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An Investigation of Online Communication and Shyness

Julie Desjardins
University of Ottawa

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School of Psychology
Faculty of Graduate and Postdoctoral Studies
University of Ottawa

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Abstract

Shy children often have difficulty communicating; however, it is not clear whether these difficulties stem from a skills deficit or from an anxiety-driven performance deficit. Therefore, the present study examined how shy children's communication skills differed from those of average, non-shy children, using the Internet as a medium for social communication. It was hypothesized that shy children may be more reticent than average children to initiate conversation in a novel situation. However, over time shy children were expected to become more comfortable in discussions with their on-line partner and to become less anxious as they acknowledge the anonymity of chat groups. This study also investigated potential changes in negative effects associated with shyness over time. Fifteen shy children (Mean shyness score=72.3; SD=6.43) and 15 average children (Mean shyness score=53.7; SD=5.6) participated in the 10 MSN conversation groups. Children were also given a series of questionnaires prior to and after the 10 sessions. Results from this study suggest that shy children communicate in a similar manner to their average partners when online. Results also suggest that shy children had higher levels of social anxiety than average children before beginning an online conversation with an unknown partner. However, by the end of the 10 sessions, their anxiety had been significantly reduced. No other changes or differences in psychological functioning were noted between shy and average children.

Introduction

Shy children are disadvantaged as compared to children who display aggressive and other externalizing problems, because the maladaptive behaviours of shy children are not overt. Because their behaviours are not disruptive to others, the problems experienced by shy children are often not detected by researchers, teachers, and peers. This poses a significant challenge, because it is important to identify children who are shy, and to ultimately intervene so that potential negative outcomes associated with prolonged shyness can be avoided (e.g., Anderson, 1994; Beer, 2002; Ialongo, Edelsohn, Werthamer-Larsson, Crockett, & Kellman, 1995). Most intervention programs for shy children focus on teaching the skills needed in specific social contexts. Conversation is an essential component to social skills, and shy children often have difficulty communicating. However, at this point, it is not clear whether these difficulties stem from a skills deficit or from an anxiety-driven performance deficit. Is it that shy children lack the skills needed to initiate and maintain conversations, which is why they have communication difficulties? Or, do shy children have the skills needed to communicate but fail to actively use their skills because of their anxiety in face-to-face situations? Given these unanswered questions, it would be useful to study how shy children communicate, as compared to average children, in order to identify where the problem lies. This information could then facilitate the creation of more effective intervention plans.

Online communication over the Internet may provide a novel method to study the communication skills of shy children, as this medium may remove much of the

fear associated with face-to-face communication. The present study examined how shy children's communication skills differed from those of average, non-shy children, using the Internet as a medium for social communication. Online communication may also provide opportunities to engage with same-aged peers, which could potentially reduce some of the negative effects associated with shyness (i.e., loneliness, anxiety, etc.) and enhance shy children's social relationships (Schneider & Amichai-Hamburger, 2010). Therefore, the second goal of this study was to investigate potential changes in negative effects associated with shyness over time.

What is Shyness?

Shyness has been defined in a number of ways, including the following: a) the feeling of uneasiness restricted to social situations (Van Ameringen, Mancini, & Oakman, 1998); b) social anxiety and interpersonal inhibition resulting from the prospect or presence of interpersonal evaluation (Leary, 1986); c) a fear of strangers and a fear of social evaluation (Asendorpf, 1993); and d) a negative reaction when seeing a stranger or casual acquaintance characterized by tension, concern, feelings of awkwardness and discomfort, and lack of direct eye contact (Cheek & Buss, 1981). The key element of all four of these definitions is that shyness is a social response characterized by interpersonal anxiety. Although the term shyness is sometimes used interchangeably with the term social withdrawal, the two are not synonymous. According to Rubin and Coplan (2004), social withdrawal is an umbrella term that is used to describe children who remove themselves from social situations. Although some children remove themselves because of fear and anxiety, others are socially

disinterested and prefer to play alone (Coplan & Rubin, 2010). The current study was not concerned with such socially disinterested children, focusing instead on those who experience social anxiety in social interactions.

Shyness and Self-consciousness

Self-consciousness is the belief that you are the object of others' attention. According to Crozier (2010), excessive self-consciousness becomes central to shyness in childhood. Shy children lack self-efficacy in social situations (Hill, 1989) and engage in negative self-talk while in conversations with others (Bruch, 2001). So why do shy children develop excessive self-consciousness? Crozier (2010) proposed two explanations for the development of self-consciousness in shyness. First, shy children may develop low self-esteem as a result of their negative social experiences with other children. Crozier (2010) argues that, because children are evaluated by their peers, their withdrawal behaviours may be perceived as a deviation from the norm, which could lead to the shy child's being unpopular or rejected by peers. If shy children are rejected, they may feel less confident about their social skills and also have fewer opportunities to practice and gain new social skills (Crozier, 2010). Second, shy children's emotional reactions may be more negative and more intense than those of their non-shy peers (Kagan, 2001). Therefore, Crozier (2010) argues that they may engage less in social interaction because of an intense fear of criticism and rejection. Engaging in fewer social interactions may result in shy children doubting their social skills and becoming self-conscious as they lack the sense of mastery in social encounters.

A heightened self-consciousness among shy children may also negatively influence their goal-directed behaviours (Carver & Scheier, 1986). They may then be at a disadvantage in performance situations, as their self-consciousness may prevent them from communicating effectively. However, if there were a situation where self-consciousness could be lessened, it might very well be that shy children could communicate more effectively.

Shyness and Gender

Although both boys and girls can be shy, shyness is viewed by parents as more socially acceptable in girls than in boys (Coplan & Armer, 2007). Indeed, parents have been found to respond differently to shyness in their sons and daughters: shyness in girls is more likely to be rewarded and praised by parents, whereas in boys it is more likely to be discouraged (Engfer, 1993). Shy preschool-aged boys are more likely to display problem behaviours in school and to be excluded by peers than are similar aged girls (Coplan, Prakash, O'Neil, & Armer, 2004; Stevenson-Hinde & Glover, 1996). Despite these gender differences, it appears that shyness remains relatively stable across time for both boys and girls (Rubin & Coplan, 2004).

Shyness and Psycho-Emotional Maladjustment

Although many children experience some degree of shyness in certain situations, some children show extreme and persistent shyness that can lead to a variety of disorders (Rubin, Bukowski & Parker, 2006). For example, shy children are more likely to report negative emotions and to function more poorly at school than non-shy children (e.g., Anderson, 1994; Bohlin, Hagekull, & Andersson, 2005;

Ialongo, Edelsohn, Werthamer-Larsson, Crockett, & Kellmam, 1995). Consistent with Leary's (1986) notion that shyness entails the preoccupation with interpersonal evaluation, Zimbardo (1982) suggested that one of the underlying causes of shyness is unrealistic personal standards. In fact, shyness has been found to be associated with socially prescribed perfectionism (Flett, Hewitt, & De Rosa, 1996). These expectations can contribute to a variety of negative consequences associated with perfectionism, such as poor psychosocial adjustment, loneliness, and low levels of social self-esteem (Flett et al., 1996). These high standards set by shy individuals can also impede their ability to converse and socialize. For example, Manning and Ray (1993) suggest that shy individuals often lack interpersonal skills because they have difficulty initiating and transitioning conversation with appropriate statements and questions. These difficulties may stem from their negative thoughts, which interfere with their ability to converse for the sake of communicating.

Furthermore, in adulthood shy individuals report fewer friendships and romantic relationships than do those who are not shy (Meleshko & Alden, 1993; Nelson et al., 2008; Paulhus & Morgan, 1997). They also report less satisfaction with their friendships and less support from their friends (Joiner, 1997; Jones & Carpenter, 1986). Because shy adults have both fewer friends and a lower perceived quality of friendships, they may be less likely to gain the benefits associated with friendships. If these difficulties are found in shy adults, it is quite probable that similar problems are experienced by shy children. Indeed, as Rubin and Coplan (2004) have suggested, the social withdrawal and lack of social interaction that often accompany shyness can

interfere with shy children's developing social and social-cognitive skills. In addition to these negative outcomes, shyness has also been associated with negative psychological outcomes such as anxiety and depression (e.g., Boivin, Hymel & Bukowski, 1995; Burgess & Younger, 2006; Fordham & Stevenson-Hinde, 1999; Prior, Smart, Sanson, Oberklaid, 2000).

Shyness and anxiety. Much research involving shyness in children has investigated the social implications and future adjustment of shy children (e.g., Coplan et al., 2001). A number of studies have also examined the association between shyness and psychopathology such as anxiety and depression. For example, Coplan, Rubin, Fox, Calkins, and Stewart (1994) compared "reticence," which is the display of onlooking behaviours and unoccupied play often observed in shy children, to two other types of solitary play not associated with social anxiety -- solitary-passive behaviour and solitary-active behaviour. Reticence was found to be significantly associated with anxiety disorders, whereas the other forms of non-anxious solitary activity were not.

Similar findings were also reported by Prior and associates (2000) who examined longitudinally the correlation between behavioural inhibition and later anxiety. Behavioural inhibition refers to a temperamental characteristic characterized by a fear of novelty, that many researchers believe may lead to shyness and social anxiety (e.g., Kagan, 1997; Prior et al., 2000). Prior and associates (2000) followed longitudinally 2443 infants who were identified as behaviourally inhibited on the basis of parent ratings of 1 SD or more from the mean on a variety of measures of

inhibition, such as the approach-sociability temperament factor from the Short Temperament Scale for Infants. The researchers discovered that a large number of the behaviourally inhibited infants in their sample developed anxiety problems at 13 to 14 years of age. This was especially true for girls, with 20.5% of inhibited girls aged 13-14 years being diagnosed with an anxiety disorder, compared to 12.9% of inhibited boys in the same age range.

Other studies have also found that behavioural inhibition in childhood is related to adolescent social phobia (e.g., Hayward, Killen, Kraemer, & Taylor, 1998). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR), social phobia is characterized by “a marked and persistent fear of social or performance situations in which embarrassment may occur” (American Psychiatric Association, 2000, p.411). Those who are diagnosed with social phobia are more likely to have poorer quality of relationships, friendships, and health (Bech & Angst, 1996). Van Ameringen, Mancini, and Oakman (1998) reported that individuals with social phobia score higher on measures of shyness, such as the Revised Shyness Scale (RCBSHY; Cheek and Melchoir, 1990) than do people with other forms of anxiety disorders, such as obsessive-compulsive disorder or panic disorder. This does not imply that shyness causes social phobia; however, as one would expect, the correlation between shyness and social phobia exists (e.g., Van Ameringen et al., 1998).

Shyness and depression. The association between shyness and depression has also received considerable research attention. Shy adults have more negative

thoughts and fear negative evaluation by others more than do non-shy adults (Johnson, Petzel, & Johnson, 1991). Indeed, the attributional styles of shy individuals have been found to overlap with those of people who are depressed (Johnson et al., 1991). In view of this evidence suggesting that people who are shy may have dysfunctional cognitions, it is not surprising that shy college students have been found significantly more likely to be depressed and to display negative attributional styles than students who are not shy (Alfano, Joiner, & Perry, 1994). In fact, Burgess and Younger (2006) found that socially withdrawn preadolescents endorsed more negative and fewer positive adjectives as a self-descriptive than did both aggressive children and non-deviant controls; a pattern not dissimilar than that reported in previous research with depressed individuals. Furthermore, the withdrawn children studied by Burgess and Younger (2006) reported more depression and anxiety on the Youth Self Report (Achenbach, 1991). Likewise, Murberg (2009) found that shy adolescents are more likely to become depressed than are their non-shy counterparts.

Shyness and Physical Illnesses

Shy children report feeling unwell more often than do non-shy children. Indeed, parents observe symptoms of unwellness in their shy children more often than do the parents of non-shy children (Chung & Evans, 2000). Murberg (2009) also found a significant relationship between shyness and somatic symptoms in adolescents, while other researchers have found several types of illnesses associated with shyness. Chung and Evans (2000) found that shy children experience more gastrointestinal upset such as nausea, vomiting, diarrhea, constipation, and cramps,

than do non-shy children. Similarly, Burgess and Younger (2006) found that withdrawn preadolescents reported more headaches, stomachaches, fatigue, and nausea than did their non-withdrawn peers. These studies suggest a higher incidence of physical symptoms of anxiety in shy children. In addition, Wamboldt, Schmitz, and Mrazek, (1998) found that there is a shared genetic risk between internalizing behaviour and a person's immediate reaction to an allergen (referred to as *atopy*). Bell, Jasnoski, Kagan, and King (1990) also argue that shy young adults are more vulnerable to specific types of allergies, such as environmental allergens and irritants, and have a higher prevalence of atopic allergies than do non-shy young adults. These researchers also found that shy children had significantly higher levels of fatigue and hay fever (seasonal allergic rhinitis) than did non-shy children (Bell et al., 1990).

