73.75$, $SD = 10.12$), $F(1, 137) = 4.58$, $p = .03$.

Figure 2 displays the results of the second half of the experimental task. In the pre-watching phase, HR differences were observed such that SA individuals ($M = 77.74$, $SD = 11.41$) exhibited greater HR elevation compared to NSA ($M = 74.03$, $SD = 10.16$) individuals, $F(1, 134) = 4.03$, $p = .05$. However, no differences were observed during the watching task itself, $F(1, 134) = 1.46$, $p = .23$. Finally, for the post-watching phase, differences were again observed with SA individuals ($M = 77.00$, $SD = 11.06$) exhibiting greater HR elevation than NSA individuals ($M = 73.17$, $SD = 9.51$), $F(1, 134) = 4.73$, $p = .03$.

RMSSD and HRV. Heart rate variability (HRV), the heart rate fluctuations in the mean heart rate, is a measure of autonomic regulation of the heart (Acharya, Joseph, Kannthal, Min, & Suri, 2007; van Ravenswaaij-Arts, Kollee, Hopman, Stoelinga, & van Geijn, 1993). In a continuous ECG recording, the most commonly used method to derive interval differences in heart rate is the root mean square successive difference (RMSSD) of successive NN intervals. Other methods include the NN50, the number of adjacent NN intervals greater than 50ms, and the pNN50, the percentage of the NN50 count divided by the total NN count. These measures of interval differences are often highly correlated with each other – RMSSD and pNN50 have been found to correlate closely with the high-frequency component of HRV (Task Force of the ESC and the NASPE, 1996). Although some researchers have reported poor reliability (e.g., Sandercock, Bromley, & Brodie, 2005) and accuracy (Hejjel & Roth, 2004) of the pNN50, others have reported the pNNx statistic as being capable of discriminating between normal and pathological conditions (Mietus, Peng, Henry, Goldsmith, & Goldberger, 2002). Among the listed measures, international guidelines recommend using RMSSD (Task Force of the ESC and the NASPE, 1996). Thus, RMSSD was used to examine HRV in the current study.

As Figure 3 shows, differences in HRV as measured by RMSSD were not observed during the first half of the experimental task between the SA and NSA groups. During the second half of the experimental task, differences were again not observed between the groups as shown in Figure 4. However, it should be noted that there was a trend towards significance where the SA group exhibited lower levels of RMSSD than the NSA group during the pre-watching phase, $F(1, 134) = 3.10$, $p = .08$, and during the post-watching phase, $F(1, 134) = 2.99$, $p = .09$.

Exploratory Analyses.

In addition to the analyses conducted to test the hypotheses, additional exploratory analyses were conducted to examine the relationship among the relevant constructs between SA and NSA groups based on the ADIS-IV interview.

Self-Conscious Emotions and Social Anxiety. To further determine the extent of the influence of shame and embarrassment on social anxiety and taijin kyofusho, a series of hierarchical regression analyses were conducted. For social anxiety as measured by the SPIN, embarrassment was entered first and resulted in a statistically significant increase in explained variance ($\Delta R^2 = .642$, $F[1, 140] = 251.19$, $p = .001$). However, the addition of shame did not add to the explained variance ($\Delta R^2 = .000$, $F[2, 139] = 124.88$, $p = .72$). Analyses for the three subscales of the TKSQ were also conducted. For the E-TKS subscale, shame was first entered and resulted in a significant increase in explained variance ($\Delta R^2 = .147$, $F[1, 140] = 24.15$, $p = .001$), as did the addition of embarrassment ($\Delta R^2 = .121$, $F[2, 139] = 25.40$, $p = .001$). For the D-TKS subscale, shame was first entered into the regression and a significant increase in explained variance was observed ($\Delta R^2 = .167$, $F[1, 140] = 28.05$, $p = .001$), as did the addition of embarrassment ($\Delta R^2 = .046$, $F[2, 139] = 18.75$, $p = .005$). Lastly, for the O-TKS subscale, shame was entered first into the regression and an increase in explained variance was observed ($\Delta R^2 = .076$, $F[1, 140] = 11.50$, $p = .001$). However, the addition of embarrassment did not add to the explained variance ($\Delta R^2 = .008$, $F[2, 139] = 6.37$, $p = .27$)

Embarrassment. During the course of the study, participants completed two self-report questionnaires on embarrassment. The SES was completed online and represents a dispositional measure of embarrassment. The SSES was completed after the singing and watching tasks respectively and represents a state measure of embarrassment. In addition, trained RAs coded the

singing and watching videos for embarrassment. Their behavioral observations resulted in an overall embarrassment rating that served as an observer-rating of embarrassment. The relations among dispositional, state, and observer-rated embarrassment were examined between SA and NSA groups.

As mentioned in the descriptive analyses, the SA group reported significantly greater dispositional embarrassment than the NSA group. Consistent with these reports, the SA group (M = 65.96, SD = 15.52) reported greater levels of embarrassment than the NSA group (M = 48.12, SD = 14.91) after the singing task, $F(1, 139) = 48.32$, $p = .001$. Similar results were obtained for the embarrassment reports after the watching task where the SA group (M = 68.80, SD = 15.14) reported greater embarrassment than the NSA group (M = 48.01, SD = 16.54), $F(1, 136) = 58.59$, $p = .001$. However, observer ratings of embarrassment did not yield differences between the SA and NSA group after the singing task, $F(1, 138) = 3.54$, $p = .06$, and after the watching task, $F(1, 136) = .48$, $p = .49$.

Additionally, RAs coded for behavioral responses of self-conscious emotional responding during the singing and watching tasks. The behavioral coding for the singing task did not yield any significant differences between the groups, $F(1, 138) = .11$, $p = .74$. Similarly, no differences were observed in the behaviors exhibited during the watching task, $F(1, 136) = .01$, $p = .92$.

Test for Moderation. Although tests for ER as a mediator did not yield significant results, there was a possibility that ER served as a moderator. In this instance, the relationship between self-conscious emotions and social anxiety would be contingent on ER strategies of reappraisal or suppression. Interactions were probed using procedures outlined by Hayes and Matthes (2009). With respect to the relationship between social anxiety and embarrassment with ER as a moderator, regression analysis revealed a non-significant interaction between embarrassment and

reappraisal strategy, $t(142) = .60$, $p = .55$. Similarly, suppression strategy did not moderate the relationship between embarrassment and social anxiety, $t(142) = -.19$, $p = .86$. Results are shown in Table 12. Likewise, similar results were found with respect to the relationship between shame and TKS symptoms with ER as a moderator. All three of the offensive TKS subscale scores (E-TKS, D-TKS, O-TKS) was used as the dependent variables with the ER strategies as the moderating variables. Results revealed that neither suppression nor reappraisal moderated the relationship between TKS and shame.

DISCUSSION

The present study examined culture and emotion in social anxiety. Specifically, the primary aim was to examine the role of emotion regulation and self-conscious emotions in socially anxious and non-socially anxious individuals. A secondary aim was to examine if emotion regulation mediated the relationship between self-conscious emotions and social anxiety. The primary hypothesis that SA individuals would report more maladaptive ER strategies in comparison to NSA individuals was not supported. Indeed, no differences in reappraisal or suppression strategies were observed between groups regardless of the measure used to classify individuals as SA and NSA (e.g., SPIN, TKSQ, ADIS-IV). However, the hypothesis that SA individuals would endorse greater levels of embarrassment and shame than NSA individuals was supported. Regardless of the manner in which the SA and NSA groups were categorized (e.g., SPIN, TKSQ, ADIS-IV), SA groups consistently reported greater levels of dispositional embarrassment and shame in comparison to NSA groups. When cultural factors were examined, the relation between collectivism and social anxiety was not significant but individualism accounted for increased variance of social anxiety symptoms, suggesting a relationship between the independent orientation and social anxiety. In contrast, neither

individualism nor collectivism accounted for the variance of TKS, suggesting that cultural orientation did not play a role in the manifestation of TKS symptoms in the current sample. The secondary hypothesis that the relation between self-conscious emotions (e.g., embarrassment or shame) and social anxiety (SAD or TKS symptoms) would be mediated by ER strategies was not supported. With respect to SAD symptoms, neither ER strategy of reappraisal or suppression mediated the relationship between embarrassment and social anxiety. Similarly, reappraisal or suppression did not mediate the relationship between shame and TKS symptoms.

Emotion Regulation in Socially Anxious Individuals

The lack of significant finding with respect to emotion regulation between SA and NSA individuals was unexpected. Theoretical works by Bradley (2000) and Gross (2002) suggest a linkage between psychopathology and emotion regulation deficits, and empirical studies have found relations as well (e.g., Mennin, Heimberg, Turk, & Fresco, 2005; Mennin et al., 2009; Spokas et al., 2009). For example, Mennin et al. (2009) found relations between social anxiety and poor emotional understanding using the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), while Spokas et al. (2009) found relations between social anxiety and emotional suppression using the emotional inhibition subscale of the Emotional Control Questionnaire (ECQ; Roger & Najarian, 1989) and emotional suppression subscale of the Attitudes Towards Emotional Expression Questionnaire (AEEQ; Joseph, Williams, Irwing, & Cammock, 1994). These past findings make the present results somewhat difficult to interpret. However, one possible reason why differences in ER were not found in the current study is that there were qualitative differences in ER measurement compared to past studies.

Gross and John's (2003) ERQ, the instrument used here, has been used successfully in various studies and is largely considered to be a reliable instrument in measuring emotional

suppression and reappraisal. However, the ERQ assesses two specific forms of ER strategies as opposed to assessing for ER deficits or deficits related to ER difficulties. The ERQ is different from the DERS used by Mennin et al. (2009), which covers a wider range of emotion dysregulation domains including clarity of emotional experience, awareness, acceptance of emotions, and effective emotion regulation strategies. In consideration of these differences between the ER measures, the lack of significant findings in the current study may not necessarily be reflective of shortcomings of ERQ as a measure of emotion regulation strategies or the lack of ER problems in SA individuals. Rather, differences in the measurement of ER may have contributed to the lack of findings.

Still, this explanation does not fully account for Spokas et al.'s (2009) finding that emotional suppression was linked to social anxiety because the ERQ assesses for emotional suppression. The ECQ and AEEQ subscales used by Spokas et al. (2009) measure the respondent's tendency to suppress emotional expression, similar to the Suppression subscale of Gross and John's (2003) ERQ. One possible explanation of differences can be attributed to differences in methodology used to classify participants as socially anxious. In the current study, social anxiety was assessed through three measures (TKSQ, SPIN, ADIS-IV) and the participants were either categorized as SA or NSA. Spokas et al. classified participants into three groups of low, mild, and high social anxiety based on the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998). In addition to dividing their sample into three groups for analysis, Spokas et al used the SIAS as the measure to categorize participants as SA or NSA, whereas this study made use of the ADIS-IV diagnostic interview. These methodological differences may account for the differences observed between the two studies. Still, further

exploration of social anxiety and emotional suppression may be necessary to clarify the extent to which SA individuals suppress their emotional expressions.

Self-Conscious Emotions and Social Anxiety

As hypothesized, the current study found a relation between self-conscious emotions (shame and embarrassment) and social anxiety (social anxiety and taijin kyofusho). Some past research has examined embarrassment in relation to social anxiety (see Hofmann et al., 2006; Leary & Kowalski, 1995); however, the current study is the first study to examine these self-conscious emotions along with TKS with respect to the regulation of emotions. Present findings suggest that in social anxiety, embarrassment accounts for a large portion of the variance with shame not adding to the explained variance. On the other hand, the findings suggest that after accounting for shame, embarrassment adds to the variance in TKS, albeit in varying degrees. For embarrassment and discomfort due to TKS symptoms (E-TKS and D-TKS respectively), embarrassment accounted for significantly increased explained variance in TKS. However, this was not the case for offense due to TKS (O-TKS). It appears that as the severity of the TKS symptom increased, from embarrassing oneself (E-TKS) to making another person uncomfortable (D-TKS) to offending another person (O-TKS), embarrassment played a smaller role in the manifestation of TKS after accounting for shame.

The difference in the degree to which embarrassment accounted for the explained variance in social anxiety and TKS may suggest TKS to be distinct from social anxiety. The association between embarrassment and social anxiety has been previously examined (Gerlach, Wilhelm, & Roth, 2003; Leary & Kowalski, 1995) and supported by the results of the current study. Hofmann, Asnaani, and Hinton (2010) suggest that a concept closely relating to the fear of violating social norms that defines SAD is violating norms of embarrassment. Should Hofmann

et al.'s supposition that violating norms of embarrassment be characteristic of SAD, then the current finding suggest TKS to be distinct from SAD because embarrassment appears to play less of a role in the manifestation of TKS symptoms in comparison to SAD symptoms. In this sense, TKS may not necessarily be a culture-bound manifestation of social anxiety (APA, 2000). However, it is premature to suggest that, based on the current findings, TKS is a different form of anxiety because research indicates the basis of TKS as social anxiety (Maeda & Nathan, 1999). Instead, TKS may be a form of social anxiety where embarrassment plays a less prominent role in its clinical presentation. In addition, the current findings suggest that it may be misleading to characterize TKS as "an obsession of shame" (Kleinknecht et al. 1997) because shame was found to account for only a small percentage of the variance for E-TKS, D-TKS, and O-TKS. The role of self-conscious emotions of shame and embarrassment appear to be minimal based on current findings. This may perhaps be a function of the "allocentric" nature of TKS (Choy et al., 2008), where the focus lies in offending others and not the self. Regardless, continued examination of specific emotions in social anxiety is necessary to further understand TKS and SAD.

Cultural Factors

The current findings reveal that for the most part, cultural orientation did not play a role in the manifestation of social anxiety and taijin kyofusho. Descriptively, the only difference found with respect to cultural orientation was NSA individuals reporting greater levels of independence than SA participants. Although the converse (SA participants reporting greater interdependence than NSA participants) was not true, this finding indicates that relative to individuals who do not have anxiety, SA individuals reported fewer values reflective of independence. The AICS (Shulruf et al., 2007) Individualism scale consists of Competitiveness,

Uniqueness, and Responsibility subscales. The present results imply that overall, SA individuals reported lower levels of competitiveness (achieving personal goals), uniqueness (distinguishing oneself from others), responsibility (sense of responsibility to oneself and others) compared to NSA individuals. The lower scores on Individualism appear to be commensurate with clinical profiles of SA individuals who may opt to not compete to avoid social evaluation and may avoid bringing additional attention to oneself by being unique. It is also possible that SA individuals may try to avoid increased responsibility, as this may lead to evaluative situations.