Henriksen and Murberg (2009) posit a couple of potential theoretical explanations for the association between shyness and physical illness. First, it may be that shy children develop more illnesses because of the anxiety experienced in social situations, which can have an impact on their immune system. Second, shyness in adolescents can contribute to school-related stress, which can in turn lead to somatic complaints. An alternative explanation may be that shyness and illness are both manifestations of a third factor, a highly responsive autonomic nervous system, which may lead to anxiety and/or psychosomatic illnesses.

Shyness and Communication

In addition to the negative factors directly related to shyness, shy children may also engage in behaviours that inadvertently exacerbate these negative factors.

Researchers have found that shy children often experience an approach-avoidance conflict (Coplan et al., 2004). That is, they would like to approach and communicate with their peers, but their anxiety and fear of social evaluation prevent them from doing so. As a result, shy children feel conflicted between their wants (i.e., to approach other children) and their fears (i.e., their avoidance) which may create even more anxiety and distress for these children.

Also, the way in which shy children communicate could be problematic. Some researchers have speculated that shy children may have deficits in language abilities. Landon and Sommers (1972) found that shy children scored lower on measures of articulation, expressive morphology, and receptive syntax compared to non-shy individuals. Other studies have found that shy children engage in less sophisticated speech, produce fewer complex sentences, and display poorer expressive language skills than do non-shy children (e.g., Spere, Schmidt, Theall-Honey, & Martin-Chang, 2004; Van Kleeck & Street, 1982).

Meleshko and Alden (1993) have found that shy children tend to use self-protective responses during conversations more than do non-shy children, which can be perceived by other children as defensiveness. Shyness has also been found to be related to discomfort in social interactions (Garcia, Stinson, Ickes, Bissonnette, & Briggs, 1991), which can contribute to poor communication with others. In addition, Asendorpf and Meier (1993) found that although shy children talk as much with very familiar people as do their non-shy peers, they talk less than non-shy children when the situation is moderately unfamiliar. Shy children also spend less time in

conversations as compared to more sociable children and tend to use shorter utterances (Asendorpf & Meir, 1993; Van Kleeck & Street, 1982). Evans (1996) also found that, because of their fear of social evaluation and performance, shy children have fewer opportunities to converse with others, which could potentially hinder the development of their communicative abilities. Taken together, these studies suggest that shy children engage less in social conversation than non-shy children. In fact, Spere and associates (2004) have argued that the lack of verbal communication is a feature of shyness. Shy children's lack of communication is also apparent to their peers: In interviews with children from grades 1 through 7, Younger, Schneider and Guirguis-Younger (2008) found that the most common characteristic of shy individuals mentioned by children was "not talking."

These studies all suggest that shy children engage in less conversation than do their non-shy peers. The underlying assumption would appear to be that their high levels of social anxiety are at the root of this communication reticence. It would be interesting, therefore, to see whether shy children communicate more or better if their anxiety could be lowered through removing the face-to-face aspect of conversation.

In an attempt to understand language skills of shy children as compared to non-shy children from a qualitative perspective, Spere, Schmidt, Theall-Honey and Martin-Chang (2004) compared 22 shy and 22 non-shy 4-year olds in terms of receptive and expressive language skills using standardized measures. Although the shy children performed more poorly than non-shy children on both measures, their performance was actually within the average range (and their non-shy peers

performed significantly above the average range). Other studies have found that shy children's communication problems may be related more to expressive language than to receptive language (Coplan, Wichmann, & Lagacé-Séguin, 2001; Crozier & Perkins, 2002). However, anxiety may play a role in these communication problems. Further research is needed to assess shy children's expressive language skills in situations where their anxiety and fear of social evaluation could be reduced.

Although many studies have found differences in how shy children communicate compared to other children, a major criticism is that shy children are often compared to extreme non-shy children (Coplan & Evans, 2009). Results from many studies may, therefore, be indicative of extreme variability rather than general performance across a continuum. Coplan and Evans (2009) have also suggested that being extremely non-shy may be beneficial to language development and performance. A better procedure, therefore, would be to compare shy children to average, rather than extremely non-shy, children.

Another major criticism in the literature is that most studies examining the communication of shy children use assessments of vocabulary (see Evans, 2010 for a complete review). Although studying vocabulary provides some insight into how shy children communicate, it does not address other aspects of discourse (e.g., social cues, number of utterances, asking questions, etc.). Given the limitation of previous research, Evans (2010) recommended that future studies should consider syntactic and pragmatic aspects of language.

Despite the abundant and ongoing research examining shyness and communication, most traditional interventions for shyness have remained relatively unchanged and do not take into account communication difficulties of shy children.

Traditional Interventions for Shy Children

As previously discussed, there may be a number of negative consequences associated with prolonged shyness. However, since many of the symptoms of shyness are not overt, shy children comprise a group that has often tended to go untreated (Greco & Morris, 2002). Traditional interventions for shyness have focused primarily on behavioural and cognitive-behavioural therapies, which include exposure approaches and social skills training (see Greco & Morris, 2002 for a complete review).

Traditional interventions usually involve a combination of social skills training and exposure to anxiety-producing social interactions (Spiegler & Guevremenont, 1998). For example, shy children may be taught a set of social skills and then asked to practice their acquired skills with their peers until they feel comfortable performing the tasks (Greco & Morris, 2002). Social skills training focuses on teaching children a set of skills which may include verbal and non-verbal communication and problem-solving techniques. Such skills are then rehearsed and often practiced in group format, often with other shy children (Erwin, 1993).

In a review of the literature of treatments for shyness, Greco and Morris (2002) noted that exposure therapies and social skills training offer short-term benefits and improve peer relations and social withdrawal. However, according to

Greco and Morris (2002) there is a lack of support for long-term generalization. Furthermore, these skills are specific to the context and may not extend beyond the boundaries of the training situation, providing limited generalization. Therefore, to increase the applicability of the skills developed, shy children may benefit from interventions that involve developing their own set of skills for interacting in social situations. However, as discussed earlier, shy children fear face-to-face communication and try to avoid such encounters. As a consequence, they tend to avoid the very situations that might allow them the opportunities to develop necessary social skills.

In recent years, however, the increasing use by children of the Internet, and specifically on-line chat groups, has opened up an entirely new mode of interacting that could serve as a promising method for shy individuals to acquire some of these needed interactional skills. Since it entails no actual face-to-face encounter, online chatting may be less threatening. Also, since they can remain anonymous, children may have less fear of social evaluation in such online chatting. Therefore, the development and practice of interactional skills within such a nonthreatening environment could help shy children become sufficiently confident in their skills to apply them in other social contexts.

Benefits and Consequences of Computer Use

Online communication is an appealing method by which to study social skills in shy children, as it minimizes the fear associated with face-to-face interaction. Furthermore, given its increased use by children over the last decade, the Internet is a

tool that most children feel comfortable using. In 2005, the number of children between the ages of 12 and 17 years who reported going online reached 87% with 51% saying they log on daily (Lenhart, Rainie, & Lewis, 2001). Although the Internet was once reserved for more privileged populations, the rise of internet cafés and easy access to the Internet in public libraries have allowed more individuals the opportunity to use the Internet. There has also been an increase in Internet access in the home. A recent national survey found that 94% of homes in Canada have a computer and access to the Internet (Media Awareness Network, 2005).

Many researchers claim that online communication offers various benefits. As far back as 1995, Scharlott and Christ (1995) found that computer-mediated adult dating could assist shy individuals in overcoming their inhibitions. Morahan-Martin and Schumacher (2003) argue that online communication can reduce self-consciousness and social anxiety and can thereby facilitate the development of friendships. Other studies have found that Internet use can help build and maintain interpersonal communication and social relationships, can increase academic performance, and has immediate effects on cognitive skills such as spatial, iconic, and attention skills (e.g., Lee & Sun, 2009; McMahon & Duffy, 1993; Subrahmanyam et al., 2001). Similarly, Sheeks and Birchmeier (2007) found that computer-mediated communication can provide shy individuals with a medium for self-exploration, and can positively affect the development of interpersonal relationships.

In a study by Morahan-Martin and Schumacher (2003), undergraduate students were assessed for both loneliness and frequency of Internet use. Results

revealed that lonely students were more likely to use the Internet than were their non-lonely cohorts, and were also more likely to make friends online and to report greater satisfaction with online friends.

The Internet has also been used in the treatment of social anxiety. Titov and associates (2008) conducted an online treatment program for social phobia and reported significant benefits. These researchers concluded that their results were comparable to the results from certain face-to-face treatment programs for social phobia.

While the potential benefits of Internet use for lonely individuals are clear, Internet use has also been found to contribute to potentially negative outcomes in some instances. For example, lonely individuals may be more likely to turn to the Internet to reduce their negative moods (Morahan-Martin & Schumacher, 2003). This coping strategy could become problematic if individuals consistently avoid their negative feelings. In this case, the Internet becomes a distraction rather than a tool for helping the individual understand and manage negative affect.

Another potential problem associated with Internet use is that it has the potential to lead to interferences with daily life functioning (Morahan-Martin & Schumacher, 2003). Chak and Leung (2004) have found that shy individuals in particular are more likely to develop an “addiction” to Internet use. As with any other social activity, if children associate positive feelings with their activity, they are likely to engage in that activity more often. For example, participation in sports can make children feel good as it increases self-esteem, moral development, and academic

achievement (Perry-Burney & Takyi, 2002). However, despite these advantages, sports participation, if excessive, could potentially interfere with schoolwork, family life, and other aspects of daily life functioning. Nevertheless, children are generally encouraged to participate in sports and other recreational activities, as the benefits of such participation usually outweigh the costs. Similarly, Internet use may also provide a greater ratio of potential benefits to negative consequences, especially for shy children.

Finally, some researchers have suggested that the Internet could lead to problems in adults such as depression, social isolation, family problems, and work related problems (Sanders, Field, Diego & Kaplan, 2000; Young & Rogers, 1998). However, these negative outcomes tend to be associated with excessive use of the Internet and are less likely to develop if Internet use is monitored and regulated.

In sum, despite some potential drawbacks, the Internet has the potential to be a valuable tool that may help shy children to develop friendships and may also aid researchers to understand how such shy children create these friendships. Furthermore, internet-based interaction may also help reduce negative feelings associated with shyness, such as loneliness, low levels of social self-esteem, and lack of comfort in social situations.

Computers and Shyness

While it appears that shy children may be likely to turn to the Internet, the direct association between shyness and the use of the Internet is an area that has only recently begun to gain research attention. Online communication has been found to

be an effective means of communication for shy individuals. It removes some of the perceived threatening factors associated with face-to-face communication, such as time constraints in preparing messages, and direct observation by others (Carducci & Zimbardo, 1995). Furthermore, according to Roberts, Smith and Pollock (2000), shy individuals are less inhibited when communicating online as opposed to face-to-face conversations. Building on this research, Stritzke, Nguyen and Durkin (2004) advance a self-presentation theory, which suggests that the online environment may prevent shy individuals from detecting negative or inhibitory cues. Being less inhibited, shy individuals may be more likely to develop more relationships online (Roberts et al., 2000). Therefore, it is possible that online communication may enable shy children to practice communication and social skills, and may perhaps reduce negative consequences associated with prolonged shyness.

Birnie and Horvath (2002) assessed the relation between Internet social communication and social behaviours, sociability, and shyness in undergraduate university students. Results revealed that, for non-shy individuals, online communication is similar to traditional social behaviour, which was defined as social contacts and interpersonal interactions such as face-to-face interactions or talking over the telephone. In essence, both sociability and reported frequency of traditional social behaviours were positively associated with communication via the Internet. Shy individuals, however, were significantly more likely to engage in social interaction over the Internet than when using more traditional forms of communication, such as face-to-face interaction or speaking on the telephone. These

results suggest that shy individuals are more comfortable communicating when their identity is concealed. By eliminating the fear associated with communicating with others via traditional forms of communication, many shy individuals are more able to demonstrate adequate social skills. This study raises the question of whether shy individuals display more of an anxiety-related *performance* deficit when communicating face-to-face than a *skills* deficit.

Orr, Sisic, Ross, Simmering, Aresenault and Orr (2009) studied the use of the popular social networking site, Facebook, and found that although shy undergraduate students had fewer online “friends” than did non-shy participants, shy participants reported using Facebook more often and reported more positive attitudes toward Facebook than did the non-shy participants. Orr and associates (2009) suggest that Facebook appeals to shy individuals specifically because of the lack of verbal and non-verbal cues associated with face-to-face interactions.

If a shy child lives in an environment where the Internet is readily accessible and uses the Internet as a means of finding friends through chat groups and social networking sites, electronic media may enhance his or her social relationships (Schneider & Amichai-Hamburger, 2010).

In order to study the social and communicative effects of face-to-face communication, Brunet and Schmidt (2007) paired 60 undergraduate students between the ages of 17 and 23 with someone they did not know. They then asked the students to communicate online in two separate conditions: 1) 15 dyads were asked to communicate online with a webcam and 2) 15 dyads communicate online without a

webcam. Students engaged in one free chat session and their sessions were then coded for total number of words, mean word count per turn, number of questions, and number of self-disclosures. Brunet and Schmidt (2007) found that students who described themselves as shy revealed less about themselves when the webcam was present. However, once the webcam was removed, there was essentially no difference in communication between shy and non-shy individuals. Results from this study suggest that shyness may be context specific and anxiety may be lessened when visual contact is removed.

It may be possible that online communication could offer some protection against the possibility of developing some of the negative consequences associated with prolonged shyness and withdrawal. Furthermore, early exposure to online communication may increase comfort and confidence with social skills children have acquired over the Internet. As previously mentioned, shy individuals often lack interpersonal skills because they have difficulty initiating and transitioning conversation with appropriate statements and questions (Manning & Ray, 1993). If shy children are able to practice these skills in a non-threatening manner, they may gain confidence in their skills. Furthermore, if shy children feel they are capable of creating and maintaining friendships over the Internet, they may gain more confidence in their abilities and feel more comfortable in other social settings (McKenna & Bargh, 2000). Other forms of computer-based media (e.g., virtual reality) have been used to help individuals overcome anxiety disorders including fear of heights and fear of flying (Rothbaum & Hodges, 1999). In these studies,

individuals with specific phobias are exposed to the feared stimulus. Although a direct parallel for shy children would be to expose them to other children in a virtual face-to-face encounter with other children, chat groups may provide sufficient exposure to some less threatening aspects of their fear hierarchy and successful completion of the group may provide them with confidence to take more risks. As a result, shy children might become more successful in developing friendships both online and potentially in other arenas after having been exposed to a positive social experience. Their success may contribute to experiencing some of the benefits associated with friendships and reduce some of the negative factors associated with shyness, such as loneliness.

In addition to the potential benefits associated with online communication, chat groups may also allow us to better understand how shy children initiate conversations as compared to non-shy children. Although no research has investigated specifically how shy children initiate conversations, researchers have looked at general patterns of initiating conversations displayed by children. Maynard and Zimmerman (1984) found that conversations of non-acquainted individuals typically began with a question and answer. These question-answers were broken down into two categories: (1) categorization-sequence and (2) category-sequence. Maynard and Zimmerman explained that the categorization-sequence referred to a membership of a particular group, such as your grade in school; whereas the category-sequence elicited an elaboration of the categorization-sequence, such as the

subjects taken in school. These results provide guidelines to the process of the initiation of typical conversation.

Few studies have explicitly investigated online communication and shyness. Of the few studies that have done so, none has examined how online communication could potentially reduce negative consequences associated with shyness in children. Furthermore, no research has studied the Internet as a means of exploring how shy children initiate conversations and communicate with others.

The Present Study

The primary goal of this study was to investigate the means by which shy children, as compared to average children, initiate and maintain conversations with others. Internet chat groups provided an optimal method to assess conversations, as chat groups are less invasive than direct face-to-face conversations. Initially, it was hypothesized that shy children may be more reticent than average children to initiate conversations in a novel situation. However, over time shy children were expected to become more comfortable in discussions with their on-line partner and to become less anxious as they acknowledge the anonymity of chat groups.

Children were asked to participate in two weekly 30-minute chat sessions over a five-week period. The use of such a time-defined session is valuable in that it differs from most other “real-life” social situations. In these 30-minute sessions children could not easily leave if they got nervous or bored (unless their anxiety became too severe), as they might in a real-life encounter. Such a situation may

encourage shy children to continue communicating, when they might normally have engaged in an anxious avoidance response.

Findings of research investigating the conversations of shy children in face-to-face interactions indicate that such children are more likely than non-shy children to display greater delay in the initiation of conversation in unfamiliar contexts, to make fewer remarks, to use less sophisticated speech, to produce fewer complex sentences, to use more self-protective responses, and to spend less time overall in conversation. However, these findings are based on face-to-face interactions. The ways in which shy children communicate when that threat is removed have yet to be examined. Therefore, in the present study, children's online conversations were recorded and coded at the end of each session for the following variables derived from the *Manual for Family Discourse* (Condon, Cooper, & Grotevant, 1984): irrelevant comments, direct suggestions, indirect suggestions, requests information, requests action, initiates compromise, agreement, direct disagreement, indirect disagreement, answers request for information, complies with request for action, acknowledgement, relevant comments, dictates feelings, length of time before first response, length of time before reply, total number of utterances, number of self-disclosure statements, and number of statements relating to the other person.

It is also important to note that previous studies have compared shy children to extremely non-shy children (Coplan & Evans, 2009). As discussed, this comparison may be indicative of extreme variability. Therefore, another important

feature of this study was to compare shy children, not to extremely non-shy children, but instead to a group of average children.

The second goal of this study was to examine the association between online communication and negative feelings associated with shyness. Children who are shy are at risk for a number of negative consequences such as poor psychosocial adjustment, loneliness, low levels of social self-esteem, and fewer friends (Flett et al., 1996; Meleshko & Alden, 1993; Paulhus & Morgan, 1997). Shy individuals have a difficult time interacting face-to-face with others because of their social anxiety and fear of rejection. Online communication, by eliminating threatening face-to-face interactions may reduce such anxiety and thereby facilitate comfort in social contexts. It may be that engaging in online communication could help shy individuals to some degree improve their social self-esteem and may decrease feelings of loneliness, and anxiety. Therefore, it was hypothesized that, after engaging in two weekly chat group sessions over a five-week period, shy individuals might report less loneliness, more perceived competence, more comfort in social contexts, and less anxiety about approaching people in the future.

Method

Participants

This project was approved by the Research Ethics Board of the University of Ottawa and the Catholic District School Board of Eastern Ontario. Only students for whom written informed parental consent was obtained participated in the study.

Child assent was also obtained prior to beginning the study. Based on proximity to

the University of Ottawa, 10 rural schools from the Catholic District School Board of Eastern Ontario were selected to participate in this study. A 20 item shyness questionnaire (Cheek & Melichor, 1985), which is a revised version of the Cheek and Buss Shyness Scale (Cheek & Buss, 1981) was distributed to 492 students in grades 6, 7, 8 and 9 along with informed consent and assent. Participants were also informed that there were two parts to this study and they could potentially be asked to participate in the second round. Participants were told that the first part included them filling out a questionnaire. They were also told that, during the second round, we would be looking at potential benefits to online communication and that they would be asked to chat with a partner they didn't know. At this time, participants were instructed that, if selected, they could decline to participate in the second part of the study. Of those questionnaires, 131 were completed and returned, resulting in a 27% return rate. This low completion rate was expected given the time required to complete this study and the age of the participants. The mean score of the shyness questionnaire was 50 with a standard deviation of 15. A group of shy children were identified as those scoring 1 SD or more above the Mean, and a group of average children was identified as those scoring within .5 SD above and below the Mean. Of these two groups of children, 24 average and 24 shy children participated in the study. Participants were then telephoned and informed that they had been selected to participate in the second round of the study. If students were interested in participating, a package including a second informed consent, child assent form, and questionnaires was sent to their school. Of the children who were interested in

participating, shy children were matched with an average partner based on sex and age. Of the 24 dyads that were initially selected to participate, 15 completed the study from sessions 1 through 10, yielding a 63% completion rate. Reasons for groups not completing the study included having too many extracurricular activities and parents feeling that their children already had too many commitments outside of school, no longer having access to the Internet, and my no longer being able to reach participants after several attempts to do so. Of the 15 groups, 11 consisted of pairs of girls, while four consisted of pairs of boys. Fifteen shy children (Mean shyness score=72.3; SD=6.43) and 15 average children (Mean shyness score=53.7; SD=5.6) between the ages of 10 and 13 (Mean age=11.71; SD=.75) participated in the MSN conversation groups.

Measures

Demographics. Parents were asked to complete a background questionnaire, which included information about parental education, parental marital status, and child's age (see Appendix B).

Chat Group Use. Throughout the study, participating children were asked to keep a daily log of their chat group use (see Appendix C). They were also asked to keep a daily log of the people they talked to each day at school (see Appendix D), as interacting with peers at school could potentially influence the other information gathered in the study. Participating children were asked to fill out both logs at home, after school. However, only one child completed the log on a regular basis. Therefore, this information could not be used.

Shyness. Shyness was assessed via a 20-item questionnaire (Cheek & Melichor, 1985), which is a revised version of the *Cheek and Buss Shyness Scale* (Cheek & Buss, 1981), a frequently used and psychometrically sound measure of shyness. This measure assesses both behavioural (e.g., “it is hard for me to act natural when I am meeting new people”) and subjective aspects of shyness (e.g., “I feel painfully self-conscious when I am around strangers”). The Cheek and Buss Shyness Scale (1981) has been used with children of a similar age range (Prakash & Coplan, 2003). Participants were asked to rate their agreement with 20 statements on a five-point Likert-scale, ranging from “1” “strongly disagree” to “5” “strongly agree.” Cheek (1983) has reported good psychometric properties for this measure, with a coefficient alpha of .90 and a test--retest reliability of .90. With a similar age group as the present study, Prakash and Coplan (2003) reported a Cronbach’s alpha of .89 (see Appendix E for the complete measure).

Affect. *The Positive Affect and Negative Affect Schedule for Children* (PANAS-C; Laurent et al., 1999) measures both positive and negative state affect for children in grades 4-8. Fifteen items on *Positive Affect* (PA) and 15 items on *Negative Affect* (NA) are rated on a scale of 1 (very slightly) to 5 (extremely). Participants were asked to rate how they have been feeling for the past 2 weeks. Examples of the positive subscale include “interested,” “excited,” and “happy,” and examples of the negative subscale include “upset,” “guilty,” and “sad.” Laurent and associates (1999) found that the alpha-coefficient for the NA scale was .92 and .89 for the PA scale. The PANAS-C demonstrates good convergent and discriminate validity with self-

report measures of anxiety and depression (Laurent et al., 1999). Crook, Beaver and Bell (1998) reported good test retest reliability ranging from .66-.82 and alpha coefficients ranging from .86- .92 (see Appendix F for the complete measure).

Perceived competence. The *Self-Perception Profile for Children* (Harter, 1985) was used to assess domain-specific judgments of competence. This instrument is a questionnaire designed for children from grades three to nine to assess four areas of competence, including cognitive competence (e.g., “good at school”), social competence (e.g., “have a lot of friends”), physical competence (e.g., “do well at all sports”), and general self-worth (e.g., “happy the way I am”). This measure has demonstrated good internal reliability for all four competence scales, ranging from .71 to .86 (Harter, 1985). Because of its focus on children’s feelings about their social abilities, in the present study participants responded only to questions from the social competence and general self-worth subscales (see Appendix G).

Social Anxiety. Social anxiety was assessed using the *Social Anxiety Scale for Children –Revised* (La Greca & Stone, 1993). The instrument is an 18-item, 5-point rating scale measure comprising three subscales: Fear of Negative Evaluation, Social Avoidance and Distress, and Generalized Social Avoidance and Distress. This measure has good established psychometric properties, with Cronbach alphas of at least .65 for each subscale (La Greca & Stone, 1993) (see Appendix H for the complete measure).