When culture was examined through regression analyses, no additional differences were observed. The lack of findings with respect to culture may be a result of the study consisting of participants within a culture as opposed to examining participant responses across cultures. Although differences within a culture can be expected, the present sample may have lacked the diversity to detect differences. Heinrichs et al. (2006) suggested cultural norms for social behavior to explain cultural values and social anxiety. Because the present sample consisted of responses from individuals living within a single culture, the role of the self and social norms influencing participant responses and behaviors may have been more uniform than a cross-cultural study where different social norms were affecting participant responses. This in turn may have led to a lack of significant differences in independent and interdependent values. Indeed, research suggests that different cultures encourage and reinforce emotions that are consistent with the culture's beliefs and practice (Kitayama et al., 2004). Given the present findings that call into question the notion of TKS as a culture bound syndrome (APA, 2000), further examination of cultural factors will remain important in examining social anxiety and taijin kyofusho.

Emotion Regulation as a Mediator

The present study did not find emotion regulation to mediate the association between embarrassment and social anxiety, or the association between shame and taijin kyofusho. Because mediation analyses were conducted using the bootstrapping method, it was unlikely that low power was the reason for the non-significant findings. As discussed previously, the relation between social anxiety and emotion regulation was not observed. Additionally, for the most part, ER did not relate to embarrassment and shame as well. This lack of association likely contributed to the non-significant findings of ER. Although the current results cannot provide evidence of ER as a mediator, ER may still play a role in the relationship of self-conscious emotions and social anxiety as past studies (e.g., Mennin et al., 2009; Spokas et al., 2009) have found ER deficits to be associated with anxiety. Instead of focusing on ER strategies like the current study, perhaps the use of measures assessing deficits in ER (e.g., DERS) or another measure of emotion suppression (e.g., ERC, AAEQ) might provide different results.

Exploratory Analyses

In addition to examining data based on the hypotheses, exploratory analyses were conducted to further examine several constructs of interest. Because ER was found to not mediate the relationship between self-conscious emotions and social anxiety, part of the exploratory analyses examined the possibility of ER moderating this relationship. However, no significant findings emerged.

In comparing embarrassment in SA and NSA individuals, the current study found that individuals in the SA group reported greater levels of dispositional and state embarrassment than those in the NSA group. However, differences in embarrassment were not found when observer-ratings of embarrassment were taken into account. The lack of differences in observer-rated

embarrassment despite self-reports indicating otherwise, suggests that individuals in the SA group may have been suppressing their emotional responses more than the NSA group. This appears to be a plausible explanation given past research findings indicating social anxiety to be associated with emotional suppression (e.g., Kashdan & Steger, 2006; Spokas et al., 2009). However, it is also possible that the NSA group exhibited more intensity in their expressiveness in their singing and reaction to watching themselves sing, which may have narrowed the difference between the SA and NSA group with respect to observer based embarrassment ratings. Unfortunately, follow-up questions enquiring about the extent to which participants suppressed their emotions was not obtained. These findings could possibly account for the fact that no differences were observed in total self-conscious behaviors exhibited by the SA and NSA groups.

Cardiovascular Functioning of SA and NSA Individuals

When HRV as measured by RMSSD was examined, no significant differences were observed although the pre-watching and post-watching phases trended towards significance. Although no significant differences emerged across groups, the overall trend of RMSSD suggested that SA individuals presented with reduced HRV in comparison to NSA individuals.

Results of cardiovascular data show some differences between the SA and NSA groups with respect to HR. While obtaining the initial baseline HR before the singing task, no differences were observed between SA and NSA groups commensurate with past research (e.g., Edelmann & Baker, 2002). Similarly, as participants took part in the singing task, although a general HR increase was observed due to the singing, no differences emerged between groups. However, more differences emerged after the singing task, where SA individuals exhibited

greater HR than NSA individuals during the post-singing phase, pre-watching baseline phase, and post-watching phases shown in the tables.

An informal examination of the HR levels reveal that apart from the singing and watching tasks, HR levels were largely consistent across HR recording phases for both SA and NSA groups. After the singing task, larger differences were observed across the HR recordings that contributed to significant differences being observed for the pre-watching phase and post-watching phase HR. During the post-singing phase, the NSA group HR dropped below the pre-singing phase levels, whereas the SA group averaged a slightly higher HR than the pre-singing phase. Then, the HR for the SA group remained steady during the pre-watching phase while the NSA group's HR increased slightly during this time in comparison to the post-singing phase. Both groups experienced an increase in HR during the watching phase, but this increase was smaller than the increase observed during the singing task. Finally, during the post-watching phase, HR dropped below levels of the pre-singing phase. One possible reason for this change in HR during the watching phase of the experiment may be due to heightened sensitivity on the part of the SA group throughout the pre-watching, watching task, and post-watching phase, while greater variability in HR was observed for the NSA group. Thus, while significant differences were largely not observed during the pre-singing and singing task phases, the effects of the singing may have impacted SA and NSA groups differently during the later stages of the experiment.

Implications

The present study's findings hold several implications for assessment, treatment, and conceptualization of social anxiety. Due to the strong relationship that self-conscious emotions have with social anxiety, the examination of self-conscious emotions such as embarrassment

may be a way to continue to assess the severity of social anxiety symptoms. In this sense, self-conscious emotions may be used as another indicator of distress or interference in SA individuals, with higher levels of embarrassment or shame as indicative of greater distress or interference. Using these emotion constructs to evaluate SA may provide greater insight into the impact that SA has on specific individuals. For instance, examining the frequency, intensity, and duration of embarrassment in social situations on a rating scale may be one way to further obtain an understanding of a person's social anxiety.

Although the hypothesis that SA individuals would report less adaptive emotion regulation strategies was not supported, the current findings suggest self-conscious emotions of shame and embarrassment to strongly relate to social anxiety. Due to the role that these emotions can play in social anxiety, the incorporation of psychoeducational materials on self-conscious emotions could be one way to enhance treatment for social anxiety. Presently, treatments for social anxiety consist of individual techniques including exposure, cognitive restructuring, relaxation training, social skills training, and the use of medication (Heimburg, 2001; Heimburg, 2002; Rodebaugh, Holaway, & Heimburg, 2004). Cognitive-behavioral group therapy (CGBT) has also been utilized as a way to treat social anxiety (Heimburg, 2002). However, these modalities do not place much emphasis on understanding specific social anxiety symptoms such as embarrassment.

Socially anxious individuals may fear embarrassing or humiliating situations and this may lead to avoidance of social situations. The current findings show they may also be predisposed to experience greater levels of shame than NSA individuals. Psychoeducation on the function of self-conscious emotions may help SA individuals understand why they experience anxiety in social situations and how their emotional responses (e.g., fear of embarrassment,

experience of shame) also contribute to their anxiety. By providing psychoeducation about the nature of embarrassment and shame and the impact on their psychosocial functioning, this could create awareness of their behavioral responses and decrease possible tendencies to be overly self-critical during social situations. For instance, evidence based treatments developed for mood disorders in youth have a large psychoeducational format (e.g., Young & Fristad, 2007) and video psychoeducation of skills for Dialectical Behavior Therapy have been found to be effective in decreasing negative affect in borderline personality disordered individuals (Waltz, Dimeff, Koerner, Linehan, Taylor, & Miller 2009). Thus, there is much support for implementing psychoeducation into treatments – the incorporation of psychoeducation of embarrassment and shame on social anxiety could assist clinicians in helping SA individuals understand and overcome their anxiety more effectively.

Finally, the current findings provide supporting evidence that self-conscious emotions may play a prominent role in social anxiety. The DSM-IV-TR (APA, 2000) refers to humiliation and embarrassment in describing social anxiety, however, no further insight into these emotions are offered. In the current study, SA participants reported greater levels of dispositional and state embarrassment in comparison to NSA participants. However, this difference in self-conscious emotional responding was not observed by trained research assistants who rated participant's behaviors during the singing and watching tasks. The results suggest that the embarrassment that SA individuals experience is not commensurate with what they display. The collective information suggests that there may be emotion based differences between SA and NSA individuals that have not been accounted for by the cognitive-behavioral model of social anxiety (Rapee & Heimburg, 1997). Although further empirical support is necessary, the current study's

findings suggest that the conceptualization of the cognitive-behavioral model of social anxiety may need to be modified to account for the role of self-conscious emotions.

Limitations and Future Directions

The present study was limited in several ways. First, during the online phase of the study, many participants were excluded from the total sample due to careless responding despite instructions stating that validity check responses were placed within questionnaire items. Some participants skipped sections of questionnaires while others failed to respond correctly to validity check questions; these responses were omitted from analyses. A more sophisticated online data collection method than survey.vt.edu would likely cut down on such careless responding and allow for a more representative sample size.

Second, with respect to the current sample, the majority of the participants were female – both for the overall sample and the laboratory sample. Importantly, the discrepancy in gender ratios for the laboratory sample prevented gender based analyses with the constructs of interest. For instance, having comparable number of males and females would have allowed for the examination of differences in ER strategies and whether these strategies differentially mediated the relationship between self-conscious emotions and social anxiety. Having comparable number of male and female participants would have also allowed for an examination of cardiovascular functioning across genders with respect to social anxiety. Similarly, another limitation was the small percentage of Asian and Asian-American participants. TKS has largely been found in Japan and some other Asian and collectivist countries (e.g., Clarvit et al., 1996, Choy et al., 2008, Lee & Oh, 1999), however, Asians were small in proportion to Caucasian participants who took part in the laboratory study. A greater number of Asian students taking part in the laboratory sample would have allowed for more in-depth analyses.

Another possible limitation was the questionnaires that were administered during the online phase. Although Gross and John's (2003) ERQ is a commonly used measure of ER strategies, analyses failed to reveal any relevant findings with respect to this questionnaire. Without the administration of additional ER measures, it remains to be seen if the lack of significant findings is truly a reflection of the lack of differences in ER strategies or if ER should be measured in a different manner. The use of another ER strategy measure such as the Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski, Kraaij, & Spinhoven, 2001) or a measure of emotion regulation difficulties like the DERS (Gratz & Roemer, 2004) may be a more appropriate means of assessing for differences.

Finally, while the present study was able to determine if participants had diagnosable conditions of social anxiety, there was no control for other disorders that may have been present. Individuals who presented with comorbid conditions of anxiety such as generalized anxiety or panic disorder or other Axis I disorders may have impacted the current findings.

Summary and Conclusions

The present study did not find emotion regulation to mediate or moderate the relationship between self-conscious emotions and social anxiety. Although mediation effects were not found, the study revealed the potential importance that self-conscious emotions of shame and embarrassment can play in the manifestation of social anxiety.

Despite some limitations, the current study built upon past research findings and provided an in-depth examination of social anxiety, taijin kyofusho, self-conscious emotions, and emotion regulation in a college sample. One of the strengths of this study was the range of measures used to assess for the constructs of interest including online and in-person self-report questionnaires, a diagnostic interview, experimental task, behavioral observation and coding, as well as

physiological recordings. This study also revealed that taijin kyofusho symptoms were present among individuals who have diagnosable conditions of social anxiety disorder, suggesting that TKS symptoms are somewhat more common than research might indicate. The relations observed among social anxiety, shame and embarrassment provide implications for treatment on social anxiety with respect to self-conscious emotions and also provide further reason to build upon the theoretical framework of the cognitive-behavioral model of social anxiety (Rapee & Heimburg, 1997) to include emotion components. Thus, future work on theoretical foundations of social anxiety can attempt to weave emotions and emotion regulatory factors into the existing cognitive-behavioral framework. Future work can also build upon current findings and attempt to incorporate psychoeducational components of understanding self-conscious emotions in social anxiety treatments in addition to the more traditional CBT methods of education about social anxiety, exposure, and cognitive restructuring.

REFERENCES

Acharya, R. U., Joseph, P. K., Kannthal, N., Min, L. C., & Suri, J. S. (2007). Heart rate variability. In R. U. Acharya, J. S. Suri, & J. A. E. Spaan (Eds.), Advances in cardiac signal processing (pp. 121-165). New York: Springer.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173-1182.

Bradley S. (2000). *Affect regulation and the development of psychopathology*. New York: Guilford.

Brown, T. A., Di Nardo, P. A., Lehman, C. L., & Campbell, L. A. (2001). Reliability of DSM-IV anxiety and mood disorders: Implications for the classification of emotional disorders. *Journal of Abnormal Psychology*, *110*, 49-58.

Choy, Y., Schneier, F. R., Heimberg, R. G., Oh, K., & Liebowitz, M. R. (2008). Features of the offensive subtype of Taijin-Kyofu-Sho in US and Korean patients with DSM-IV social anxiety disorder. *Depression and Anxiety*, *25*, 230-240.

Clarvit, S. R., Schneier, F.R., & Liebowitz, M. R. (1996). Taijin kyofu-sho in New York City: The phenomenology and treatment of a social anxiety disorder. *Journal of Clinical Psychiatry*, *57*, 523-527.

Connor, K. M., Davidson, J. R. T., Churchill, L. E., Sherwood, A., Foa, E., & Weisler, R. H. (2000). Psychometric properties of the Social Phobia Inventory (SPIN). *British Journal of Psychiatry*, *176*, 379-386.

Cook, D. R. (1994, 2001). *Internalized Shame Scale: Technical manual*. North Tonawanda, NY: Multi-Health Systems, Inc.

Davidson, J. R. T., Miner, C. M., DeVeaugh-Geiss, J., Tupler, L. A., Colket, J. T., & Potts, N. L. (1997). The Brief Social Phobia Scale: A psychometric evaluation. *Psychological Medicine*, *27*, 161-166.

del Rosario, P. M., & White, R. M. (2006). The Internalized Shame Scale: Temporal stability, internal consistency, and principal components analysis. *Personality and Individual Differences*, *41*, 95-103.

Derogatis, L. R. (1993). *BSI: Administration, scoring, and procedures manual – 3rd Ed*. Minneapolis, MN: National Computer Systems.

Di Nardo, P. A., Brown, T. A., & Barlow, D. H. (1994). *Anxiety Disorders Interview Schedule for DSM-IV: Lifetime version (ADIS-IV-L)*. San Antonio, TX: Psychological Corporation.

Edelamnn, R. J., & Baker, S. R. (2002). Self-reported and actual physiological responses in social phobia. *British Journal of Clinical Psychology*, *41*, 1-14.

Garneftski, N., Kraaij, V., & Spinhoven, P. (2001). Negative life events, cognitive emotion regulation and emotional problems. *Personality and Individual Differences*, *30*, 1311-1327.

Gerlach, A. L., Wilhelm, F. H., & Roth, W. T. (2003). Embarrassment and social phobia: The role of parasympathetic activation. *Anxiety Disorders*, *17*, 197-210.

Gramer, M., & Sprintschnik, E. (2008). Social anxiety and cardiovascular responses to an evaluative speaking task: The role of stressor anticipation. *Personality and Individual Differences*, *44*, 371-381.

Gratz, K. L., & Roemer, L. (2004). Multidimensoinal assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment*, *26*, 41-54.

Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology*, *39*, 281-291.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, *85*, 348-362.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, *76*, 408-420.

Hayes, A. F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods*, *41*, 924-936.

Heimberg, R. G. (2001). Current status of psychotherapeutic interventions for social phobia. *Journal of Clinical Psychiatry*, *62*, 36-42.

Heimberg, R. G. (2002). Cognitive-behavioral therapy for social anxiety disorder: Current status and future directions. *Biological Psychiatry*, *51*, 101-108.

Heine, S. J., Takata, T., & Lehman, D. R. (2000). Beyond self-presentation: Evidence for self-criticism among Japanese. *Personality and Social Psychology Bulletin*, *26*, 71-78.

Heinrichs, N., Rapee, R. M., Alden, L. A., Bögels, S., Hofmann, S. G., Oh, K. J., & Sakano, Y. (2006). Cultural differences in perceived social norms and social anxiety. *Behaviour Researchand Therapy, 44*, 1187-1197.

Hejjel, L., & Roth, E. (2004). What is the adequate sampling interval of the ECG signal for heart rate variability analysis in the time domain? *Physiological Measurement*, *25*, 1405-1411.

Hofmann, S. G., Asnaani, A., & Hinton, D. E. (2010). Cultural aspects in social anxiety and social anxiety disorder. *Depression and Anxiety*, *27*, 1117-1127.

Hofmann,, S. G., Moscovitch, D. A., & Kim, H-J. (2006). Autonomic correlates of social anxiety and embarrassment in shy and non-shy individuals. *International Journal of Psychophysiology*, *61*, 134-142.

Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology*, *65*, 599–610.

Jennings, J. R., Kamarck, T., Stewart, C., Eddy, M., & Johnson, P. (1992). Alternate cardiovascular baseline assessment techniques: Vanilla or resting baseline. *Psychophysiology, 24,* 474-475.

Joseph, S., Williams, R., Irwing, P., & Cammock, T. (1994). The preliminary development of a measure to assess attitudes towards emotional expression. *Personality and Individual Differences*, *16*, 869–875.

Kashdan, T. B., & Steger, M. (2006). Expanding the topography of social anxiety: An experience sampling assessment of positive emotions and events, and emotion suppression. *Psychological Science*, *17,* 120-128.

Kelly, K. M., & Jones, W. H. (1997). Assessment of dispositional embarrassability, *Anxiety, Stress, and Coping*, *10*, 307-333.

Kitayama, S., Mesquita, B., & Karasawa, M. (2006). Cultural affordances and emotional experience: Socially engaging and disengaging emotions in Japan and the United States. *Journal of Personality and Social Psychology*, *91*, 890-903.

Kleinknecht, R. A., Dinnel, D. L., Kleinknecht, E. E., Hiruma, N., & Harada, N. (1997). Cultural factors in social anxiety: A comparison of Social Phobia symptoms and Taijin Kyofusho. *Journal of Anxiety Disorders, 11*, 157-177.

Larkin, K. T., Ciano-Federoff, L. M., & hammel, D. (1998). Effects of gender of observer and fear of negative evaluatoin on cardiovascular reactivity to mental stress in college men. *International Journal of Psychophysiology*, *29*, 311-318.

Leary, M. R., & Kowalski, R. M. (1995). *Social anxiety*. New York: Guilford Press.

Lee S. H., & Oh, K. S. (1999). Offensive type of social phobia: Cross-cultural perspectives. *International Medical Journal*, *6*, 271–279.

Liebowitz, M. R. (1987). Social phobia. *Modern Problems of Pharmacopsychiatry*, *22*, 141-173.

Maeda, F., & Nathan, J. H. (1999). Understanding taijin kyofusho through its treatment, Morita Therapy. *Journal of Psychosomatic Research*, *46*, 525-530.

Maltby, J., & Day, L. (2000). The reliability and validity of a susceptibility to embarrassment scale among adults. *Personality and Individual Differences*, *29*, 749-756.

Marschall, D. E., Sanftner, J. L., & Tangney, J. P. (1994). *The State Shame and Guilt Scale.* Fairfax, VA: George Mason University.

Matsumoto, D., Yoo, S. H., Nakagawa, S., Altarriba, J., Alexandre, J., Anguas-Wong, A. M., et al. (2008). Culture, emotion regulation, and adjustment. *Journal of Personality and Social Psychology: Attitudes and Social Cognition*, *94*, 925-937.

Mennin, D. S., Heimburg, R. G., Turk, C. L., & Fresco, D. M. (2005).Preliminary evidence for an emotion dysregulation model of generalized anxiety disorder. *Behaviour Research and Therapy*, *43*, 1281-1310.

Mennin, D. S., McLaughlin, K. A., & Flanagan, T. J. (2009). Emotion regulation deficits in generalized anxiety disorder, social anxiety disorder, and their co-occurrence. *Journal of Anxiety Disorders*, *23*, 866-871.

Mietus, J. E., Peng, C-K., Henry, I., Goldsmith, R. L., & Goldberger, A. L. (2002). The pNNx files: Re-examining a widely used heart rate variability measure. *Heart*, *88*, 378-380.

Miller, R. S. (2007). Is embarrassment a blessing or a curse? In J. L. Tracy, R. W. Robins & J. P. Tangney (Eds.), *The self-conscious emotions: Theory and research* (pp. 245-262). New York: Oxford University Press.

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128*, 3-72.

Maltby, J., & Day, L. (2000). The reliability and validity of a susceptibility to embarrassment scale among adults. *Personality and Individual Differences*, *29*, 749-756.

Marschall, D. E., Sanftner, J. L., & Tangney, J. P. (1994). *The State Shame and Guilt Scale.* Fairfax, VA: George Mason University.

Masumoto, D., Yoo, S. H., Nakagawa, S., Alexandre, J., Altarriba, J., Anguas-Wong, A. M., et al. (2008). Culture, emotion regulation, and adjustment. *Journal of Personality and Social Psychology*, *94*, 925-937.

Mattick, R. P., & Clarke, J. C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy*, *36*, 455-470.

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128*, 3-72.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers*, *36*, 717-731.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*, 879-891.

Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia. *Behavior Research Therapy*, *35*, 741-756.

Rodebaugh, T. L., Holaway, R. M., & Heimburg, R. G. (2004). The treatment of social anxiety disorder. *Clinical Psychology Review*, *24*, 883-908.

Roger, D., & Najarian, B. (1989). The construction and validation of a new scale for measuring emotional control. *Personality and Individual Differences*, *10*, 845-853.

Sakurai, A., Nagata, T., Harai, H., Yamada, H., Morhi, I., Nakano, Y., et al. (2005). Is "relationship fear" unique to Japan? Symptom factors and patient clusters of social anxiety disorder among the Japanese clinical population. *Journal of Affective Disorders*, *87*, 131-137.

Sandercock, G. R. H., Bromley, P. D., & Brodie, D. A. (2005). The reliability of short-term measurements of heart rate variability. *International Journal of Cardiology*, *103*, 238-247.

Shearn, D., Bergman, E., Hill, K., Abel, A., & Hinds, L. (1990). Facial coloration and temperature responses in blushing. *Psychophysiology, 27,*687–693.

Shindo, M., Shioiri, T., Kuwabara, H., Murayama, M., Tamura, R., & Someya, T. (2006). Clinical features and treatment outcome in Japanese patients with social anxiety disorder: Chart review study. *Psychiatry and Clinical Neurosciences*. 60, 410-416.

Shulruf, B., Hattie, J., & Dixon, R. (2007). Development of a new measurement tool for individualism and collectivism. *Journal of Psychoeducational Assessment*, *25*, 385-401.

Singelis, T. M. (1994). The measurement of independent and interdependent self-construals. *Personality and Social Psychology Bulletin*, *20*, 580-591.

Spokas, M., Luterek, J. A., & Heimberg, R. G. (2009). Social anxiety and emotional suppression: The mediating role of beliefs. *Journal of Behavior Therapy and Experimental Psychiatry*, *40*, 283-291.

Sturm, V. E., Ascher, E. A., Miller, B. L., & Levenson, R. W. (2008). Diminished self-conscious emotional responding in frontotemporal lobar degeneration patients. *Emotion*, *8*, 861-869.

Task Force of the European Society of Cardiology and the North American Society of Pacing Electrophysiology (1996). Heart rate variability: Standards of measurement, physiological interpretation, and clinical use. *European Heart Journal*, *17*, 354-381.

Trumbull, D. (2008). Humiliation: The trauma of disrespect. *Journal of the American Academy of Psychoanalysis and Dynamic Psychiatry*, *36*, 643-660.

van Ravenswaaij-Arts, C. M. A., Kollee, L. A. A., Hopman, J. C. W., Stoelinga, G. B. A., & van Geijin, H. P. (1993). Heart rate variability. *Annals of Internal Medicine*, *118*, 436-447.

Vella, E. J., & Friedman, B. H. (2007). Autonomic characteristics of defensive hostility: Reactivity and recovery to active and passive stressors. *International Journal of Psychophysiology*, *66*, 95-101.

Waltz, J., Dimeff, L. A., Koerner, K., Linehan, M. M., Taylor, L., & Miller, C. (2009). Feasibility of using video to teach a Dialectical Behavior Therapy skill to clients with borderline personality disorder. *Cognitive and Behavioral Practice*, *16*, 214-222.

Young, M. E., & Fristad, M. A. (2007). Evidence based treatments for bipolar disorder in children and adolescents. *Journal of Contemporary Psychotherapy*, *37*, 157-164.

Zeman, J., Shipman, K., & Suveg, C. (2002). Anger and sadness regulation: Predictions to internalizing and externalizing symptoms in children. *Journal of Clinical Child and Adolescent Psychology*, *31*, 393-398.

Table 1

Means, Standard Deviations, and Correlations among Social Anxiety, Emotion Regulation, Embarrassment, Shame, Taijin Kyofusho, and Culture (n = 142)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. SPIN Social Anxiety	-	-.06	-.20*	.80**	.56**	.52**	.41**	.27**	-.32**	-.004
2. ERQ Reappraisal		-	.56**	-.003	-.03	-.01	-.02	-.03	.20*	.007
3. ERQ Suppression			-	-.19*	-.16	-.09	-.06	-.08	.25**	.19*
4. SES Embarrassment				-	.69**	.52**	.44**	.26**	-.23**	.03
5. ISS Shame					-	.38 **	.41**	.28**	-.26**	-.08
6. TKSQ E_TKS						-	.77**	.61**	-.17*	.07
7. TKSQ D_TKS							-	.82**	-.15	.12
8. TKSQ O_TKS								-	-.12	.09
9. AICS Individualism									-	-.12
10. AICS Collectivism										-
M	26.31	25.44	18.89	100.37	27.17	5.95	5.52	5.19	55.27	35.80
SD	12.03	4.75	4.22	31.55	17.89	3.64	3.66	3.79	7.32	5.89

Note: SPIN = Social Phobia Inventory, ERQ = Emotion Regulation Questionnaire, SES = Susceptibility to Embarrassment Scale, ISS = Internalized Shame Scale, TKSQ = Taijin-Kyofu-Sho Questionnaire, AICS = Auckland Individualism Collectivism Scale.

* $p < .05$

** $p < .01$.

Table 2

Comparison of Means and Standard Deviations for BSI Subscales between NSA (n = 29) and SA (n = 113) Groups as Categorized by the TKSQ

Measure	Group	*M*	*SD*	*F*	*df*	Significance (Two-tailed)
Interpersonal Sensitivity	Total	60.81	11.14			
	NSA	52.41	9.16			
	SA	62.96	10.60	24.10	140	.000**
Anxiety	Total	58.15	10.10			
	NSA	50.66	10.52			
	SA	60.08	9.08	23.29	140	.000**
GSI	Total	61.31	10.03			
	NSA	53.07	10.89			
	SA	63.42	8.65	29.61	140	.000**
PSDI	Total	57.5	8.27			
	NSA	51.28	8.46			
	SA	59.10	7.45	24.04	140	.000**
PST	Total	60.44	10.17			
	NSA	52.38	10.85			
	SA	62.51	8.93	27.16	140	.000**

Note: GSI = Global Severity Index; PSDI = Positive Symptom Distress Index; PST = Positive Symptom Total.

* $p < .05$.

** $p < .01$.

Table 3

Comparison of Means and Standard Deviations for Social Anxiety Measures between NSA (n = 29) and SA (n = 113) Groups as Categorized by the TKSQ

Measure	Group	*M*	*SD*	*F*	*df*	Significance (Two-tailed)
ADIS-IV	Total	3.30	1.75			
	NSA	1.97	2.04			
	SA	3.65	1.49	25.01	140	.000**
SPIN	Total	26.31	12.03			
	NSA	14.50	9.35			
	SA	29.34	10.73	46.38	140	.000**
TKSQ E-TKS	Total	5.95	3.64			
	NSA	1.94	1.44			
	SA	6.98	3.31	64.10	140	.000**
TKSQ D-TKS	Total	5.52	3.66			
	NSA	1.86	2.29			
	SA	6.46	3.35	48.48	140	.001**
TKSQ O-TKS	Total	5.19	3.79			
	NSA	2.32	2.52			
	SA	5.92	3.72	24.22	140	.000*

Note: ADIS-IV = Anxiety Disorders Interview Schedule; SPIN = Social Phobia Inventory; TKSQ = Taijin-Kyofu-Sho Questionnaire.

* $p < .05$.

** $p < .01$.

Table 4

Comparison of Clinical and Nonclinical samples as categorized by the TKSQ

Measure		TKSQ Nonsocially Anxious (n = 29)	TKSQ Socially Anxious (n = 113)
ADIS-IV	SA	7	61
	NSA	22	52
SPIN	SA	7	94
	NSA	22	19
TKSQ	SA	0	113
	NSA	29	0

Note: ADIS-IV = Anxiety Disorders Interview Schedule; SPIN = Social Phobia Inventory; TKSQ = Taijin-Kyofu-Sho Questionnaire.

Table 5

Comparison of Means and Standard Deviations for BSI Subscales between NSA (n = 41) and SA (n = 101) Groups based on the SPIN Categorization

Measure	Group	*M*	*SD*	*F*	*df*	Significance (Two-tailed)
Interpersonal Sensitivity	Total	60.81	11.14			
	NSA	53.73	9.96			
	SA	63.68	10.31	27.68	140	.000**
Anxiety	Total	58.15	10.10			
	NSA	51.56	10.02			
	SA	60.83	8.86	29.57	140	.000**
GSI	Total	61.31	10.03			
	NSA	55.59	10.19			
	SA	63.63	9.02	21.52	140	.000**
PSDI	Total	57.50	8.27			
	NSA	53.80	9.53			
	SA	59.00	7.22	12.46	140	. 001**
PST	Total	60.44	10.17			
	NSA	54.27	9.58			
	SA	62.95	9.33	24.84	140	.000**

Note: GSI = Global Severity Index; PSDI = Positive Symptom Distress Index; PST = Positive Symptom Total.