Communication. Communication was coded using a revised version of the *Manual for Family Discourse* (Condon et al., 1984). This measure, which was based

on interactions between family members, analyzes patterns of communication by assessing communication behaviours. These behaviours include the following categories: irrelevant comments (e.g., my dog is barking), direct suggestions (e.g., let's take a quick break) indirect suggestions (e.g., fishing would be fun), requests for information (e.g., do you want to learn to ski?), requests action (e.g., you tell me first), initiates compromise (e.g., well, do you want to do both?), agreements (e.g., good idea), direct disagreements (e.g., it wouldn't be fun), indirect disagreements (isn't it awfully far?), answers request for information (e.g., how long have you been at your school?), complies with request for action (e.g., got it), acknowledgements (e.g., that's an idea), and dictates feelings (e.g., I'm bored) (see Appendix I for the complete measure).

Reliabilities for each of the scales of the Manual for Family Discourse are good (irrelevant comment ($r = 1.00$), direct suggestions ($r = .82$), indirect suggestions ($r = .80$), requests for information ($r = .82$), requests action ($r = .80$), initiates compromise ($r = .52$), agreements ($r = .72$), direct disagreements ($r = .88$), indirect disagreements ($r = .76$), answers request for information ($r = .81$), complies with request for action ($r = .76$), acknowledgement ($r = .64$), and dictates feelings ($r = .86$) (Condon et al., 1984).

Although the Manual for Family Discourse is derived from conversations between family members, this measure was very relevant to classifying the content of the dyadic conversations in this study, and indeed was the only such measure available.

In addition to the behaviours assessed by the Manual for Family Discourse, the following variables were also coded: length of time before first response, length of time before replying, total number of statements made by each participant, number of

self-disclosure statements, and number of statements relating to the other person. In order to ensure reliability, two different coders examined each of the conversations. The coders were: (1) the principal investigator for this study, a Ph.D. student in clinical psychology, and (2) an honours student at the end of her four-year bachelor's degree in psychology. The honours student was trained to code the conversations by the primary investigator. This was done by carefully reviewing each category and providing several examples of statements that would fall within a particular category. Both coders began by coding the same conversation and comparing results. Results that differed between coders were discussed until consensus was attained about how the statement should be coded. This was done on four occasions. Following the fourth session, coding was judged to be sufficiently similar between coders.

Children's Social Perception. In order to assess the children's perception of their comfort in social contexts, they were asked to complete a brief questionnaire (see Appendix J). This 7-item questionnaire was created for the purposes of this study in order to get an accurate account of their perception relevant to these areas. Specifically, children were asked if they have a hard time making friends, if they feel like they don't have many friends, if they find it easy to approach someone, if they can make friends easily, if they can carry on a conversation with someone and if they wished they had more friends.

Loneliness. Children's loneliness was assessed via the *Children's Loneliness and Social Dissatisfaction Scale* (CLSD; Asher, Hymel & Renshaw, 1984). This is a 24-item questionnaire, containing 16 items that assess loneliness and social dissatisfaction,

along with 8 filler items. This scale has been found to be internally consistent ($r=.90$) and to have good test-retest reliability ($r=.91$) (Asher et al., 1984). (See Appendix K for the complete measure.)

Procedure

Each group participated in 10 online chat sessions, which took place twice a week in the participants' homes, in order to limit time spent on the computer and interferences with school work. Each chat session lasted 30 minutes. Participants were asked to discuss a pre-selected topic during each session. Participants were introduced to a popular chat network, MSN, and given basic instructions which were sent home with the child along with the questionnaire package. The MSN chat network was selected because it allows the individual to add to the chat list only the people he or she wishes, thus allowing for only the members of the dyad to be involved in the chat sessions. Usernames were created in order to assure confidentiality. Children were instructed to add their partner and the experimenter to the list, but not to use their username created for this study for any other purpose.

During each chat session, the experimenter observed the online conversation as part of the chat-group, but remained silent unless inappropriate behaviour was observed. Inappropriate behaviour referred to any comment that threatened the rights or needs of another person, including threats, negative or sexual comments, or derogatory comments about someone's race, culture, or beliefs would not be tolerated. However, no instances of such negative behaviour occurred for any chat

session. Consequently, there was no need for the experimenter to intervene at any time.

Before beginning each session, participants were called to remind them about the study. Once online, the experimenter described the conversation topic of the day. Participants were asked to begin their discussion by talking about the selected topic, but were allowed to deviate from that topic if the conversation headed in a different direction. Conversational topics were selected to alternate between neutral and emotion-provoking topics. In the first session, children were asked to get to know each other. In session 2, they were asked to discuss recreational activities offered at their school. In session 3, they were asked to discuss how they feel about bullying. In session 4, they were asked to discuss hobbies they may have outside of school. In session 5, they were asked to discuss how they feel about popularity. In session 6, they were asked to talk about whether or not they like living in Canada. In session 7, they were asked to discuss how students interact with each other at school. In session 8, they were asked to talk about where they would like to visit. In session 9, they were free to discuss anything they choose. Finally, in session 10, they were asked to discuss this study.

The conversations were printed after each chat session and then the content was coded. Two independent experimenters coded the variables to allow the assessment of inter-rater reliability.

Once the study was complete, 20 conversations were randomly selected. Two coders who were blind to the design and rationale for the study were given the

definition of shyness (Cheek & Buss, 1981) and were asked: 1) whether or not they felt there was a shy participant in the conversation, and 2) if so, to indicate which child was the shy participant. Both coders examined the same 20 conversations. The purpose of this task was to determine if individuals who were blind to the study could accurately identify the shy individual. If unable to do so, it would suggest that shy and average participants are very similar in the way they communicate online.

Prior to the first chat session (Time 1), participants were asked to complete a series of questionnaires. Since shyness has been related to anxiety, negative affect, loneliness, and negative perceived competence, each child was asked to fill out a measure of each, as described in the Measures section. At the end of the 10 chat sessions (Time 2), each child was asked to again fill out the same questionnaires, allowing us to examine any change in these areas across the study. Participants were also asked to complete a measure of how comfortable they felt with their partner. This was done to assess whether there were any dyads who were not comfortable with each other. A follow-up assessment (Time 3) was also planned to take place one month after the end of the last session, using the same questionnaires. However, since only one participant completed the third set of questionnaires, this information was not obtained.

Results

Preliminary Analysis

Shy and average groups did not differ significantly in terms of Mean age, $t(15)=-1.406$; $p > .05$ or Median level of parental education, $U(15)=-1.155$; $p > .05$.

See Table 1 for Mean age and Median parental education for shy and average individuals.

Table 1: Mean Age and Median Parental Education for Shy and Average Individuals

Variables	Shy	Average
Age	Mean =11.50 SD=.67	Mean=11.92 SD=.79
Parental Education	Median = 3.00 SD=.68	Median =3.00 SD=.74

Given that two experimenters coded the conversational content of each chat session, inter-rater reliability was assessed for each of the behavioural categories derived from the Manual for Family Discourse. Excellent inter-rater reliability was noted for each of the 15 categories (see Table 2).

Table 2: Inter-rater Reliability for the 15 Categories of Conversational Behaviour

Variable	Weighted Kappa
Irrelevant comment	.89
Direct comment	.95
Requests Information	.96
Requests Action	1.00
Initiates Compromise	.99
Agreements	.91
Direct Disagreement	.92

Indirect Disagreement	1.00
Answers Request for Information	.94
Complies with Request for Action	1.00
Acknowledge	.87
Relevant Comments	.85
Dictates Feelings	.86
Self-disclosure	.91
Relating to Another Person	.94

Content of Chat Conversations Across Sessions

A series of 2 (Group) x 10 (Session) ANOVAs with repeated measures across the second factor looked at the effects of Group and Session for each of the 15 behavioral categories into which the conversations were coded. For “irrelevant comments,” there was no main effect of Group, $F(1,13)=.10$, $p>.05$ and no main effect of Session, $F(9, 117)=2.06$, $p>.05$ (using Greenhouse-Geisser correction). See Appendix M for a complete list of means and standard deviations for each Group across Session. However, there was a significant interaction between Group and Session, $F(9,117)=2.98$, $p<.05$ (using Greenhouse Geisser correction). See Figure 1. In looking at the simple main effects of group for each session, a significant effect was found only for session 7, where shy children made more irrelevant comments than did average children, $F(1,13)=5.11$, $p<.05$. In looking at the simple main effects of session, no significant effects of session were found for either group.

For “requests information,” there was a main effect of Session, $F(9, 117)=7.27, p<.001$ (using Greenhouse-Geisser correction). This effect was examined further using paired samples t tests and a Bonferroni correction. Results showed that children asked for more information in the fourth session than in other sessions ($t = 2.50, p. <.001$). There was no main effect of Group, $F(1,13)=2.15, p,>.05$ and no significant interaction between Group and Session, $F(9,117)=1.63, p>.05$ (using Greenhouse Geisser correction).

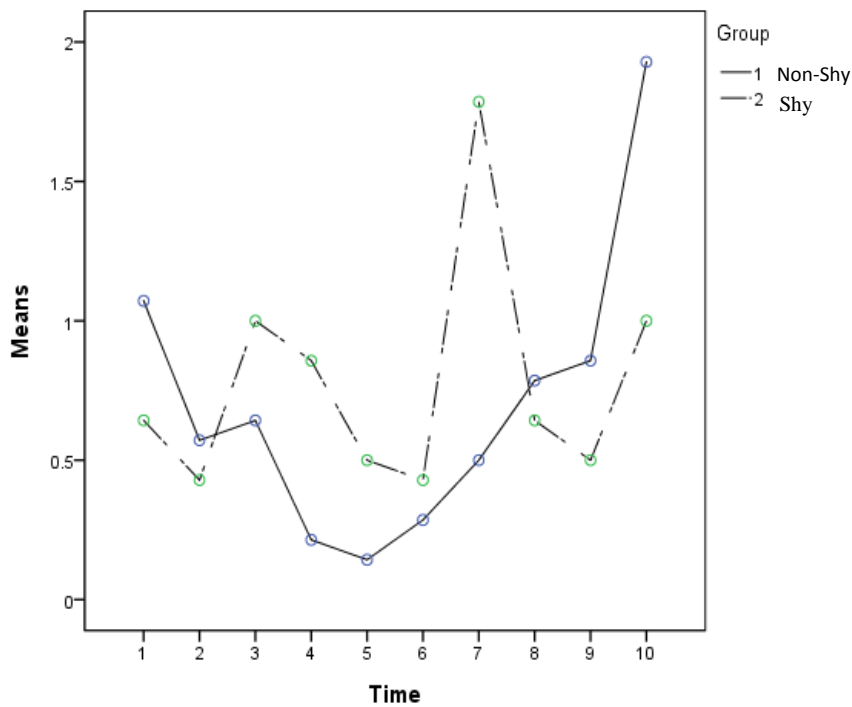


Figure 1: Means for Irrelevant Comments for Average and Shy children across Sessions

For the variable “answers request for information,” there was a main effect of Session $F(9, 117)=7.79, p<.05$ (using Greenhouse-Geisser correction), however, a

series of *t* tests looking across sessions collapsed across groups and using the Bonferonni correction found no significant differences between sessions. There was no main effect of Group, $F(1,13)=3.58, p >.05$ and no significant interaction between Group and Session, $F(9,117)=1.97, p >.05$ (using Greenhouse Geisser correction).

For “number of sentences,” there was a main effect of Session, $F(9, 117)=2.93, p <.05$ (using Greenhouse-Geisser correction). However, in a series of *t* tests looking across sessions collapsed across groups and using the Bonferonni correction, no significant differences were observed. There was no main effect of Group, $F(1,13)=0.21, p >.05$ and no significant interaction between Group and Session, $F(9,117)=1.54, p >.05$ (using Greenhouse Geisser correction).

For “self-disclosure,” there was a main effect of Session, $F(9, 117)=2.91, p <.05$ (using Greenhouse-Geisser correction). However, in a series of *t* tests looking across sessions collapsed across groups and using the Bonferonni correction, no significant differences were observed. There was no main effect of Group, $F(1,13)=2.62, p >.05$ and no significant interaction between Group and Session, $F(9,117)=.64, p >.05$ (using Greenhouse Geisser correction).

Main effects and interactions for Group by Session ANOVAs for the remaining conversational variables were non-significant (i.e., “direct comments,” “requests action,” “initiates compromise,” “agreements,” “direct disagreements,” “indirect disagreements,” “complies with request for action,” “acknowledgement,” “relevant comments,” “dictates feelings,” “length of time before first response,” “length of time before first reply,” “total number of utterances,” and “number of

statements relating to the other person.” See Table 3 for a complete list of non-significant F values and degrees of freedom for main effects of Group, main effects of Time and Interactions. See Appendix M for a complete list of means and standard deviations for each Group across Session.

Table 3: Effects of Group and Session for nonsignificant ANOVAs

Variable	Group	Session	Interaction
Direct Comments	F(1,13)=3.55	F(9, 117)=6.24	F(9,117)=.86
Requests Action	F(1,13)=.00	F(9, 117)=.51	F(9,117)=1.07
Initiates Compromise	F(1,13)=1.00	F(9, 117)=1.00	F(9,117)=1.00
Agreements	F(1,13)=.19	F(9, 117)=1.21	F(9,117)=1.52
Direct Disagreements	F(1,13)=4.81	F(9, 117)=.84	F(9,117)=1.52
Indirect Disagreements	F(1,13)=1.00	F(9, 117)=1.00	F(9,117)=1.00
Complies With Requests for Action	F(1,13)=1.32	F(9, 117)=.60	F(9,117)=.97
Acknowledge	F(1,13)=.74	F(9, 117)=.60	F(9,117)=.61
Relevant Comments	F(1,13)=.00	F(9, 117)=1.84	F(9,117)=1.24
Dictates Feelings	F(1,13)=3.35	F(9, 117)=1.67	F(9,117)=1.37
Length of Time Before First Response	F(1,13)=2.00	F(9, 117)=1.20	F(9,117)=1.14
Length of Time Before First Reply	F(1,13)=.60	F(9, 117)=1.20	F(9,117)=.43
Total Number of Utterances	F(1,13)=0.97	F(9, 117)=1.27	F(9,117)=0.42
Number of Statements Relating to the Other Person	F(1,13)=.29	F(9, 117)=2.30	F(9,117)=.72

In order to determine if there would be more power when combining sessions, the first 5 sessions (Session 1-Session 5) were compared to the last 5 sessions

(Session 6-Session 10). The mean scores for each of the behavioral categories into which the conversations were coded for the first 5 sessions were compared to those on the second 5 sessions, using a series of 2 (Group) x 2 (Sessions) ANOVAs with repeated measures across the second factor. For “requests information,” there was a main effect of Session, $F(1, 14)=6.75, p<.05$. When collapsed across group, both shy and average children requested more information during the first 5 sessions than during the last five sessions. There was no main effect of Group, $F(1, 14)=2.15, p>.05$ and no significant interaction between Group and Session, $F(1, 14)=.206, p>.05$.

For “answers requests information,” there was a main effect of Session, $F(1, 14)=12.86, p<.05$. When collapsed across group, children requested more information within the first 5 sessions than during the last 5. There was no main effect of Group, $F(1,14)=3.56, p,>.05$ and no significant interaction between Group and Session, $F(1,14)=1.45, p>.05$.

For “number of words,” there was a main effect of Session, $F(1, 14)=9.91, p<.05$. When collapsed across group, shy and average children used more words during the last 5 sessions than during the first. There was no main effect of Group, $F(1,14)=.969, p,>.05$ and no significant interaction between Group and Session, $F(1,14)=.602, p>.05$.

No significant differences were found for “irrelevant comments,” “direct comments,” “requests action,” “initiates compromise,” “agreements,” “direct disagreements,” “indirect disagreements,” “complies with request for action,”

“acknowledgement,” “relevant comments,” “dictates feelings,” “length of time before first response,” “length of time before first reply,” and “number of statements relating to the other person” when comparing the first 5 and last 5 sessions.

Identification of Shy and Average Students

As the results indicate, there were some differences in how shy and average students communicated online. However, the differences were few, suggesting that shy and average children had similar ways of communicating, when the threat of face-to-face interaction was removed. To test whether the patterns of communication were similar between shy and average children, we assessed whether the shy child could be identified in any particular conversation. Two judges, who were blind to the purpose of the study and the status of the participants, independently examined 20 randomly-selected conversations, all of which included a shy and an average participant. Both judges examined the same 20 conversations. The judges were then provided with a clear definition of shyness derived from Cheek and Buss (1981), and were asked to indicate 1) whether there was a shy participant in the dyad, and 2) if so, which of the two was shy. Neither judge was able to identify the shy child at a level beyond chance: for judge 1 $\chi^2(1, N=20) = .05, p > .05$, and for judge 2, $\chi^2(1, N=20) = .25, p > .05$. Out of the 20 conversations, judge 1 correctly identified the shy participant 10 times (50%), incorrectly identified the shy participant 4 times (20%) and stated that there was no shy participant 6 times (30%). Likewise, judge 2 correctly identified the shy participant 9 times (45%), incorrectly identified the shy participant 8 times (40%) and stated that there was no shy participant 3 times (15%).

In other words, judge 1 was wrong in 50% of her attempts to identify the shy child, and judge 2 was wrong in 55% of her attempts.

Pre- and Post-Session Comparisons

In addition to investigating conversations, results from the self-report questionnaires at Time 1 (before beginning the 10 chat sessions) and Time 2 (after completing the 10 chat sessions) were compared using a series of 2 (Group) x 2 (Time) AVOVAs with repeated measures across the second factor. Results from the *Social Anxiety Scale for Children –Revised* (La Greca & Stone, 1993) showed a main effect of Group, $F(1,13)=20.14$, $p<.05$ (using Greenhouse-Geisser correction). Overall, shy children reported more social anxiety than did average children. A main effect of Time, $F(1, 13)=31.10$, $p<.05$ (using Greenhouse-Geisser correction) was also noted. At the end of the study, there was a significant interaction between Group and Time, $F(1,13)=20.57$, $p<.05$ (using Greenhouse Geisser correction). Shy children reported less social anxiety at Time 2 than Time 1, $F(1,3) =25.57$, $p<.025$, whereas average children reported no difference in social anxiety from Time 1 to Time 2. In addition, at Time 1 shy children reported more social anxiety than did average children, $F(1,3)=20.57$, $p < .05$; however, there was no difference in social anxiety between the two groups at Time 2 (see Figure 2).

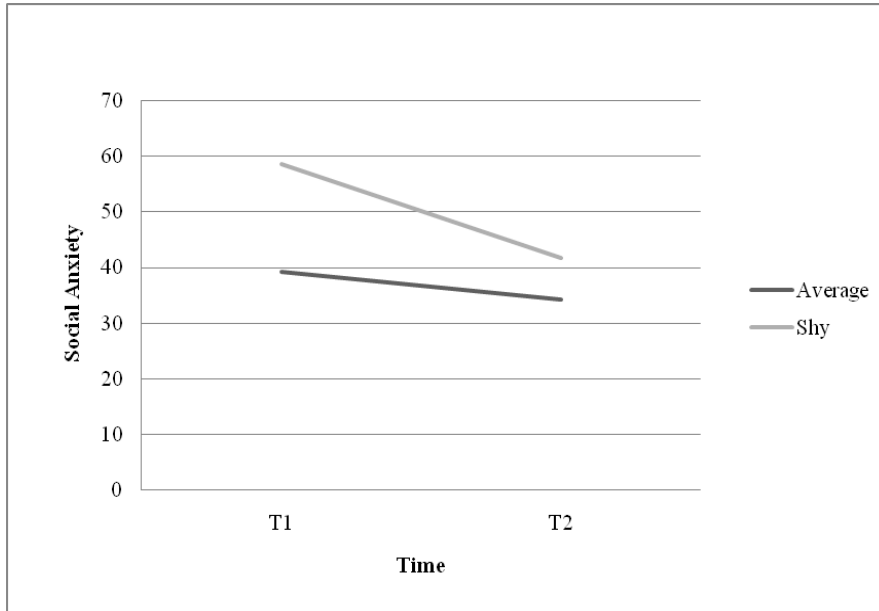


Figure 2: Social Anxiety scores for Average and Shy children at Time 1(pre) and Time 2 (post)

Apart from social anxiety, there were no significant main effects or interactions in the pre- and post-session 2 X 2 ANOVAS for the remaining dependent variables: “positive affect,” “negative affect,” “perceived competence,” “social perception,” or “loneliness.” Table 4 shows means and standard deviations for these five dependent variables for shy and average children at time 1 and time 2.

Table 4: Means and Standard Deviations for Affect, Perceptions, Anxiety, and Loneliness for Shy and Average Children at the Beginning and the End of the 10 Chat sessions

Variable	Group	T1	T2
Positive Affect	Average	50.55 (11.26)	55.40 (8.93)
	Shy	46.78 (9.24)	47.17 (9.50)
Negative Affect	Average	25.46 (9.13)	21.69 (5.99)
	Shy	33.64 (10.35)	29.43 (13.98)
Self-perception	Average	46.82 (7.36)	48.00 (5.89)

	Shy	41.00 (8.49)	53.00 (20.39)
Social Anxiety	Average	39.25 (12.54)	34.33 (8.43)
	Shy	58.67 (14.79)	41.64 (12.79)
Social Perception	Average	29.36 (3.44)	28.00 (2.94)
	Shy	21.91 (6.28)	23.56 (4.28)
Loneliness	Average	25.73 (6.96)	27.67 (8.73)
	Shy	40.27 (14.53)	38.89 (12.31)

Discussion

Online communication is an appealing method by which to study social skills in shy children. Shy individuals are less inhibited when they communicate online because it removes the fear associated with a face-to-face interaction (Roberts, Smith, & Pollock, 2000). Furthermore, given its widespread proliferation during the past decade, the Internet is a tool that most children feel comfortable using. Therefore, the Internet provides an ideal arena in which to conduct a study investigating the communication of shy children.

The purpose of this study was twofold: first, to study how shy children initiate and maintain on-line conversations with others as compared to average individuals; and, second to measure any effects on shy children after having communicated in several online sessions.

With respect to the first objective, results of the present study revealed that, overall, shy children communicated in a manner similar to their average peers in the online environment. Other than irrelevant comments, there were no significant differences in the way in which shy children communicated online as compared to

their average partners. Indeed, when two blind judges examined randomly-selected conversations, they were unable to determine beyond a level of chance which member of the dyad was the shy participant.

With respect to the second objective -effects of the 10 chat sessions- one significant improvement was noted. Across the 10 sessions of the study, the shy participants reported lowered rates of social anxiety, suggesting that online communication may reduce social anxiety in shy children. No other differences were found. Results and implications are discussed below.

First Objective

Previous research has indicated that shy children are more likely than non-shy children to take more time to initiate conversation in unfamiliar contexts, to use fewer utterances, to have less sophisticated speech, to use fewer complex sentences, to employ more self-protective responses, and to spend less time in conversation (Meleshko & Alden, 1993; Van Kleeck & Street, 1982). However, these findings were derived from face-to-face interactions. In the present study, the assumption was that anxiety would be lessened by the removal of face-to-face interaction. It was therefore hypothesized that shy children might be initially more reticent than average children to initiate conversation, given the novelty of the situation. However, over time shy children were expected to become more comfortable in discussions with their on-line partner and to become less anxious as they grow more comfortable with the anonymity of the chat group experience. This was not the case. Shy children communicated in a similar manner to their average partner throughout the 10

sessions. Results of the present research revealed a significant difference between shy and average children in specific sessions for one of the variables. However, no other group by session interactions emerged.

The one variable that significantly differed between shy and average children was ‘irrelevant comments.’ Shy children made significantly more irrelevant comments in Session 7 than did average children. This was a peculiar finding, given that the effect occurred in only one session. Why would this aspect of speech increase in this particular session? It may be that the findings resulted specifically from the subject matter discussed rather than an effect of the session number itself. In Session 7, children were asked to discuss how other children interact with each other at school. Given that shy children often have less experience interacting with someone new, as they tend to avoid novel social situations (Van Ameringen et al., 1998), they may have had limited experience with and, therefore, less knowledge about this particular topic. Furthermore, shyness has been linked to a fear of social evaluation (Asendorpf, 1993) and self-protective responses during conversation (Meleshko & Alden, 1993). As a consequence, the shy children in this study may have used irrelevant comments as a means of deflecting attention away from themselves, rather than opening up to their partner about their lack of knowledge on this particular topic.