* $p < .05$.

** $p < .01$.

Table 6

Comparison of Means and Standard Deviations for Social Anxiety Measures between NSA (n = 41) and SA (n = 101) Groups as Categorized by the SPIN

Measure	Group	*M*	*SD*	*F*	*df*	Significance (Two-tailed)
ADIS-IV	Total	3.30	1.75			
	NSA	1.85	1.54			
	SA	3.89	1.46	54.86	140	.000**
SPIN	Total	26.31	12.03			
	NSA	10.89	4.41			
	SA	32.56	7.71	285.30	140	.000**
TKSQ E-TKS	Total	5.95	3.64			
	NSA	3.38	2.90			
	SA	7.00	3.39	36.01	140	.000**
TKSQ D-TKS	Total	5.52	3.66			
	NSA	3.48	3.12			
	SA	6.34	3.56	20.18	140	.000**
TKSQ O-TKS	Total	5.19	3.79			
	NSA	3.75	2.93			
	SA	5.77	3.95	8.70	140	.004*

Note: ADIS-IV = Anxiety Disorders Interview Schedule; SPIN = Social Phobia Inventory; TKSQ = Taijin-Kyofu-Sho Questionnaire.

* $p < .05$.

** $p < .01$.

Table 7

Comparison of Clinical and Nonclinical samples as categorized by the SPIN

Measure		SPIN Nonsocially Anxious (n = 41)	SPIN Socially Anxious (n = 101)
ADIS-IV	SA	5	63
	NSA	36	38
TKSQ	SA	19	94
	NSA	22	7
SPIN	SA	0	101
	NSA	41	0

Note: ADIS-IV = Anxiety Disorders Interview Schedule; SPIN = Social Phobia Inventory; TKSQ = Taijin-Kyofu-Sho Questionnaire.

Table 8

Comparison of Means and Standard Deviations for Selected BSI Subscales between NSA (n = 74) and SA (n = 68) Groups based on the ADIS-IV Categorization

Measure	Group	*M*	*SD*	*F*	*df*	Significance (Two-tailed)
Interpersonal Sensitivity	Total	60.81	11.14			
	NSA	55.25	10.52			
	SA	66.75	8.48	50.00	140	.000**
Anxiety	Total	58.15	10.10			
	NSA	52.89	9.29			
	SA	63.88	7.52	59.38	140	.000**
GSI	Total	61.31	10.03			
	NSA	56.54	9.90			
	SA	66.50	7.24	46.15	140	.000**
PSDI	Total	57.50	8.27			
	NSA	53.86	8.53			
	SA	61.46	5.83	37.66	140	.000**
PST	Total	60.44	10.17			
	NSA	55.77	9.72			
	SA	65.53	8.03	42.14	140	.000**

Note: GSI = Global Severity Index; PSDI = Positive Symptom Distress Index; PST = Positive Symptom Total.

* $p < .05$.

** $p < .01$.

Table 9

Comparison of Means and Standard Deviations of Social Anxiety Measures between NSA (n = 41) and SA (n = 101) Groups as Categorized by the ADIS-IV

Measure	Group	*M*	*SD*	*F*	*df*	Significance (Two-tailed)
ADIS-IV	Total	3.30	1.75			
	NSA	1.92	1.03			
	SA	4.81	.92	309.14	140	.000**
SPIN	Total	26.30	12.03			
	NSA	19.85	10.86			
	SA	33.33	8.94	64.54	140	.000**
TKSQ E-TKS	Total	5.95	3.64			
	NSA	4.82	3.41			
	SA	7.18	3.51	16.46	140	.000**
TKSQ D-TKS	Total	5.19	3.79			
	NSA	4.52	3.57			
	SA	6.60	3.48	12.36	140	.001**
TKSQ O-TKS	Total	5.19	3.79			
	NSA	4.58	3.55			
	SA	5.85	3.96	4.02	140	.047*

Note: ADIS-IV = Anxiety Disorders Interview Schedule; SPIN = Social Phobia Inventory; TKSQ = Taijin-Kyofu-Sho Questionnaire.

* $p < .05$.

** $p < .01$.

Table 10

Comparison of Clinical and Nonclinical samples as categorized by the ADIS-IV

Measure		ADIS-IV Nonsocially Anxious (n = 74)	ADIS-IV Socially Anxious (n = 68)
SPIN	SA	38	63
	NSA	36	5
TKSQ	SA	52	61
	NSA	22	7
ADIS-IV	SA	0	68
	NSA	74	0

Note: ADIS-IV = Anxiety Disorders Interview Schedule; SPIN = Social Phobia Inventory; TKSQ = Taijin-Kyofu-Sho Questionnaire.

Table 11

Mediation Analyses Using Bootstrapping

Simple Indirect Effects for:	*Point estimate*	*BCa** 95% CI *Lower*	*Upper*
SES Embarrassment & SPIN Social Anxiety			
ERQ Suppression	0.0038	-0.0029	0.0180
ERQ Reappraisal	0.0001	-0.0047	0.0058
ISS Shame & TKSQ Embarrassment-TKS			
ERQ Suppression	0.0010	-0.0041	0.0094
ERQ Reappraisal	0.0000	-0.0044	0.0027
ISS Shame & TKSQ Discomfort-TKS			
ERQ Suppression	-0.0002	-0.0073	0.0054
ERQ Reappraisal	0.0001	-0.0028	0.0032
ISS Shame & TKSQ Offensive-TKS			
ERQ Suppression	0.0012	-0.0037	0.107
ERQ Reappraisal	0.0001	-0.0029	0.0040

Note: *BCa = bias corrected and accelerated bootstrapping confidence intervals.

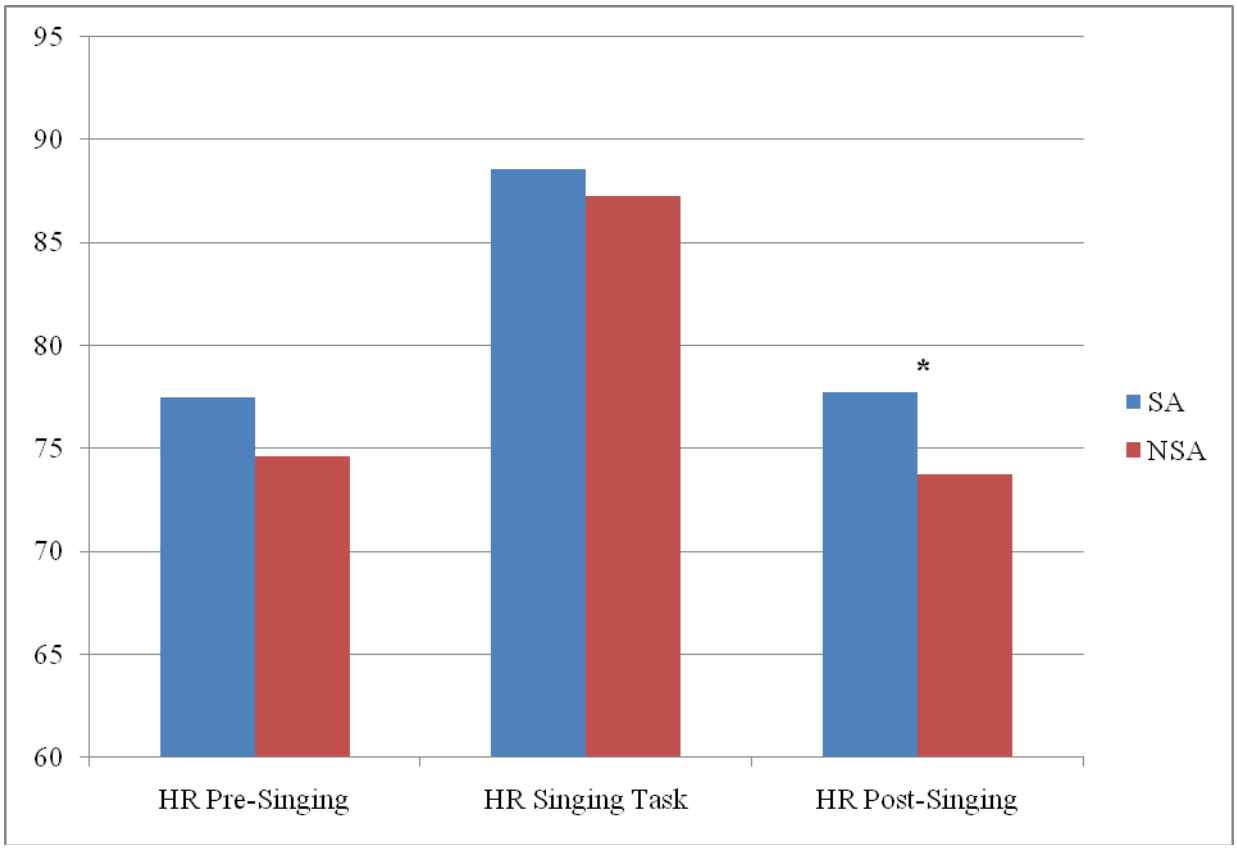
Table 12

Moderation Analyses Using OLS Regression for Emotion Regulation Strategies on Embarrassment and Social Anxiety

	Coefficient	*SE*	*t*	*p*
a: constant	26.3076	0.6067	43.3628	< .0001
b1: SES Embarrassment (F)	0.3036	0.0196	15.5159	< .0001
b2: ERQ Reappraisal (M)	-0.1603	0.1289	-1.2432	.2159
b3: F x M	0.0026	0.0044	.5997	.5497
a: constant	2.6826	0.6193	44.4429	< .0001
b_1: SES Embarrassment (*F*)	0.3022	0.0198	15.2618	< .0001
b_2: ERQ Suppression (*M*)	-0.1484	0.1475	-1.0062	.3161
b_3: *F* x *M*	-0.0009	0.0046	-0.1874	.8516

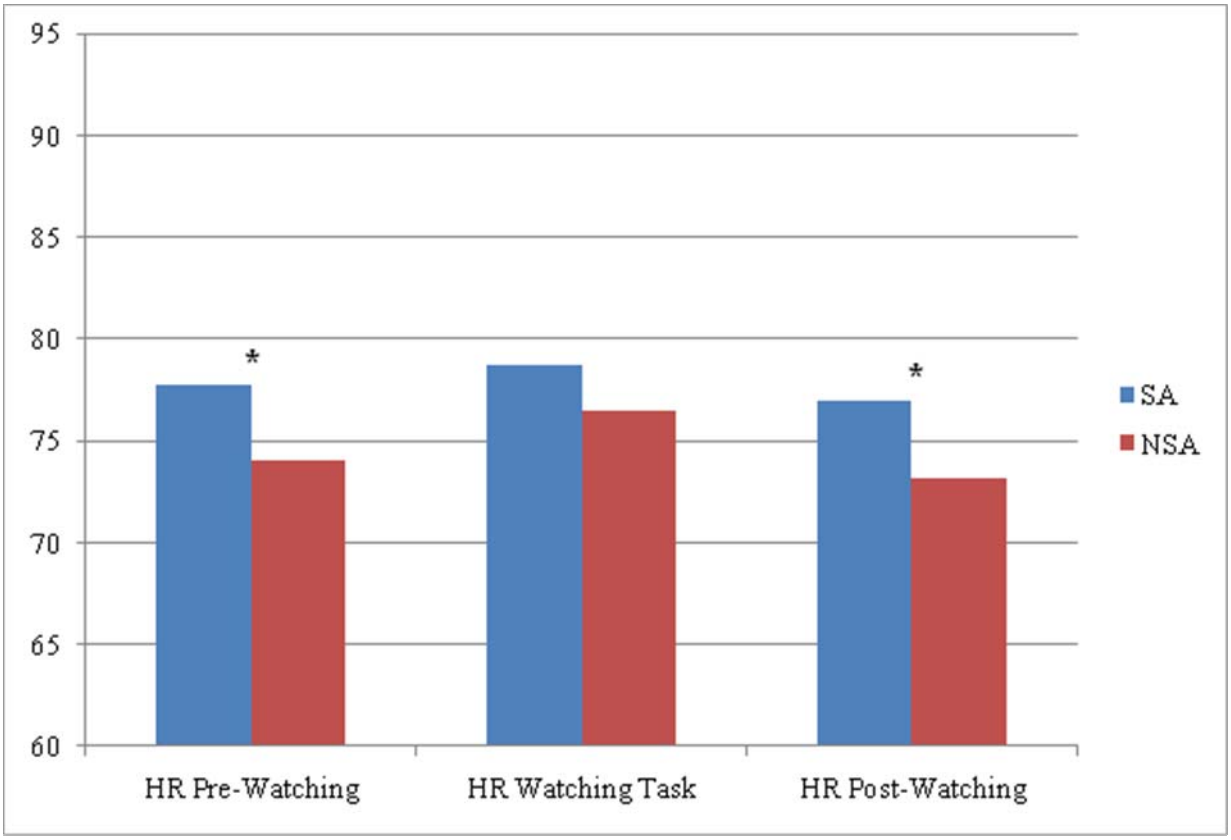
Note: SES = Susceptibility to Embarrassment Scale, ERQ = Emotion Regulation Questionnaire. For Reappraisal, $R = .8042$, $R^2 = .6467$, $F(3, 138) = 84.1873$, $p = .0001$. For Suppression, $R = .8030$, $R^2 = .6448$, $F(3, 138) = 83.5139$, $p < .0001$.

Figure 1. Comparison of heart rate in SA and NSA individuals during the pre-singing, singing, and post-singing phases.