While shy children made more irrelevant comments in Session 7, average children made more irrelevant comments toward the end of the series of sessions. This surprising result begs the question of what changed over time for average

children. At the beginning of the sessions, the average children may have been interested in and excited about the study. However, toward the end of the study, they may have been losing interest as the novelty wore off. For example, in Session 9, an average child stated that she couldn't think of anything else to talk about. Another average child stated that she was starting to get bored toward the end of the series. Possibly as a result, the children may have made occasional irrelevant statements in an attempt to make the conversation more interesting. For example, in one session, an average child asked her partner if she was going to a concert, which was coded as an irrelevant comment as it was off topic.

No similar increase in irrelevant comments toward the end of the 10 sessions was noted in the comments made by the shy children. With the exception of the "blip" in their use of irrelevant comments in session 7, which as previously discussed may have resulted from their lack of comfort with the subject matter, shy children made fewer irrelevant comments than average children toward the end of the series of sessions. It may be that the shy children did not feel a similar loss of excitement as the average children as the study wore on, perhaps because of their higher self-reported social anxiety at the beginning of the study. Given their higher levels of social anxiety, shy children may have returned to their base level of anxiety more gradually than average children resulting in less boredom towards the end.

When comparing shy and average children, it had been predicted that there would be greater differences in the way in which shy and average children communicated at the beginning of the conversations, but that the differences would

disappear by Session 10. This was not the case. There were no significant differences in the communication of shy and average children at the beginning of the sessions. Similarly, aside from irrelevant comments, there were no significant differences at the end of the study (session 10). One possible explanation for the lack of difference between the two groups is that shy and average children may have similar approaches to initiating and maintaining social conversations when anxiety was lessened as a result of the removal of the threat of face-to-face interaction. Such an explanation would support the notion that the lack of social interactions by shy children in “real-life” settings may be less a result of a skills deficit, and more the result of an anxiety-related performance deficit in such live, face-to-face situations. These findings may also suggest that shy children could possibly prefer online communication to face-to-face interaction, as they have more control in the conversation. For example, they can take the time needed to respond to their online partner instead of feeling rushed to provide an answer immediately as would be the case in a face-to-face conversation.

During the study some shy children expressed enjoyment with communicating through Instant Messenger. For example, one shy participant reported that she does not feel shy online and that it provides her with an opportunity to socialize. This is an interesting and useful observation, particularly because the participant came to this conclusion on her own, without being prompted by anyone else. This observation may also have potential clinical implications, as it underscores the hypothesis that the anxiety experienced by shy children may be attributed in part to the unique circumstances arising through face-to-face conversation. Future research should

continue to examine the importance of reducing anxiety in social contexts, in addition to teaching shy children specific social skills to cope with difficult social situations. Providing shy children with less stressful opportunities to practice their social skills, such as through the medium of online chat groups, may also prove beneficial. Such opportunities may allow shy children to reduce social-anxiety and build confidence about social skills through their being exposed to social situations that are less threatening than direct in-person encounters. However, more research is needed to determine if these effects would generalize to real-life, face-to-face encounters.

The review of selected conversations by the two blind judges also provided interesting information. Both judges found it very difficult to differentiate between the shy and the average children, suggesting that there seemed to be little difference between these children in the content of their conversations. These findings could indicate that at least some shy children may be as capable as average children at communicating online. To some extent, this may be attributable to the fact that their partners were average, rather than extremely non-shy. The shy children, therefore, may have felt more comfortable communicating with such a partner. According to Coplan and Evans (2009), most studies examining shy children have compared them to children who are extremely non-shy. However, it is possible that in our study the shy children felt less intimidated by partners who were average in status, resulting in less inhibition during conversation. More research is needed to see how shy children communicate in face-to-face contexts with partners who are average, rather than being at the extreme outgoing end of the spectrum.

In sum, this study demonstrated that shy children appear to communicate similarly to average children when communicating online, likely because the perceived threat of face-to-face interaction is removed. These findings also suggest that online communication could provide opportunities for shy children to practice their communication skills in a safe environment. Therefore, when communicating face-to-face, they may have more comfort with their communication skills which may reduce their anxiety about communicating in real-world interactions. Having less anxiety about their communication skills may then enable them to communicate more frequently with others.

Second Objective.

The second goal of this study was to examine the effects of the experience of online communication on shy children. Individuals who are very shy are at risk for a number of negative consequences, such as poor psychosocial adjustment, loneliness, social anxiety, low levels of social self-esteem, and fewer friends (Flett et al., 1996; Meleshko & Alden, 1993; Paulhus & Morgan, 1997). Consistent with these findings, the shy children in the current study reported significantly higher levels of social anxiety than did the average participants before beginning the chat groups. Given that shyness is closely related to social anxiety (Van Ameringen et al., 1998), this is hardly surprising, as the procedure which they were about to begin required them to engage in social conversations. However, by the end of the 10 sessions, no differences were found between shy and average children in self-reported social anxiety. This finding is similar to those from another recent study indicating that

online chat groups can boost confidence and self-esteem in lonely teens (Selfhout, Branje, Delsing, ter Bogt, Meeus, & Wim, 2009). Moreover, research has found exposure to be a useful technique when treating individuals for anxiety in social situations (Greco & Morris, 2002; Spiegler & Guevremont, 1998). Results from the current study suggest that online communication may perhaps provide such exposure, helping to reduce levels of social anxiety in shy children. In other words, there may be valuable clinical implications in the use of online communication as a form of intervention with socially anxious children, as it could allow the opportunity for such children to be exposed to social situations in a less-threatening manner, helping to reduce their perceived social anxiety.

Arguably, online communication lacks some of the qualities of a real-life, *in vivo* experience. Children who communicate solely online may miss out on experiences that could only occur with other forms of interaction. For example, they may miss out on the visual cues that other children give while talking. Missing out on such visual cues could result in more limited experience in interpreting and understanding social cues: important components of their learning and social development. Another potential problem associated with chat groups is that reliance on the Internet as a sole method of social conversation could possibly lead to interferences with daily life functioning (Morahan-Martin & Schumacher, 2003). Chak and Leung (2004) have found that shy individuals are more likely than non-shy individuals to develop an “addiction” to Internet use. Nonetheless, online communication could be a first step to reducing social anxiety, giving shy children

some confidence that could be useful in their subsequent initiating and sustaining social interactions in face-to-face contexts. In short, shy children might be better able to “perform” in a face-to-face social context if they had previously positive experiences in the less threatening, on-line environment.

No differences were found between shy and average children in terms of positive or negative affect or perceived competence. Given that Burgess and Younger (2006) found that socially withdrawn preadolescents endorsed more negative and fewer positive adjectives as a self descriptive and were more likely to be depressed, it had been expected that the shy children in the current study would display more negative and less positive affect than their average peers. However, this was not the case. One possible explanation for these results could be that shy children may maintain specific negative beliefs, particularly about social situations, rather than engaging in general cognitive distortions or negative biases as measured by their affect. For example, shy children may feel negatively about their abilities to socialize, but have a more positive view on other aspects in life. Burgess and Younger (2006) also found such distortions in self-relevant recall. However, it should be noted that Burgess and Younger (2006) identified withdrawn, not shy children, using peer evaluations, while this study used self-ratings to identify anxious, shy children. Therefore, there could be some slight differences in the makeup of the groups in the two studies that might account for the discrepancy in findings. It should also be noted that, given the limited number of participants in this study, the lack of significant

findings may actually be attributed to the lack of statistical power. Studies with more participants are needed in order to better understand these findings.

Previous research has found that shy children tend to devalue their social skills (e.g., Gazelle & Ladd, 2003); therefore, it was also predicted in the current study that shy children would show less perceived competence in social situations. However, this hypothesis was not supported: no differences were found between shy children and average children in perceived competence in social situations. Although some studies have found that shyness is related to lower perceived social competence, some researchers argue that other factors may contribute to perceived competence. For example, Laible, Carlo and Raffaelli (2000) found that warm, supportive relationships with parents can foster increased positive perceptions of competence. Such positive factors may have been operating in the lives of some of the children in the current study.

In sum, results from this study suggest that shy children have higher levels of social anxiety than average children before beginning an online conversation with an unknown partner. However, by the end of the study, their social anxiety was significantly reduced. No other changes or differences in psychological functioning were noted between shy and average children.

Conclusions

The results of this study suggest that, when anxiety is lessened by the removal of face-to-face interactions, there are very few significant differences between how shy and average children communicate. Therefore, shy children may in fact possess

similar methods of communication as do average children, but their lack of social experience may impede their actual skills in face-to-face social contexts. However, it is also possible that the results may be attributable to other factors such as being in small groups. More studies are needed in order to further explore this issue. Despite other attributable factors, it may very well be, therefore, that online conversation could serve as a bottom-tier mechanism (i.e., the first step in a series of steps) for reducing social anxiety, while increasing social comfort in shy children, ultimately allowing shy children to better perform in real-life social situations. As previously noted, when online and less inhibited, shy children are more likely to develop more relationships (Roberts et al., 2000). Therefore, it is possible that online communication could allow shy children to practice developmentally-appropriate social skills, which could perhaps mitigate some of the negative consequences associated with prolonged shyness.

If shy children felt they were capable of creating and maintaining friendships over the Internet, they might develop more confidence to cope with their anxiety, leading to more confidence in other social settings. This might be especially likely if they were also taught strategies to manage their anxiety and challenge the negative thoughts that can interfere with socializing. Computer-based media such as virtual reality have been used to help individuals overcome other forms of anxiety disorders, including fear of heights and fear of flying (Rothbaum & Hodges, 1999). These intervention procedures have involved actual programmed, systematic, graduated exposure. It may therefore be that using Internet chat groups in a similarly systematic

way (i.e., some form of graduated exposure) might be helpful for shy children, allowing them to become more successful in developing friendships both online and, hopefully, in other arenas, through practicing their skills. For example, typing online could graduate to speaking to one another via the phone, then to video conferencing, then to real person-to-person interaction. More studies are needed in order to understand whether the improvements noted after completing the series of online conversations are transferable to real-life social interactions.

Caveats

Given that this study this was a preliminary attempt at understanding the differences between shy and average children in terms of online communication styles, some limitations should be noted. The participants in this study came from schools located in rural communities or small towns outside of Ottawa. Whether these results would generalize to other populations remains to be examined. This study also required access to a computer and the Internet, which could potentially limit the generalizability of these findings. Nevertheless, the vast majority of Canadian children have access to the Internet, whether living in urban or rural areas. Indeed, a recent Canada-wide survey of Canadian children entitled “Young Canadians in a Wired World” found that 94% of homes in Canada have a computer and the Internet (Media Awareness Network, 2005).

Another important issue with this study involves the challenges in recruiting participants. The study required students to complete a questionnaire and return it to their school. However, although teachers had been asked to remind students about

their forms, many forgot to do so. Of the 492 forms that had been distributed, only 131 were returned. Of the students who returned the form, many were not interested in participating in a series of ten 30-minute online sessions. Although a larger sample size had been hoped for, only 15 dyads actually participated in this study. A larger sample size might have allowed for greater detection of differences between the groups. Once children agreed to participate, it was very difficult to work around their schedules and find a convenient time for both members of the dyad. As a result, conversations sometimes took place at times that were not ideal, such as immediately after school or late in the evening.

Given the limited sample size, results from this study were not independent. The small number of participants of this particular study may also limit the generalizability of the findings to the larger population. Therefore, future studies looking at communication of shy and average children should include a greater sample size, which would allow the researchers the opportunity to randomly split their sample and investigate non-independent results. It may also be beneficial to perform sequential analyses (Bakeman & Gottman, 1986, 1997) and discuss conditional probabilities (see Sharpe & Koperwas, 2003 for a complete review), which are based on Skinner's contingency of stimulus, response and consequence.

As a final point on generalization, as previously stated, traditional treatments offer only short-term benefits and may only be specific to the particular context of the training, thus resulting in limited generalization (Greco & Morris, 2002). Therefore,

longitudinal studies would be necessary in order to investigate whether findings from this study have long term implications and extend to other contexts.

Another limitation of this study was that it did not account for gender differences. Although it was hoped to get an equal number of boy and girl participants, the study included 22 girls and only 8 boys. Given the challenges of recruitment, it was decided to collapse across gender as an independent variable, and work with that number of children, ensuring of course that all dyads were same-sex pairs. Future studies should examine differences in communication of pairs of both shy girls and shy boys.

Although an 11th session had originally been planned, in which we had intended to pair each participant with a different partner for an additional session, most children were not interested in a session with a different partner. Moreover, because some children were not available immediately after their 10th session, there would have been too much variability between dyads in the delay between session 10 and session 11. It had also been planned to have the questionnaires completed a third time; however, despite ongoing communication and friendly reminders, only one participant completed and returned the questionnaires the third time.

Finally, given that the study of shyness and language is a relatively new area of study (Coplan & Evans, 2009), there continues to be some debate about definitions and methodology of studying how shy children communicate. Therefore, although definitions and methodologies provided in this study may contribute to the overall understanding of how shy children communicate, they may not necessarily coincide

with emerging research. More studies are needed in order to determine an agreed-upon method of defining and measuring shyness and communication. Exploring alternate methodologies such as having multiple raters for questionnaires may also be beneficial. Furthermore, since previous research on shyness and communication have been assessments on vocabulary (see Evans, 2009 for a complete review), there is no agreed upon method of assessing communication styles at this time. Therefore, the coding from this study may not necessarily be the optimal method of analyzing and conceptualizing conversations. However, it is a stepping stone to better understanding how shy children communicate as compared to average children.

Despite these limitations, this study provided meaningful information about the well-being of shy children after engaging in social conversations online. It also gave us a glimpse into the understanding of how shy children communicate as compared to average children. According to Coplan and Evans (2009) even small effects can have significant implications for future research and intervention programs for this relatively novel area. Therefore, this study was a bridge to better understanding how shy children communicate as compared to children who are not shy. Future research in this area will further allow us to better understand shy children, which will have important clinical and practical implications.

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Appendix A

THE STUDY OF ONLINE COMMUNICATION

Dear parents,

We are writing to ask your permission for your child to fill out a questionnaire on shyness for a study conducted by researchers at the University of Ottawa. After completing the questionnaire, some children will be selected to participate in the second part of the study. The purpose of this study is to investigate the potential benefits associated with online communication.

Your child is free to choose not to fill out the questionnaire. Your child is also free to refrain from answering any question(s) he or she does not feel comfortable answering. Furthermore, should your child be selected to participate in the second part of the study, a second consent form will be sent home once asking for your permission to participate. If you have any questions, you can contact me directly or my supervisor Dr. Alastair Younger. You can also contact the research protocol officer Catherine Paquette.

The data collected are strictly confidential and are made available only to the researchers of this study. The data will remain in a locked cabinet for a period of 5 years. Participants' names will be replaced with an identification number. This study has been approved by the Research Ethics Board at the University of Ottawa.

Should you choose to allow your child to participate in this study, please fill out the information below.

I would like to take this opportunity to thank you for your time and consideration.

Sincerely,

Julie Desjardins

Child's Name: _____ Age: _____

Yes, I give permission for my child to participate _____

No, I do not give permission for my child to participate _____

Parent's signature: _____

Contact number: _____

THE STUDY OF ONLINE COMMUNICATION-PART 2

Dear parents,

Your child recently filled out a questionnaire on shyness for a study at the University of Ottawa, and has been selected to participate in the second part of thesis study. The purpose of this study is to investigate the potential benefits associated with online communication. Should you allow your child to participate, you will be asked to fill out background information. Your child will also participate in 2 one-hour chat group sessions a week for 5 weeks. Children will be assigned to a partner with whom they will chat. A researcher will also be online observing the chat sessions and will terminate the session if any form of aggression or inappropriate behavior occurs. Prior to, and after completing the sessions, your child will fill out a series of questionnaires that can be returned via mail. Questionnaire and instructions will be sent home with your child prior to the first session.

Your child is free to withdraw from the study at any time. If you have any questions, you can contact me or my supervisor Dr. Alastair Younger. You can also contact the research protocol officer Catherine Paquette.

The data collected are strictly confidential and are made available only to the researchers of this study. The data will remain in a locked cabinet for a period of 5 years. Participants' names will be replaced with an identification number. This study has been approved by the Research Ethics Board at the University of Ottawa.

Should you choose to allow your child to participate in this study, please fill out the information below.

I would like to take this opportunity to thank you for your time and consideration.

Sincerely,
Julie Desjardins

Child's Name: _____ Age: _____

Yes, I give permission for my child to participate _____

No, I do not give permission for my child to participate _____

Parent's signature: _____

Contact number: _____

Appendix B

BACKGROUND INFORMATION

Child name: _____

Boy____ Girl____

Child date of birth: _____
month day year

Child's age (in years) _____

Mother's occupation: _____

Mother's formal education completed (check one):
elementary school _____
high school diploma or equivalent _____
community college or equivalent _____
university degree _____
graduate school degree _____

Father's occupation: _____

Father's formal education completed (check one):
elementary school _____
high school diploma or equivalent _____
community college or equivalent _____
university degree _____
graduate school degree _____

Appendix C

1. On average, how many hours do you spend on Chat groups such as Microsoft Network (MSN)? Please check the appropriate box.

Less than 1 hour a week

1-5 hours/week

6-10 hours/week

11-15 hours/week

16-20 hours/week

More than 21 hours/week

2. Which Chat groups do you use? Please check all that apply.

MSN

ICQ

Google Talk

Other Please list: _____

Chat Group Daily Log

Date ICQ)	Number of hours	Chat group (i.e, MSN,
----------------------	------------------------	------------------------------

Appendix D

Social Interactions Daily Log

Date	Number of people I talked to at school today	Number of NEW people I talked to at school today
------	----------------------------------------------	--------------------------------------------------

Appendix E

20-Item Scale

INSTRUCTIONS: Please read each item carefully and decide to what extent it is characteristic of your feelings and behavior. Fill in the blank next to each item by choosing a number from the scale printed below.

1 = very uncharacteristic or untrue, strongly disagree

2 = uncharacteristic

3 = neutral

4 = characteristic

5 = very characteristic or true, strongly agree

- ___ 1. I feel tense when I'm with people I don't know well.
- ___ 2. During conversations with new acquaintances, I worry about saying something dumb.
- ___ 3. I am socially somewhat awkward.
- ___ 4. I do not find it difficult to ask other people for information.
- ___ 5. I am often uncomfortable at parties and other social gatherings.
- ___ 6. When in a group of people, I have trouble thinking of the right things to talk about.
- ___ 7. I feel relaxed even in unfamiliar social situations
- ___ 8. It is hard for me to act natural when I am meeting new people.
- ___ 9. I feel painfully self-conscious when I am around strangers.
- ___ 10. I am confident about my social skills.
- ___ 11. I feel nervous when speaking to someone in authority.
- ___ 12. I have trouble looking someone right in the eye.
- ___ 13. I am usually a person who initiates conversation.

- _____ 14. I often have doubts about whether other people like to be with me.
- _____ 15. Sometimes being introduced to new people makes me feel physically upset (for example, having an upset stomach, pounding heart, sweaty palms, or heat rash).
- _____ 16. I do not find it hard to talk to strangers.
- _____ 17. I worry about how well I will get along with new acquaintances.
- _____ 18. I am shy when meeting someone of the opposite sex.
- _____ 19. It does not take me long to overcome my shyness in a new situation.
- _____ 20. I feel inhibited in social situations.

Appendix F

Feelings and Emotions (PANAS-C)

This scale consists of a number of words that describes different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate the extent you have felt this way during the past few weeks.

Feeling	Very slightly/ not at all	A little	Moderately	Quite a bit	Extremely
Interested	1	2	3	4	5
Sad	1	2	3	4	5
Frightened	1	2	3	4	5
Alert	1	2	3	4	5
Excited	1	2	3	4	5
Ashamed	1	2	3	4	5
Upset	1	2	3	4	5
Happy	1	2	3	4	5
Strong	1	2	3	4	5
Nervous	1	2	3	4	5
Guilty	1	2	3	4	5
Energetic	1	2	3	4	5
Scared	1	2	3	4	5
Calm	1	2	3	4	5
Miserable	1	2	3	4	5
Jittery	1	2	3	4	5
Cheerful	1	2	3	4	5
Active	1	2	3	4	5
Proud	1	2	3	4	5
Afraid	1	2	3	4	5
Joyful	1	2	3	4	5
Lonely	1	2	3	4	5
Mad	1	2	3	4	5
Fearless	1	2	3	4	5
Disgusted	1	2	3	4	5
Delighted	1	2	3	4	5
Blue	1	2	3	4	5
Daring	1	2	3	4	5
Gloomy	1	2	3	4	5
Lively	1	2	3	4	5

Appendix G

Self-Perception Profile for Children

Please check the appropriate box.

Really True For me	Sort of True For me		BUT		Sort of True For me	Really True For me
<input type="checkbox"/>	<input type="checkbox"/>	Some kids find it hard to make friends.		Other kids find it's pretty easy to make friends.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Some kids are often unhappy with themselves.		Other kids are pretty pleased with themselves.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Some kids have a lot of friends.		Other kids don't have very many friends.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Some kids don't like the way they are leading their life.		Other kids do like the way they are leading their life.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Some kids would like to have a lot more friends.		Other kids have as many friends as they want.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Some kids are happy with themselves as a person.		Other kids are often not happy with themselves.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Some kids are always doing things with a lot of kids.		Other kids usually do things by themselves.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Some kids like the kind of person they are.		Other kids often wish they were someone else.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Some kids wished that more people their age liked them.		Other kids feel that most kids their age do like them.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Some kids are very happy being the way they are.		Other kids wish they were different.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Some kids are popular with others their age.		Other kids are not very popular.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Some kids are not very happy with the way they do a lot of things.		Other kids think they way they do things is fine	<input type="checkbox"/>	<input type="checkbox"/>

Appendix H

(SASC-R) Use these numbers to show HOW MUCH YOU FEEL something is true for you:

- 1 = Not at all
- 2 = Hardly ever
- 3 = Sometimes
- 4 = Most of the time
- 5 = All the time

1. I worry about doing something new in front of other kids... 1 2 3 4 5
2. I like to play with other kids.....1 2 3 4 5
3. I worry about being teased.....1 2 3 4 5
4. I feel shy around kids I don't know.....1 2 3 4 5
5. I only talk to kids I know really well.....1 2 3 4 5
6. I feel that other kids talk about me behind my back.....1 2 3 4 5
7. I like to read.....1 2 3 4 5
8. I worry about what other kids think of me.....1 2 3 4 5
9. I'm afraid that others will not like me.....1 2 3 4 5
10. I get nervous when I talk to kids I don't know well.....1 2 3 4 5
11. I like to play sports.....1 2 3 4 5
12. I worry about what others say about me.....1 2 3 4 5
13. I get nervous when I meet new kids.....1 2 3 4 5
14. I worry that other kids don't like me.....1 2 3 4 5
15. I'm quiet when I'm with a group of kids.....1 2 3 4 5
16. I like to do things by myself.....1 2 3 4 5
17. I feel that other kids make fun of me.....1 2 3 4 5
18. If I get into an argument with another kid, I worry that he or she
will not like me.....1 2 3 4 5
19. I'm afraid to invite other kids to do things with me because they might
say no.....1 2 3 4 5
20. I feel nervous when I'm around certain kids.....1 2 3 4 5
21. I feel shy even with kids I know well.....1 2 3 4 5
22. It's hard for me to ask other kids to do things with me1 2 3 4 5

Appendix I

Interaction Coding Sheet

MOVE	Number of Times Observed
Irrelevant comment	
Direct suggestions	
Indirect suggestions	
Requests information	
Requests action	
RESPONSES	Number of Times Observed
Initiates compromise	
Agreements	
Direct disagreement	
Indirect disagreement	
Answers request for information	
Complies with request for action	
Acknowledgement	
Relevant comment	
Dictates feelings	
OTHER	
Length of time before first response	

Length of time for reply	
Total number of utterances	
Number of self-disclosure statements	
Number of statements relating to the other person	

Appendix J

Children's Social Perception

This is a measure of how you feel about your friends. Please circle the number that best represents how true a statement is for you.

- 1 = Not at all
- 2 = Hardly ever
- 3 = Sometimes
- 4 = Most of the time
- 5 = All the time

I have a lot of friends	1	2	3	4	5
I have a hard time making friends	1	2	3	4	5
I feel like I don't have many friends	1	2	3	4	5
I find it easy to approach someone	1	2	3	4	5
I can make friends easily	1	2	3	4	5
I can carry on a conversation with someone	1	2	3	4	5
I wish I had more friends	1	2	3	4	5

Appendix K

Loneliness

Please answer the extent to which these statements are true about you.