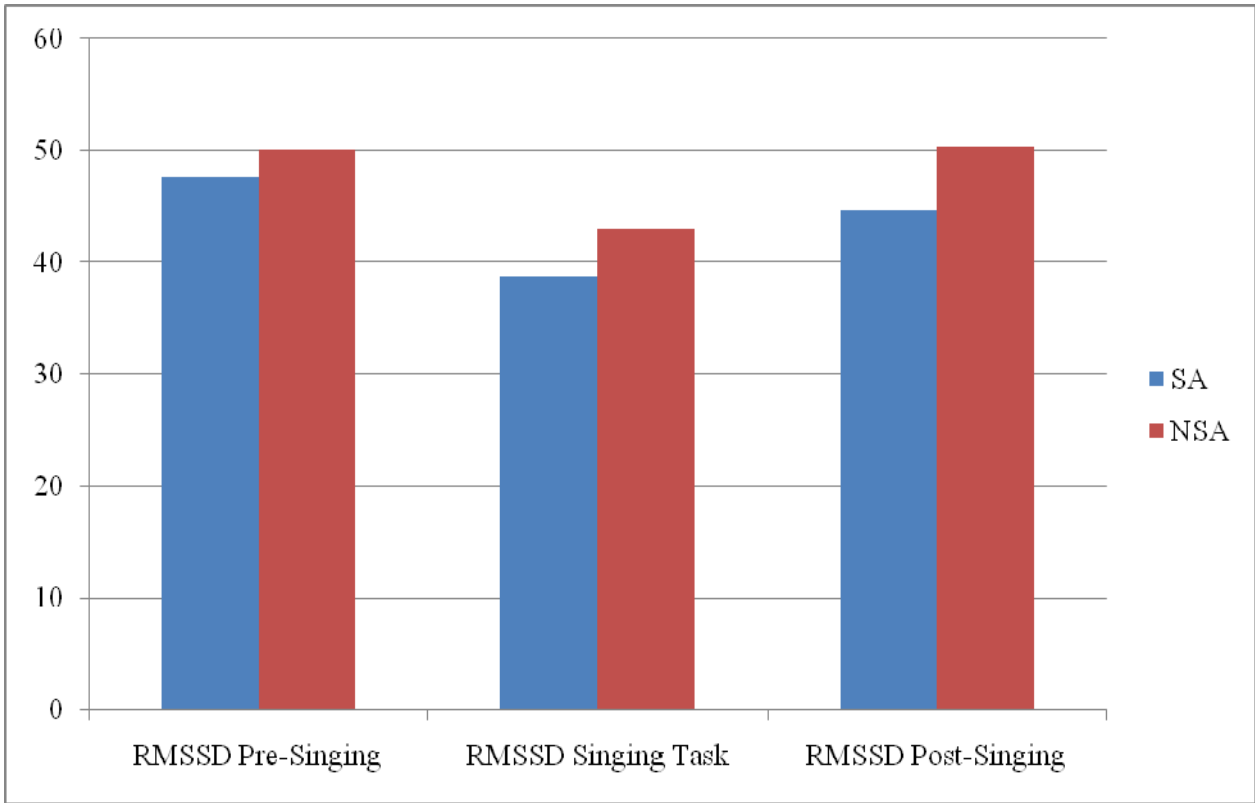
* $p < .05$

Figure 2. Comparison of heart rate in SA and NSA individuals during the pre-watching, watching, and post-watching phases.



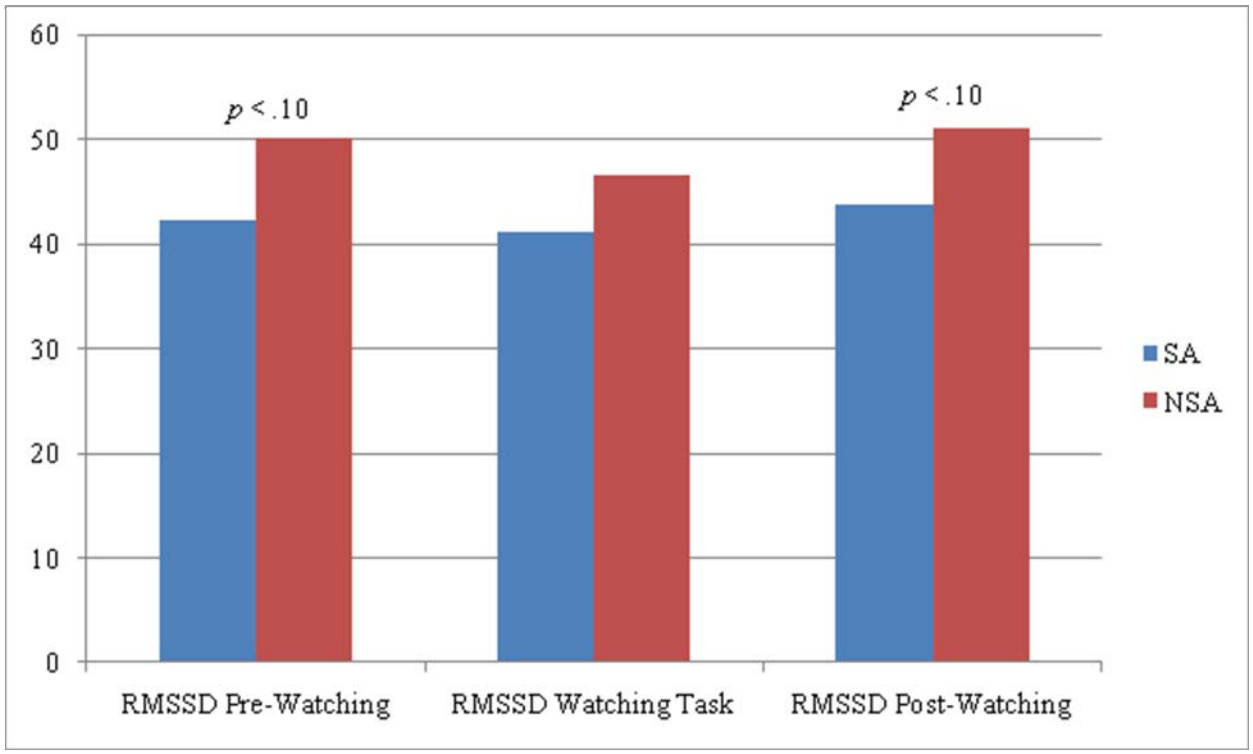
* $p < .05$

Figure 3. Comparison of RMSSD in SA and NSA individuals during the pre-singing, singing, and post-singing phases.



* $p < .05$

Figure 4. Comparison of RMSSD in SA and NSA individuals during the pre-watching, watching, and post-watching phases.



* $p < .05$

Appendix A

Recruitment Flyer A

Virginia Tech

SEEKING PARTICIPANTS FOR PSYCHOLOGY RESEARCH STUDY:

"Emotions, Culture, & Anxiety"

Who is eligible:

- VT students 18 years and older
- Study will be listed on the VT Psychology SONA System

Information about the study:

- Two part study: Online & Laboratory (1 hr each)
- Qualifying participants will be invited for Laboratory phase
- Extra credit offered for Psychology courses for both parts of study
- For Laboratory phase, participants entered into raffle for one of five $25 amazon.com gift certificates

For more information, please contact:

(540) 231-2024

rnoguchi@vt.edu

or visit the VT Psychology SONA Website:

https://vt-psyc.sona-systems.com/

Please tear off a reminder and contact us for more information:

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Appendix B

Recruitment Flyer B

Virginia Tech

SEEKING PARTICIPANTS FOR RESEARCH STUDY:

"Emotions, Culture, & Anxiety"

Who is eligible:

- VT students 18 years and older
- Study will be listed on the VT Psychology SONA System

Information about the study:

- Two part study: Online & Laboratory (1 hr each)
- Qualifying participants will be invited for Laboratory phase
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Appendix C

Recruitment Flyer C

Virginia Tech

SEEKING PARTICIPANTS FOR RESEARCH STUDY:

"Emotions, Culture, & Anxiety"

Who is eligible:

- VT students 18 years and older
- Study will be listed on the VT Psychology SONA System

Information about the study:

- Two part study: Online & Laboratory (1 hr each)
- Qualifying participants will be invited for Laboratory phase
- Extra credit offered for Psychology courses for both parts of study
- For Laboratory phase: participants entered into raffle for one of five $25 amazon.com gift cards

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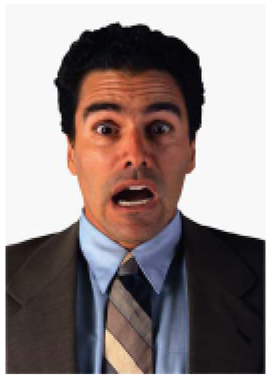
Appendix D

Recruitment Flyer D

Virginia Tech

SEEKING PARTICIPANTS FOR RESEARCH STUDY:



"Emotions, Culture, & Anxiety"

Who is eligible:

- VT students 18 years and older
- Study will be listed on the VT Psychology SONA System

Information about the study:

- Two part study: Online & Laboratory (1 hr each)
- Qualifying participants will be invited for Laboratory phase
- Extra credit offered for Psychology courses for both parts of study
- For Laboratory phase: participants entered into raffle for one of five $25 amazon.com gift cards

For more information, please contact:

(540) 231-2024

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or visit the VT Psychology SONA Website:

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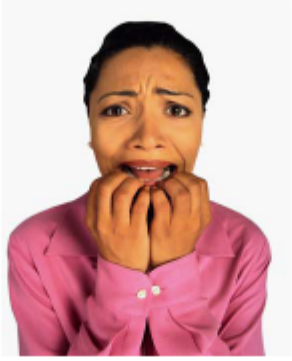
Appendix E

Recruitment Flyer E

Virginia Tech

SEEKING PARTICIPANTS FOR RESEARCH STUDY:



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Appendix F

INFORMED CONSENT FORM

(Laboratory Portion)

Study Title: Emotions, Culture, and Anxiety

Investigators: Thomas H. Ollendick, Ph.D., Ryoichi Noguchi, M.S.

I. Purpose of this Project:

The purpose of this project is to examine culture, anxiety, and the role of the emotions of shame and embarrassment in social situations.

II. Procedures

I am being asked to help the above researchers in a project. I agree that in order to participate in this study, I need to be at least 18 years of age. In the online portion of this study, my role in this project will be to complete a series of questionnaires about my emotion, emotion processes, thoughts about social situations, social anxiety, and my own physical and mental health. After completing these questionnaires, I might be contacted again by the researchers for participation in a second laboratory portion of this study.

If I am contacted to participate in the second phase, I will be asked to attach a heart rate monitor belt with electrode gel and a heart rate monitor watch. During this phase, I understand researchers will collect this physiological data (my heart rate and heart rate variability levels), and will videotape parts of the session. I will also be asked to complete a brief clinical interview that will be audio recorded, as well as two questionnaires. I will then take part in a singing task that will be video recorded; other parts of the session may be video recorded as well.

For the singing task, I will be taken to a psychology laboratory room located in Williams Hall. The video recording will be a requirement in order to participate in the study. I understand that all video and audio recordings will be kept in a locked cabinet and all recordings will be erased as soon as possible upon termination of my participation unless otherwise permitted by written consent. Additionally, only the researchers and research assistants taking part in this study will be able to view these recordings.

In between the interview, questionnaires, and singing task, I will be asked to sit quietly in a chair for a few minutes. At the end of the laboratory session, I will remove the heart rate monitor and be allowed to leave. If I desire to see my cardiovascular data, I may email the experimenters after the study ends.

The online portion of this study will last approximately 1 hour. The second part of the study, the laboratory portion, will also last approximately 1 hour. Participation in the second portion of the study is optional for a raffle entry and increased extra credit amount; participation will not impact the extra credit received during the online portion.

III. Risks

Any risks associated with the completion of materials in this study are considered minimal and may include slight emotional discomfort. During the laboratory session, there may

be slight discomfort associated with putting the heart rate monitor belt on and taking it off. Additionally, there may be slight emotional discomfort associated with the singing task.

IV. Benefits of this Project

There is a societal benefit of increasing the understanding of culture and the relation between embarrassment and shame in social situations such as a singing task. Additionally, you will be asked by the researcher if you would like to see your cardiovascular data from the study at a later time. This information is for research purposes only but you may gain extra knowledge about your own physiological functioning and the cardiovascular system in general.

V. Confidentiality

All of my responses will be kept completely confidential and will not be released to any other agency or individual without my knowledge and consent. I will be asked to provide my e-mail address for the purpose of getting academic course credit, but not in relation to my particular set of questionnaires. A code number will be assigned to my answers and only this number will be associated with the data. Additionally, my e-mail contact information will be used for the research team to contact me with respect to the laboratory portion of the study and to notify me if I win one of the raffle entries. I understand that although the responses to the questionnaire require a password for entry and completion of the questionnaire, this does not guarantee complete confidentiality should the responses be intercepted inappropriately from the Internet. All the video recordings will also be numbered and no identifying information will be placed with the video. The primary and co-investigator along with laboratory assistants will have access to and transcribe the recordings. The videos will be erased or destroyed approximately five years after data collection ends.

VI. Compensation

Introductory Psychology undergraduates will receive extra credit points averaged into their final grade, with one credit for every hour or hour portion of participation. Undergraduates in other psychology courses may receive extra credit, as determined by their course instructor. Completion of the online portion of this study is worth one extra credit point. The completion of the laboratory portion of this study is worth an additional one extra credit point in addition to the one previously earned.

Additionally, all participants who take part in the laboratory portion will be eligible for a drawing for one of ten (five per semester) $25 dollar gift certificates to amazon.com. The potential odds for being selected for a gift certificate are 1 in 20. The graduate student co-investigator will be responsible for drawing the winner randomly from the pool of participants from the laboratory session. The drawing will occur on the last day of classes at the end of the Fall 2009 and Spring 2010 semesters. Winners will be notified through email. In order to claim the gift certificate, winners will need to confirm by responding to the email. In the event that an individual does not confirm the prize, another drawing will be conducted to select a new winner.

VII. Freedom to Withdraw

This project has been explained to me and I have been allowed to ask questions about it. I understand that I do not have to fill out the questionnaires or participate in any way if I do not want to and that there will be no negative consequences for withdrawal. I can stop part way through or withdraw at any time if I choose. If I decide to withdraw, I understand that extra

credit will be prorated based on my length of participation in the study, where one credit is awarded for each hour of participation. I also understand that as per university policy and Psychology Department policy, my course instructor can provide me with other opportunities for extra credit.

VIII. Approval of Research

This research project has been approved, as required, by the Institutional Review Board for Research Involving Human Subjects of Virginia Polytechnic Institute and State University, and by the Department of Psychology.

IX. Participant's Responsibility

I am responsible for filling out several questionnaires on emotions, culture, anxiety, physical and mental health, as well as providing my contact information if I would be willing to participate in the second portion of this study. I expect the online portion to last approximately 1 hour. During the laboratory portion, I am expected to make my best attempt to truthfully answer the interview questions and follow the directions of the researcher. I will try to complete the task as directed to during the instructions to the best of my abilities. I expect that the laboratory portion to last 1 hour.

X. Participant's Permission

I have read and understood the Informed Consent Form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this project. By agreeing to participate in this research study, I also acknowledge that I am a consenting adult who is 18 years of age or older.

If I participate, I may withdraw at any time without penalty. I agree to abide by the rules of this project.

Participant Signature: _____ Date: _____

Should I have any questions about this research or its conduct, I may contact:

Thomas H. Ollendick, Ph.D. Phone: 231-6451
Principal Investigator tho@vt.edu

Ryoichi Noguchi, M.S. Phone: 231-2024
Co-Investigator rnoguchi@vt.edu

Dr. David Moore Phone: 231-4991
Chair, IRB
CVM Phase II

Dr. David Harrison Phone: 231-4422
Chair, Psychology Human Subjects Committee

Appendix G

Demographics Information Form

We will obtain a brief medical history as part of the experimental protocol. It is important that you be completely honest. All information will be kept strictly confidential.