	Always True	5			
	True Most of the Time	4			
	True Sometimes	3			
	Hardly Ever True	2			
	Never True	1			
1. It's easy for me to make new friends at school	1	2	3	4	5
2. I like to read	1	2	3	4	5
3. I have nobody to talk to	1	2	3	4	5
4. I'm good at working with other children	1	2	3	4	5
5. I watch TV a lot	1	2	3	4	5
6. It's hard for me to make friends	1	2	3	4	5
7. I like school	1	2	3	4	5
8. I have a lot of friends	1	2	3	4	5
9. I feel alone	1	2	3	4	5
10. I can find a friend when I need one	1	2	3	4	5
11. I play sports a lot	1	2	3	4	5
12. It's hard to get other kids to like me	1	2	3	4	5
13. I like science	1	2	3	4	5
14. I don't have anyone to play with	1	2	3	4	5
15. I like music	1	2	3	4	5

Online communication and shyness

16. I get along with other kids	1	2	3	4	5
17. I feel left out of things	1	2	3	4	5
18. There's nobody I can go to when I need help	1	2	3	4	5
19. I like to paint or draw	1	2	3	4	5
20. I don't get along with other children	1	2	3	4	5
21. I'm lonely	1	2	3	4	5
22. I'm well-liked by the other kids in my class	1	2	3	4	5
23. I like playing board games a lot	1	2	3	4	5
24. I don't have any friends	1	2	3	4	5

Appendix L

Debriefing

I would like to take this opportunity to thank you for participating in the study of online communication. This study examined the benefits associated with online communication for shy versus non-shy children. Shy children are sometimes disadvantaged as compared to children who have more externalizing problems because their maladaptive behaviours are not seen. Since their behaviours are not disruptive to others, shy children are often neglected by researchers, teachers, and peers. However, not only is it important to identify children who are shy, but also to intervene so that they can avoid potential negative outcomes associated with prolonged shyness (e.g., Beer, 2002; Anderson, 1994; Ialongo, Edelsohn, Werthamer-Larsson, Crockett, & Kellmam, 1995). Although most intervention programs for shy children focus on teaching the skills needed in specific contexts, it would be valuable to study a means by which shy children are able to learn these skills independently. Independent learning of conversation and social skills may help in reducing negative consequences associated with shyness, such as loneliness and depression. On-line chat groups could be one such way that children could learn conversation skills and social skills independently. Furthermore, on-line chat groups provide an opportunity to study whether or not shy children utilize social skills and how their skills may differ from those of non-shy children. Thus, the goals of this study are to investigate the use of online chat groups to (1) investigate how shy children communicate online as compared to non-shy children and (2) study whether such interactions can play any role in preventing the development of negative outcomes associated with shyness following the chat group sessions.

It is anticipated that results will be available in January 2011. Although individual results will not be analyzed, general information will be provided upon request. If you have any questions, you can contact me or my supervisor Dr. Alastair Younger.

Once again, we would like to thank you for your time and help with this study. Your participation was very much appreciated.

Sincerely,

Julie Desjardins

Appendix M

Means and Standard Deviations Across Group and Session

Variable	Grp	T1	T2	T3	T4	T5
Irrelevant Comment	Average	1.07 (1.39)	.57 (1.02)	.64 (1.08)	.21 (.43)	.14 (.36)
	Shy	.64 (1.15)	.43 (.76)	1.00 (1.30)	.86 (1.29)	.50 (1.29)
Direct Suggestions	Average	.07 (.27)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
	Shy	.00 (.00)	.00 (.00)	.07 (.27)	.07 (.27)	.07 (.27)
Requests Info	Average	8.00 (4.33)	5.29 (2.92)	4.43 (3.30)	5.36 (3.57)	3.43 (2.85)
	Shy	9.00 (4.52)	6.64 (4.18)	5.07 (2.90)	7.86 (3.40)	3.86 (3.21)
Requests Action	Average	.07 (.27)	.00 (.00)	.00 (.00)	.21 (.58)	.07 (.27)
	Shy	.07 (.27)	.07 (.27)	.00 (.00)	.07 (.27)	.00 (.00)
Initiates Compromise	Average	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
	Shy	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Agreements	Average	.93 (1.14)	.93 (.83)	1.43 (1.51)	1.43 (1.60)	1.07 (1.69)
	Shy	1.36 (1.39)	.57 (.76)	1.14 (.95)	.71 (1.14)	1.14 (1.83)
Direct Disagreement	Average	.07 (.27)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
	Shy	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.07 (.27)
Indirect Disagreement	Average	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
	Shy	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Answers Request for Info	Average	8.21 (2.94)	5.43 (3.13)	4.14 (2.66)	7.07 (2.30)	3.29 (2.81)
	Shy	6.64 (3.54)	4.43 (2.07)	3.36 (2.41)	4.14 (2.41)	3.07 (2.65)
Complies with Request for Action	Average	.07 (.27)	.00 (.00)	.00 (.00)	.07 (.27)	.00 (.00)
	Shy	.00 (.00)	.00 (.00)	.00 (.00)	.07 (.27)	.07 (.27)
Acknowledge	Average	1.07 (1.39)	1.29 (1.64)	.86 (1.17)	1.43 (1.60)	1.14 (1.75)
	Shy	.93 (1.44)	.93 (1.33)	1.07 (1.69)	.93 (1.49)	.71 (1.33)
Relevant Comment	Average	11.50 (11.79)	10.14 (10.47)	8.93 (9.60)	12.50 (12.90)	8.50 (8.92)
	Shy	14.57 (14.13)	10.29 (10.16)	9.50 (9.34)	12.71 (12.55)	8.00 (7.41)
Dictates Feelings	Average	4.57 (6.24)	3.29 (4.62)	3.21 (4.39)	4.21 (5.86)	2.00 (2.48)
	Shy	3.07 (4.60)	1.14 (1.41)	1.43 (2.03)	2.64 (3.18)	1.43 (1.70)
Length of Time before First Resp	Average	7.00 (12.93)	8.93 (14.80)	10.71 (19.75)	6.00 (9.86)	4.86 (7.42)

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(sec)						
	Shy	16.36 (22.89)	6.64 (16.47)	7.29 (13.83)	4.64 (8.08)	16.36 (43.61)
Length of Time before Reply (sec)	Average	3.36 (5.64)	11.64 (29.40)	10.29 (22.42)	4.14 (9.93)	16.43 (50.07)
	Shy	3.00 (6.40)	10.29 (21.33)	5.71 (12.39)	3.21 (6.32)	16.07 (43.66)
Total Number of Utterances	Average	183.92 (79.14)	178.17 (75.20)	169.17 (91.52)	159.17 (71.18)	165.75 (114.91)
	Shy	191.08 (76.97)	205.67 (76.65)	199.33 (107.73)	188.83 (85.36)	182.67 (134.89)
Number of Sentences	Average	33.57 (14.72)	31.29 (17.97)	26.71 (12.58)	32.14 (12.35)	21.29 (7.29)
	Shy	33.86 (16.79)	31.29 (16.80)	26.79 (14.62)	34.93 (19.20)	25.29 (16.27)
Self- Disclosure	Average	.00 (.00)	.00 (.00)	.21 (.43)	.00 (.00)	.64 (1.01)
	Shy	.14 (.36)	.07 (.27)	.64 (1.51)	.14 (.54)	.64 (1.15)
Relating to the Other Person	Average	2.07 (2.67)	1.21 (2.01)	.71 (1.14)	1.36 (2.02)	1.07 (2.13)
	Shy	1.71 (1.94)	1.43 (1.83)	.93 (1.27)	1.93 (2.76)	.86 (1.17)

Variable	Grp	T6	T7	T8	T9	T10
Irrelevant Comment	Average	.29 (.47)	.50 (1.16)	.79 (1.42)	.86 (1.10)	1.93 (3.32)
	Shy	.43 (.65)	1.79 (1.72)	.64 (1.22)	.50 (1.02)	1.00 (1.62)
Direct Suggestions	Average	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
	Shy	.00 (.00)	.07 (.27)	.00 (.00)	.00 (.00)	.00 (.00)
Requests Info	Average	3.43 (2.56)	3.71 (3.41)	3.36 (2.06)	4.36 (3.23)	5.50 (5.11)
	Shy	6.36 (5.33)	3.36 (1.82)	4.14 (2.32)	6.14 (4.24)	5.00 (3.55)
Requests Action	Average	.14 (.36)	.00 (.00)	.00 (.00)	.00 (.00)	.07 (.27)
	Shy	.00 (.00)	.14 (.54)	.07 (.27)	.07 (.27)	.07 (.27)
Initiates Compromise	Average	.00 (.00)	.00 (.00)	.07 (.27)	.00 (.00)	.00 (.00)
	Shy	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Agreements	Average	1.93 (1.90)	1.07 (1.07)	.79 (1.42)	1.36 (1.95)	1.29 (1.77)
	Shy	1.64 (2.41)	.93 (1.21)	1.29 (1.68)	1.07 (1.64)	1.79 (1.93)
Direct Disagreement	Average	.00 (.00)	.07 (.27)	.00 (.00)	.00 (.00)	.14 (.36)
	Shy	.00 (.00)	.00 (.00)	.00 (.00)	.07 (.27)	.00 (.00)
Indirect Disagreement	Average	.07 (.27)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
	Shy	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Answers Request for Info	Average	5.50 (4.97)	2.57 (1.65)	3.36 (2.82)	4.71 (3.29)	3.80 (2.23)
	Shy	3.21 (2.42)	2.79 (2.23)	2.71 (2.13)	3.14 (2.35)	4.07 (2.97)
Complies with Request for Action	Average	.00 (.00)	.14 (.54)	.00 (.00)	.00 (.00)	.07 (.27)
	Shy	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)

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		(.00)	(.00)	(.00)	(.00)	(.00)
Acknowledge	Average	1.00 (1.18)	1.14 (1.96)	1.14 (1.70)	1.43 (1.83)	1.21 (1.93)
	Shy	1.00 (1.71)	1.07 (1.44)	.79 (1.19)	1.36 (1.60)	1.14 (1.92)
Relevant Comment	Average	10.14 (12.40)	11.79 (11.15)	8.50 (7.42)	10.07 (9.76)	14.29 (20.06)
	Shy	9.79 (10.15)	10.71 (10.03)	9.00 (8.77)	9.07 (8.32)	11.93 (11.93)
Dictates Feelings	Average	2.36 (3.30)	4.14 (6.01)	2.71 (4.71)	2.07 (3.05)	4.43 (5.57)
	Shy	1.57 (2.14)	2.07 (2.59)	2.21 (4.59)	1.50 (1.56)	2.36 (2.62)
Length of Time before First Resp (sec)	Average	4.36 (8.43)	6.57 (18.80)	1.93 (4.94)	4.14 (7.03)	3.21 (6.50)
	Shy	13.93 (36.40)	16.00 (35.97)	5.29 (7.83)	2.21 (4.51)	5.93 (10.95)
Length of Time before Reply (sec)	Average	13.29 (29.56)	12.43 (22.02)	4.21 (13.26)	.79 (2.01)	5.50 (16.53)
	Shy	14.29 (37.27)	12.07 (37.17)	1.57 (5.33)	8.50 (24.48)	1.50 (3.48)
Total Number of Utterances	Average	133.58 (65.50)	139.00 (83.45)	127.92 (71.83)	157.58 (83.35)	136.83 (97.57)
	Shy	162.83 (88.67)	197.17 (60.85)	158.92 (85.28)	186.67 (77.94)	177.00 (72.30)
Number of Sentences	Average	27.64 (14.05)	25.14 (11.43)	22.00 (9.24)	28.00 (10.93)	36.71 (25.97)
	Shy	28.71 (14.55)	28.43 (13.76)	24.43 (14.17)	28.86 (14.46)	31.64 (15.79)
Self- Disclosure	Average	.07 (.27)	.36 (.84)	.00 (.00)	.14 (.36)	.00 (.00)
	Shy	.14 (.54)	.36 (.93)	.07 (.27)	.21 (.58)	.29 (.61)
Relating to the Other Person	Average	.64 (1.01)	1.07 (1.49)	.57 (.76)	.64 (1.01)	1.14 (1.35)
	Shy	1.36 (2.10)	1.36 (2.71)	.64 (.93)	.57 (1.09)	.86 (1.10)