1. What is your date of birth (month/day/year)? _____
2. What is your age? _____
3. What is your gender? □Male □ Female
4a. Were you born outside of the United States? If no, please skip to next question. □ Yes □ No
4b. If Yes: Please specify city and country of birth: _____
4c. If Yes: Please specify how long you have lived in the U.S. in terms of years and months: _____

5. Please specify your race/ethnicity:
   - □ American Indian or Alaska Native
   - □ Asian
   - □ Black or African-American
   - □ Hispanic or Latino or Spanish origin
   - □ Native Hawaiian or Other Pacific Islander
   - □ White or Caucasian
   - □ Other: _____

6a. What is your primary language? _____
6b. What is your secondary language? _____

7a. Highest level of education attained including present education level: _____
7b. Please indicate what year you are in college: _____

8a. Since birth, have you ever been hospitalized or had any major medical problems?
□ Yes □ No
8b. If Yes, briefly explain:_____

9a. Have you ever had problems that required you to visit:
□ Yes □ No Psychologist
□ Yes □ No Psychiatrist
□ Yes □ No Counselor
□ Yes □ No Social Worker
□ Yes □ No Other Mental Health Professional
9b. If Yes, briefly explain:_____

10a. Have you ever been diagnosed with a mental health disorder?
□ Yes □ No
10b. If Yes, indicate the disorder and briefly describe:_____

11a. Do you currently have or have you ever had any of the following?
□ Yes □ No Circulatory problems
□ Yes □ No Tissue disease
□ Yes □ No Skin disorders (other than facial acne)
□ Yes □ No Arthritis
□ Yes □ No Asthma
□ Yes □ No Lung problems
□ Yes □ No Cardiovascular disorder/disease
□ Yes □ No Diabetes
□ Yes □ No Hypoglycemia
□ Yes □ No Hypertension (high blood pressure)
□ Yes □ No Hypotension (low blood pressure)
□ Yes □ No Hepatitis
□ Yes □ No Neurological problems
□ Yes □ No Epilepsy or seizures
□ Yes □ No Brain disorder
□ Yes □ No Stroke
11b. If you responded Yes to any of the above conditions, briefly explain:_____

12a. List any over-the-counter or prescription medications you are currently taking:_____
12b. List the symptoms that these drugs are treating: _____

13. What is your average daily caffeine consumption (approximate number of cups/glasses of coffee, tea, or caffeinated soda)?_____

Appendix H

Auckland Individualism Collectivism Scale

Please rate the degree to which the following statements are true for you. For quality inspection purposes, there may be a few questions where you will be asked to endorse a predetermined response.

	Never/Almost Never					Always
1. I discuss job or study-related problems my parents.	1	2	3	4	5	6
2. I consult my family before making an important decision.	1	2	3	4	5	6
3. Before taking a major trip, I consult with most members of my family and many friends.	1	2	3	4	5	6
4. It is important to consult close friends and get their ideas before making a decision.	1	2	3	4	5	6
5. Even when I strongly disagree with my group members, I avoid an argument.	1	2	3	4	5	6
6. I hate to disagree with others in my group.	1	2	3	4	5	6
7. It is important to make a good impression on one's manager.	1	2	3	4	5	6
8. In interacting with superiors, I am always polite.	1	2	3	4	5	6
9. It is important to consider the needs of those who work above me.	1	2	3	4	5	6
10. I sacrifice my self-interest for the benefit of my group.	1	2	3	4	5	6
11. Choose response number five for this item.	1	2	3	4	5	6
12. I reveal personal things about myself.	1	2	3	4	5	6
13. I have the feeling that my relationships with others are more important than my own accomplishments.	1	2	3	4	5	6
14. I like to live close to my good friends.	1	2	3	4	5	6
15. To me, pleasure is spending time with my superiors.	1	2	3	4	5	6
16. To me, pleasure is spending time with others.	1	2	3	4	5	6

17.	I help acquaintances, even if it is inconvenient.	1	2	3	4	5	6
18.	I define myself as a competitive person.	1	2	3	4	5	6
19.	I enjoy working in situations involving competition with others.	1	2	3	4	5	6
20.	Without competition, it is not possible to have a good society.	1	2	3	4	5	6
21.	Competition is the law of nature.	1	2	3	4	5	6
22.	I consider myself as a unique person separate from others.	1	2	3	4	5	6
23.	I enjoy being unique and different from others.	1	2	3	4	5	6
24.	I see myself as “my own person.”	1	2	3	4	5	6
25.	I take responsibility for my own actions.	1	2	3	4	5	6
26.	It is important for me to act as an independent person.	1	2	3	4	5	6
27.	Being able to take care of myself is a primary concern for me.	1	2	3	4	5	6
28.	Select number two for this item.	1	2	3	4	5	6
29.	I consult with my superior on work-related matters.	1	2	3	4	5	6
30.	I prefer to be self-reliant rather than depend on others.	1	2	3	4	5	6
31.	It is my duty to take care of my family.	1	2	3	4	5	6
32.	When faced with a difficult personal problem, it is better to decide for myself, than follow the advice of others.	1	2	3	4	5	6

Appendix I

Emotion Regulation Questionnaire

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For quality inspection purposes, there may be a few questions where you will be asked to endorse a predetermined response. For each item, please answer using the following scale:

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

	Strongly Disagree						Strongly Agree
1. When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.	1	2	3	4	5	6	7
2. I keep my emotions to myself.	1	2	3	4	5	6	7
3. When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about.	1	2	3	4	5	6	7
4. When I am feeling positive emotions, I am careful not to express them.	1	2	3	4	5	6	7
5. When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.	1	2	3	4	5	6	7
6. I control my emotions by not expressing them.	1	2	3	4	5	6	7
7. When I want to feel more positive emotion, I change the way I'm thinking about the situation.	1	2	3	4	5	6	7
8. I control my emotions by changing the way I think about the situation I'm in.	1	2	3	4	5	6	7
9. When I am feeling negative emotions, I make sure not to express them.	1	2	3	4	5	6	7
10. For this item, choose option number two.	1	2	3	4	5	6	7
11. When I want to feel less negative emotion, I change the way I'm thinking about the situation.							

Appendix J

Social Phobia Inventory

Please rate the degree to which the following statements are true for you using the scale below. For quality inspection purposes, there may be a few questions where you will be asked to endorse a predetermined response.

	Not at all	A little bit	Somewhat	Very much	Extremely
1. Fear of people in authority	0	1	2	3	4
2. Bothered by blushing	0	1	2	3	4
3. Fear of parties and social events	0	1	2	3	4
4. Avoids talking to strangers	0	1	2	3	4
5. Fear of criticism	0	1	2	3	4
6. Avoids embarrassment	0	1	2	3	4
7. Please select Not at all	0	1	2	3	4
8. Distressed by sweating	0	1	2	3	4
9. Avoids parties	0	1	2	3	4
10. Avoids being the center of attention	0	1	2	3	4
11. Fear of talking to strangers	0	1	2	3	4
12. Avoids speeches	0	1	2	3	4
13. Select A little bit	0	1	2	3	4
14. Avoids criticism	0	1	2	3	4
15. Distressed by palpitations	0	1	2	3	4
16. Fear of others watching	0	1	2	3	4
17. Fear of embarrassment	0	1	2	3	4
18. Avoids talking to authority	0	1	2	3	4
19. Distressed by trembling or shaking	0	1	2	3	4

Appendix K

Susceptibility to Embarrassment Scale

We are interested in people's personality attributes. Listed below are a variety of statements. Please read each statement carefully and indicate to the left of each item the extent to which you feel it applies to you using the scale below. For quality inspection purposes, there may be a few questions where you will be asked to endorse a predetermined response.

1 Not at all Like me 2 3 4 5 6 7 Very much Like me

		Not at all like me						Very much like me
1.	I feel unsure of myself.	1	2	3	4	5	6	7
2.	I don't feel comfortable in public unless my clothing, hair, etc. are just right.	1	2	3	4	5	6	7
3.	I feel uncomfortable in a group of people.	1	2	3	4	5	6	7
4.	I don't mind being the center of attention.	1	2	3	4	5	6	7
5.	I probably care too much about how I come across to others.	1	2	3	4	5	6	7
6.	I feel inadequate when I am talking to someone I just met.	1	2	3	4	5	6	7
7.	I feel clumsy in social situations.	1	2	3	4	5	6	7
8.	I feel uncomfortable leaving the house when I don't look my best.	1	2	3	4	5	6	7
9.	Sometimes I just feel exposed.	1	2	3	4	5	6	7
10.	I feel humiliated if I make a mistake in front of a group.	1	2	3	4	5	6	7
11.	I get flustered when speaking in front of a group.	1	2	3	4	5	6	7
12.	I often feel emotionally exposed in public and with groups of people.	1	2	3	4	5	6	7
13.	For this question, select number seven.	1	2	3	4	5	6	7
14.	It is unsettling to be the center of attention.	1	2	3	4	5	6	7
15.	I get tense just thinking about making a presentation by myself.	1	2	3	4	5	6	7

16. I have felt mortified or humiliated over minor embarrassment.	1	2	3	4	5	6	7
17. I am very much afraid of making mistakes in public.	1	2	3	4	5	6	7
18. I don't like being in crowds.	1	2	3	4	5	6	7
19. I do not blush easily.	1	2	3	4	5	6	7
20. I often worry about looking stupid.	1	2	3	4	5	6	7
21. I feel so vulnerable.	1	2	3	4	5	6	7
22. Select number four for this response.	1	2	3	4	5	6	7
23. I am concerned about what others think of me.	1	2	3	4	5	6	7
24. I'm afraid that things I say will sound stupid.	1	2	3	4	5	6	7
25. I worry about making a fool out of myself.	1	2	3	4	5	6	7
26. What other people think of me is very important.	1	2	3	4	5	6	7

Appendix L

Taijin-Kyofu-Sho Questionnaire

Please circle one response for each of the following questions. For quality inspection purposes, there may be a few questions where you will be asked to endorse a predetermined response.

How fearful are you that you may blush in front of others, such as turning red when someone asks you a question, and as a result:

1. You will feel embarrassed.
   Not fearful at all Mildly fearful Moderately fearful Extremely fearful

2. You will make another person uncomfortable.
   Not fearful at all Mildly fearful Moderately fearful Extremely fearful

3. You will offend another person.
   Not fearful at all Mildly fearful Moderately fearful Extremely fearful

How fearful are you that your facial expressions may stiffen in front of others, such as not being able to change the expression on your face, and as a result:

4. You will feel embarrassed.
   Not fearful at all Mildly fearful Moderately fearful Extremely fearful

5. You will make another person uncomfortable.
   Not fearful at all Mildly fearful Moderately fearful Extremely fearful

6. You will offend another person.
   Not fearful at all Mildly fearful Moderately fearful Extremely fearful

How fearful are you that your head, hands, and/or feet will tremble in front of others, and as a result:

7. You will feel embarrassed.
   Not fearful at all Mildly fearful Moderately fearful Extremely fearful

8. You will make another person uncomfortable.
   Not fearful at all Mildly fearful Moderately fearful Extremely fearful

9. You will offend another person.
   Not fearful at all Mildly fearful Moderately fearful Extremely fearful

10. Choose Moderately fearful.
    Not fearful at all Mildly fearful Moderately fearful Extremely fearful

How fearful are you that your voice will tremble while talking with others, and as a result:

11. You will feel embarrassed.
    Not fearful at all Mildly fearful Moderately fearful Extremely fearful

12. You will make another person uncomfortable.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

13. You will offend another person.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

How fearful are you that you will sweat or perspire in front of others, and as a result:

14. You will feel embarrassed.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

15. You will make another person uncomfortable.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

16. You will offend another person.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

How fearful are you that you will have body odors around others, and as a result:

17. You will feel embarrassed.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

18. You will make another person uncomfortable.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

19. You will offend another person.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

How fearful are you that you will stare at parts of other persons' bodies, and as a result:

20. You will feel embarrassed.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

21. You will make another person uncomfortable.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

22. You will offend another person.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

How fearful are you that you will release intestinal gas in the presence of others, and as a result:

23. You will feel embarrassed.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

24. You will make another person uncomfortable.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

25. You will offend another person.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

How fearful are you that you will make eye-to-eye contact with another person, and as a result:

26. You will feel embarrassed.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

27. Select Extremely fearful for this question.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

28. You will make another person uncomfortable.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

29. You will offend another person.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

How fearful are you that due to your physical appearance to others:

30. You will feel embarrassed.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

31. You will make another person uncomfortable.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

32. You will offend another person.
Not fearful at all Mildly fearful Moderately fearful Extremely fearful

Appendix M

Anxiety Disorders Interview Schedule: Social Phobia Module

The Anxiety Disorders Interview Schedule is copyrighted by Oxford University Press and is not reproduced here.

Appendix N

Brief Symptom Inventory

The BSI consists of a list of problems people sometimes have. Read each one carefully and fill in the circle that best describes HOW MUCH THAT PROBLEMS HAS DISTRESSED OR BOTHERED YOU DURING THE PAST 7 DAYS INCLUDING TODAY. Blacken the circle for only one number for each problem. Do not skip any items.

0 = Not at all 1 = A little bit 2 = Moderately 3 = Quite a bit 4 = Extremely

Appendix O

Internalized Shame Scale

Below is a list of statement describing feelings or experiences that you may have. Read each statement carefully and circle the number to the right of each item that indicates the frequency with which you find yourself feeling or experiencing what is described in the statement. Use the scale below. Try to be as honest as you can when responding. Please answer all of the items.

Never	Seldom	Sometimes	Often	Almost Always
0	1	2	3	4

Appendix P

SSES

Form A1

Listed below are a variety of statements. Please read each statement carefully and indicate to the right of each item the extent to which you feel it applied to you while you were singing, using the following scale:

1 Not at all Like me 2 3 4 5 6 7 Very much Like me

		Not at all like me						Very much like me
1.	I feel unsure of myself in situations like this.	1	2	3	4	5	6	7
2.	I feel uncomfortable in situations like this.	1	2	3	4	5	6	7
3.	I don't mind being the center of attention in situations like this.	1	2	3	4	5	6	7
4.	I probably care too much about how I come across to others in situations like this.	1	2	3	4	5	6	7
5.	I feel inadequate when I am in situations like this.	1	2	3	4	5	6	7
6.	I get flustered in situations like this.	1	2	3	4	5	6	7
7.	I often feel emotionally exposed in situations like this.	1	2	3	4	5	6	7
8.	I get tense just thinking about situations like this.	1	2	3	4	5	6	7
9.	I am very much afraid of making mistakes in situations like this.	1	2	3	4	5	6	7
10.	I do not blush easily in situations like this.	1	2	3	4	5	6	7
11.	I often worry about looking stupid in situations like this.	1	2	3	4	5	6	7
12.	I am concerned about what others think of me in situations like this.	1	2	3	4	5	6	7
13.	I'm afraid that things I say will sound stupid in situations like this.	1	2	3	4	5	6	7
14.	I worry about making a fool out of myself in situations like this.	1	2	3	4	5	6	7
15.	I am not easily embarrassed in situations like this.	1	2	3	4	5	6	7

Appendix Q

SSES

Form B1

Listed below are a variety of statements. Please read each statement carefully and indicate to the right of each item the extent to which you feel it applied to you while you watched yourself sing, using the following scale:

1 Not at all Like me 2 3 4 5 6 7 Very much Like me

		Not at all like me						Very much like me
1.	I feel unsure of myself in situations like this.	1	2	3	4	5	6	7
2.	I feel uncomfortable in situations like this.	1	2	3	4	5	6	7
3.	I don't mind being the center of attention in situations like this.	1	2	3	4	5	6	7
4.	I probably care too much about how I come across to others in situations like this.	1	2	3	4	5	6	7
5.	I feel inadequate when I am in situations like this.	1	2	3	4	5	6	7
6.	I get flustered in situations like this.	1	2	3	4	5	6	7
7.	I often feel emotionally exposed in situations like this.	1	2	3	4	5	6	7
8.	I get tense just thinking about situations like this.	1	2	3	4	5	6	7
9.	I am very much afraid of making mistakes in situations like this.	1	2	3	4	5	6	7
10.	I do not blush easily in situations like this.	1	2	3	4	5	6	7
11.	I often worry about looking stupid in situations like this.	1	2	3	4	5	6	7
12.	I am concerned about what others think of me in situations like this.	1	2	3	4	5	6	7
13.	I'm afraid that things I say will sound stupid in situations like this.	1	2	3	4	5	6	7
14.	I worry about making a fool out of myself in situations like this.	1	2	3	4	5	6	7
15.	I am not easily embarrassed in situations like this.	1	2	3	4	5	6	7

Appendix R

SSGS

Form A2

The following are some statements which may or may not describe how you were feeling while you were singing. Please rate each statement using the 5-point scale below. Remember to rate each statement based on how you were feeling while you were singing.

1	2	3	4	5
Not feeling this way at all		Feeling this way somewhat		Feeling this way very strongly

	Not feeling this way at all				Feeling this way somewhat				Feeling this way very strongly
1. I feel good about myself in situations like this.	1	2	3	4	5
2. I want to sink into the floor and disappear in situations like this.	1	2	3	4	5
3. I feel remorse, regret in situations like this.	1	2	3	4	5
4. I feel worthwhile, valuable in situations like this.	1	2	3	4	5
5. I feel small in situations like this.	1	2	3	4	5
6. I feel tension about something I have done in situations like this.	1	2	3	4	5
7. I feel capable, useful in situations like this.	1	2	3	4	5
8. I feel like I am a bad person in situations like this.	1	2	3	4	5
9. I cannot stop thinking about something bad I have done in situations like this.	1	2	3	4	5
10. I feel proud in situations like this.	1	2	3	4	5
11. I feel humiliated, disgraced in situations like this.	1	2	3	4	5
12. I feel like apologizing, confessing in situations like this.	1	2	3	4	5
13. I feel pleased about something I have done in situations like this.	1	2	3	4	5
14. I feel worthless, powerless in situations like this.	1	2	3	4	5
15. I feel bad about something I have done in situations like this.	1	2	3	4	5

Appendix S

SSGS

Form B2

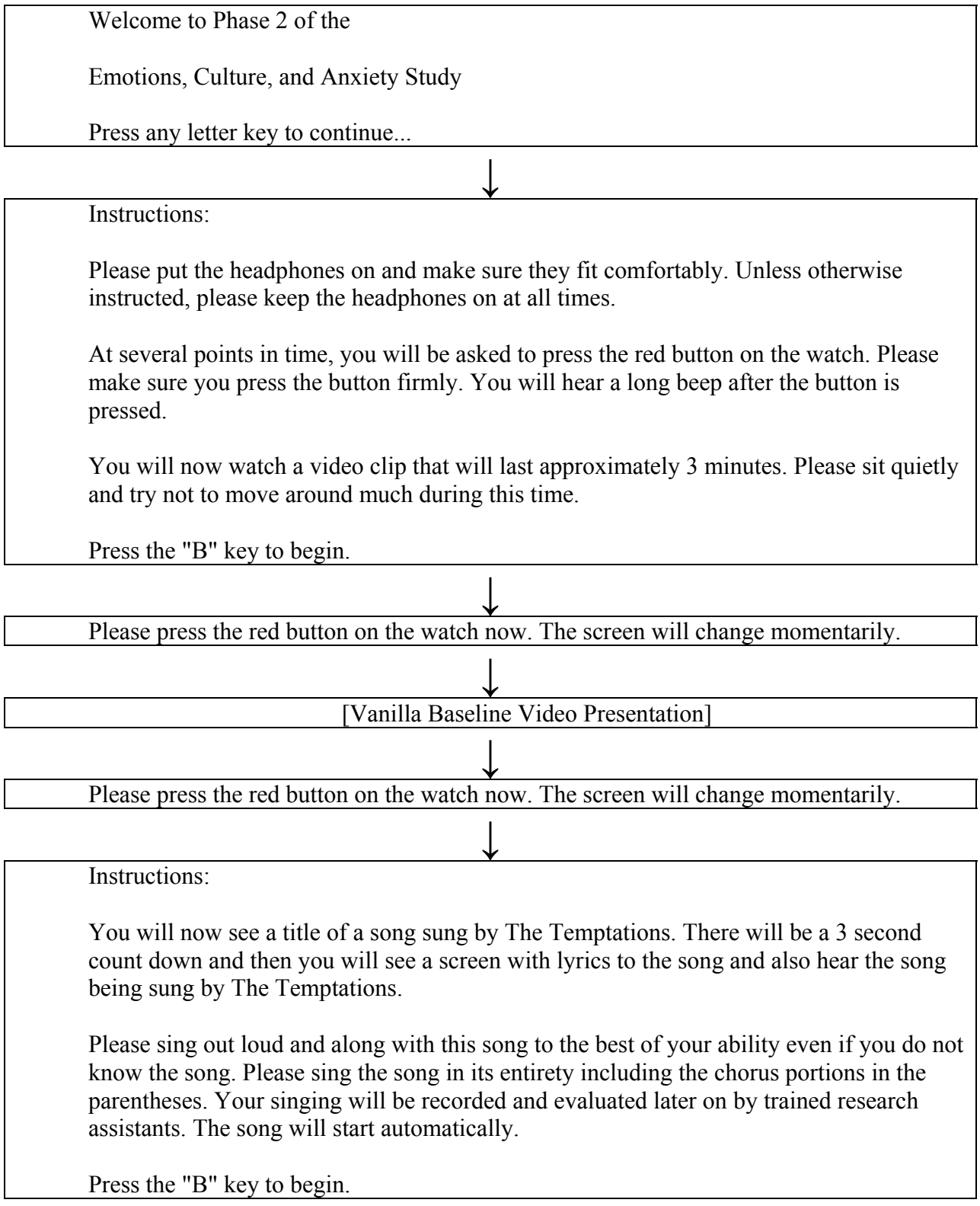
The following are some statements which may or may not describe how you were feeling while you watched yourself sing. Please rate each statement using the 5-point scale below. Remember to rate each statement based on how you were feeling while you watched yourself sing.

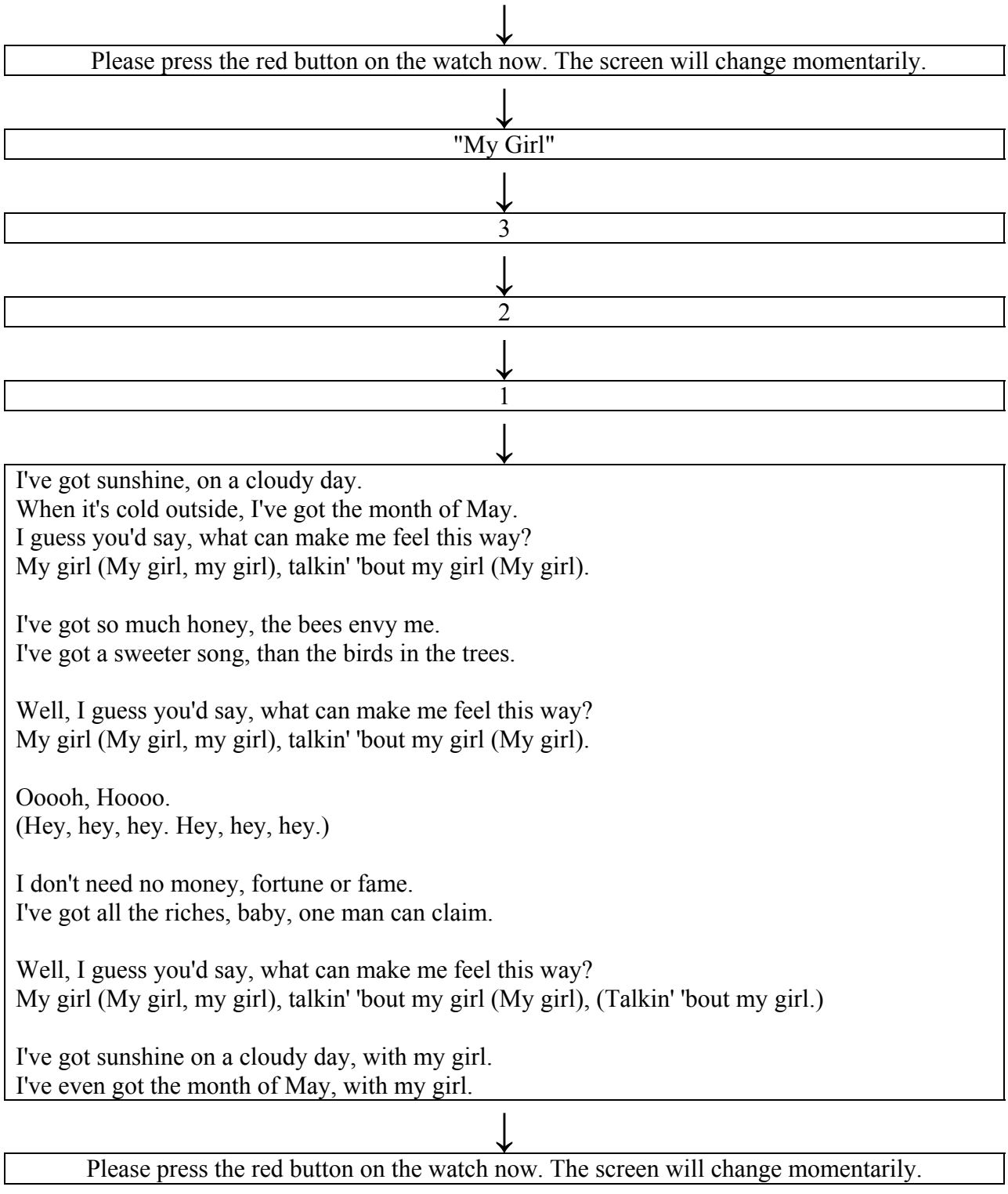
1 Not feeling this way at all
2
3 Feeling this way somewhat
4
5 Feeling this way very strongly

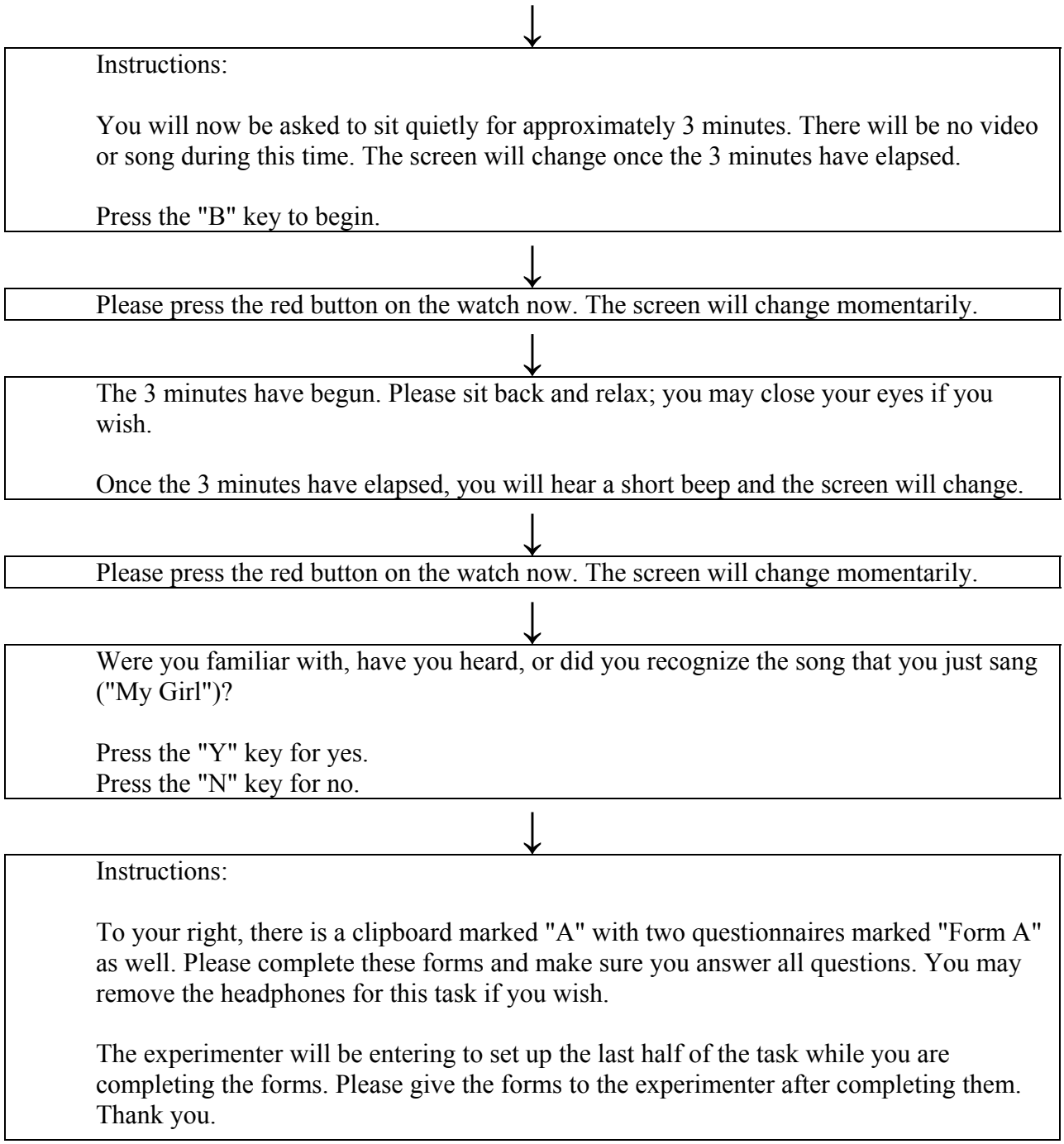
	Not feeling this way at all		Feeling this way somewhat		Feeling this way very strongly
1. I feel good about myself in situations like this.	1	2	3	4	5
2. I want to sink into the floor and disappear in situations like this.	1	2	3	4	5
3. I feel remorse, regret in situations like this.	1	2	3	4	5
4. I feel worthwhile, valuable in situations like this.	1	2	3	4	5
5. I feel small in situations like this.	1	2	3	4	5
6. I feel tension about something I have done in situations like this.	1	2	3	4	5
7. I feel capable, useful in situations like this.	1	2	3	4	5
8. I feel like I am a bad person in situations like this.	1	2	3	4	5
9. I cannot stop thinking about something bad I have done in situations like this.	1	2	3	4	5
10. I feel proud in situations like this.	1	2	3	4	5
11. I feel humiliated, disgraced in situations like this.	1	2	3	4	5
12. I feel like apologizing, confessing in situations like this.	1	2	3	4	5
13. I feel pleased about something I have done in situations like this.	1	2	3	4	5
14. I feel worthless, powerless in situations like this.	1	2	3	4	5
15. I feel bad about something I have done in situations like this.	1	2	3	4	5

Appendix T

Flowchart of Procedures for the Singing Task

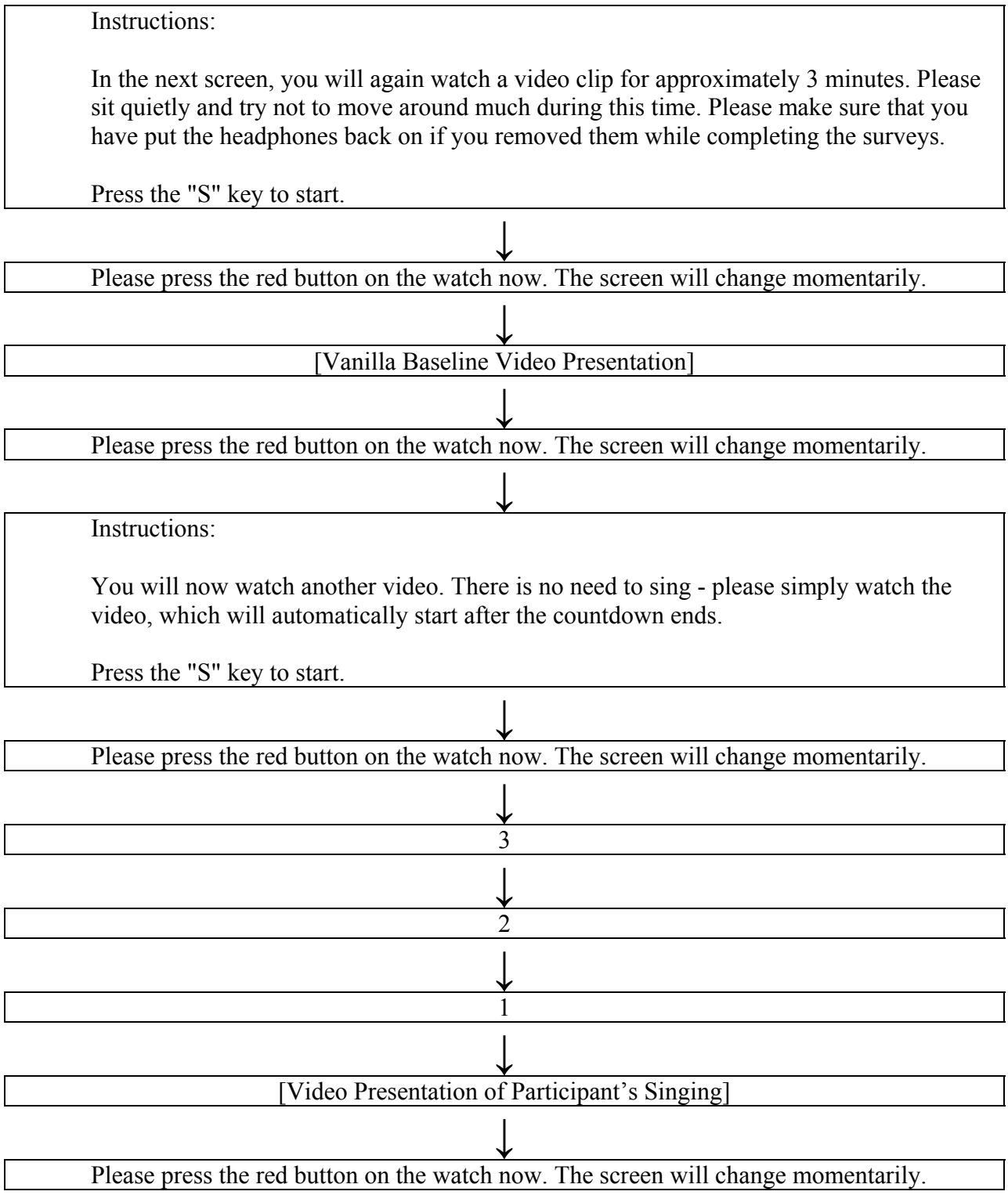


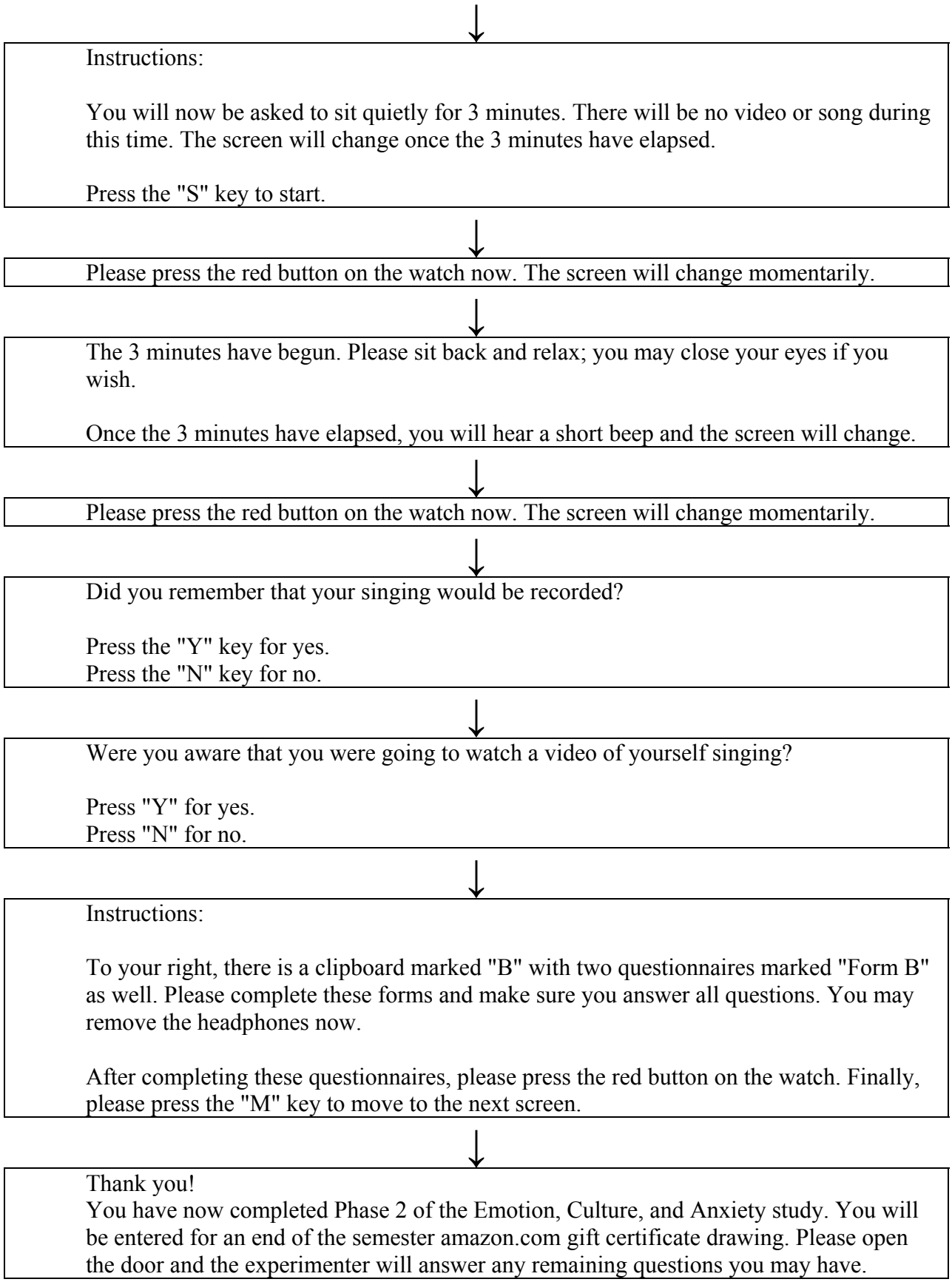

Please press the red button on the watch now. The screen will change momentarily.
"My Girl"
3
2
1
I've got sunshine, on a cloudy day.
When it's cold outside, I've got the month of May.
I guess you'd say, what can make me feel this way?
My girl (My girl, my girl), talkin' 'bout my girl (My girl).
I've got so much honey, the bees envy me.
I've got a sweeter song, than the birds in the trees.
Well, I guess you'd say, what can make me feel this way?
My girl (My girl, my girl), talkin' 'bout my girl (My girl).
Ooooh, Hoooo.
(Hey, hey, hey. Hey, hey, hey.)
I don't need no money, fortune or fame.
I've got all the riches, baby, one man can claim.
Well, I guess you'd say, what can make me feel this way?
My girl (My girl, my girl), talkin' 'bout my girl (My girl), (Talkin' 'bout my girl.)
I've got sunshine on a cloudy day, with my girl.
I've even got the month of May, with my girl.
Please press the red button on the watch now. The screen will change momentarily.


Instructions:
You will now be asked to sit quietly for approximately 3 minutes. There will be no video or song during this time. The screen will change once the 3 minutes have elapsed.
Press the "B" key to begin.
Please press the red button on the watch now. The screen will change momentarily.
The 3 minutes have begun. Please sit back and relax; you may close your eyes if you wish.
Once the 3 minutes have elapsed, you will hear a short beep and the screen will change.
Please press the red button on the watch now. The screen will change momentarily.
Were you familiar with, have you heard, or did you recognize the song that you just sang ("My Girl")?
Press the "Y" key for yes.
Press the "N" key for no.
Instructions:
To your right, there is a clipboard marked "A" with two questionnaires marked "Form A" as well. Please complete these forms and make sure you answer all questions. You may remove the headphones for this task if you wish.
The experimenter will be entering to set up the last half of the task while you are completing the forms. Please give the forms to the experimenter after completing them. Thank you.

Appendix U

Flowchart of Procedures for the Watching Task




Instructions:
You will now be asked to sit quietly for 3 minutes. There will be no video or song during this time. The screen will change once the 3 minutes have elapsed.
Press the "S" key to start.
Please press the red button on the watch now. The screen will change momentarily.
The 3 minutes have begun. Please sit back and relax; you may close your eyes if you wish.
Once the 3 minutes have elapsed, you will hear a short beep and the screen will change.
Please press the red button on the watch now. The screen will change momentarily.
Did you remember that your singing would be recorded?
Press the "Y" key for yes.
Press the "N" key for no.
Were you aware that you were going to watch a video of yourself singing?
Press "Y" for yes.
Press "N" for no.
Instructions:
To your right, there is a clipboard marked "B" with two questionnaires marked "Form B" as well. Please complete these forms and make sure you answer all questions. You may remove the headphones now.
After completing these questionnaires, please press the red button on the watch. Finally, please press the "M" key to move to the next screen.
Thank you!
You have now completed Phase 2 of the Emotion, Culture, and Anxiety study. You will be entered for an end of the semester amazon.com gift certificate drawing. Please open the door and the experimenter will answer any remaining questions you may have.

Appendix V

Behavioral Coding for Self-Conscious Emotions

Instructions: Place check mark next to segment when behavior is observed. After coding, watch the segment one more time and then rate the extent to which you think the subject was embarrassed.

Behavior:	Check if behavior observed during 1 minute interval	Comments:
1. Blushing		
2. Looking away/gaze aversion		
3. Eyes restless or wavering		
4. Touching/covering (part of) face		
5. Smile controls		
6. Small body posture		
7. Lowering or dropping head		
8. Trembling		
9. Pursed lips		
10. Closing eyes		
11. Furrowed brows		
12. Laughing or giggling		
13. Grimacing		
14. Licking lips		
15. Negative vocalizations		
16. Other:		
17. Other:		

Circle Overall Embarrassment Rating:	**None**	**A Little**	**Some**	**A Lot**	**Very Much**
	1	**2**	**3**	**4**	**5**

Definition of embarrassment from Macmillan Dictionary: A feeling of being nervous or ashamed because of what people know or think about you.

Appendix W

Descriptions of Behaviors to Code

Descriptions of Behaviors to Code (rev. 6/15/10)
1. Blushing: Face turning into red-like color; if face is already red, see if color in face changes
2. Looking away/gaze aversion: Momentarily shifting gaze away from stimulus
3. Restless eyes or wavering: Continuously shifting eyes from place to place (eyes moving frequently), avoid watching stimulus but head tends to stay in place facing the stimulus
4. Touching/covering (part of) face: Often obscures smile or hides the eyes, can include other behaviors that can cover or touch face
5. Smile controls: Attempt to pull down corners of mouth, biting or pressing lips together to minimize imminent smile
6. Small body posture: Body posture turning small, as if to curl up to make the body appear smaller
7. Lowering or dropping head: Lowering or dropping the head in disgust or disapproval
8. Trembling: Nervous shaking or quivering; can be verbal as well
9. Pursed lips: Contract and puckering the lips; tightening of lips (pressed together) that is not a smile control
10. Closing eyes: Shutting eyes to prevent self from seeing stimulus
11. Furrowed brows: Tightening and/or lowering of brows that can result in forehead wrinkling
12. Laughing or giggling: Does not necessarily have to include vocalized laughter
13. Grimacing: Squinting of eyes and raising of check muscles in an expression of disgust, disapproval or pain
14. Licking lips: Using tongue to moisten lips, may occur briefly; licking/rolling lips inward, tongue may not be visible
15. Negative vocalizations: Any negative verbalization that indicates subject's negative state; does not include throat clearing
16. Other behaviors: Sticking tongue out, shaking head sideways (shake head “no”), sighing, heaving breathing, gratuitous movements (playing with pen, hair, twirling headphone cord, etc.) among others.