

Physical education games and social skills: An investigation with Iranian primary school girls

Tayebeh Sohrabi

Memorial University, Canada

This study investigated the effects of group play on communication skills in upper primary students. A quasi-experimental method for evaluation and comparison of communication development was adopted, and two classes of fifth-grade female students were randomly selected. They were divided into two groups: a control group and an experimental group. The survey *Willingness to Communicate* (McCroskey & Richmond, 1987) was administered to gather data, and a t-test was conducted to examine the hypothesis. A pre-test was given to participants in the two classes to measure communication skills development. The experimental group played the pre-selected group games for six weeks (two sessions of 60 minutes per week), while the control group continued with the standard curriculum. After this time a middle-test was administered on the students to eliminate time as a factor. This indicated that additional time was necessary, so the study continued for another six weeks. After the last phase of this study, a post-test was conducted, revealing that group play could be related to increasing social skills in the area of communication with peers ($p < .05$).

Introduction

This article examines the effects of group games on the development of social skills in the field of communication skills in children. Physical games, which can be group-based and individually-based games, are a ubiquitous part of almost all children's and adolescents' lives. Potential benefits of games have changed dramatically in the last decades, becoming increasingly complex, diverse, realistic, and social (Granic, Lobel & Engels, 2014). Van Oers (2013), for example, recognised that play is evolution based and is developmentally beneficial. Using these factors teachers can design, implement, and guide educational activities in more meaningful and authentic ways.

Given the variety of play and curriculum requirements, the activities can be designed for individual or group work. While the individual play is more focused on improving personal abilities, group play aims to enhance various social skills which according to Kasture, and Bhalerao, (2014) are defined as a "person's ability to interact, maintain and build relationships with others" (p. 1913). Lack of social skills such as communication and cooperation skills is believed to be one significant factor that contributes to children's failure in school. Learning is not just cognitive, but also includes social and emotional development (Chari et al., 2013). Social skills, including skills such as self-awareness, empathy, emotional management, emotional expressions in a constructive manner, self-regulation, cooperation and communication (Chinekesh, Kamalian, Eltemasi, Chinekesh & Alavi, 2013), can be gained when students work together in group games. Communicating with other people helps children to come out from themselves, communicate with the outside world, and interact with their environment (Rye, 2008). Despite children being self-centred in early childhood (Piaget, 1962), the social

atmosphere of group play has the potential to contribute to their social development and their achievements in communication, responsibility, and gaining familiarity with concepts like individual and social rights. Having the opportunity to teach through play might have the potential to deal with some problems caused by a lack of communication among students in primary/elementary education.

Some studies show those who experience insufficient playing during their childhood may have difficulties in social skills, such as communication, in adulthood (Nelson, McDonnell, Johnston, Crompton & Nelson, 2007). Learning through play creates an environment that is also engaging and fun. Games are exciting and rewarding because participants communicate with the other members of the group less formally than when engaged in other methods of learning. Due to its informal nature, play can engage students differently compared to more structured methods. The responsibility game outcomes are shared between all participants of groups, creating a positive experience for all members to practise how to communicate with others. Moreover, the dynamic of each group is different, and even if the same game is repeated, it continues to be engaging. If teachers can use play with a particular purpose and plan, its outcomes can be quite positive.

Although many studies have been done on the effect of group games on social skills in various fields such as communication skills, the majority of these studies have concerned with children having disabilities, such as autism spectrum disorder (Miltenberger & Charlop, 2014; Tse, Strulovitch, Tagalakis, Meng & Fombonne, 2007; Mundy, Kasari, Freeman & Paparella, 2006; Barry, Klinger, Lee, Palardy, Gilmore & Bodin, 2003). There has not been sufficient study on the effects of group games on typically developing children who do not suffer from any exceptionalities. This research focused on the effects of physical group games on the development of upper primary students' communication skills in Tehran, Iran.

Theoretical foundation

Play is a voluntary activity pursued without concealed purpose and with satisfaction or expectation (English & English, 1958). It is believed that maturation and socialisation grow throughout the stages of childhood by play. This assumption is supported by several developmental theories such as Kollburnner and Seifert (2013) who assumed childhood is the best time for learning adaptive behaviour and communication skills. Recently, the effect of play therapy for improving various social skills has been noticed by some social researchers (Stone & Stark, 2013). Amongst them, Vygotsky's theory of social development is probably the most well-known one. Vygotsky's theory provided the theoretical foundation for this study.

Vygotsky's theory underscores the underlying role of social interplay in cognitive development (Vygotsky, 1980). He assumed that the community plays a significant role in the process of meaning-making. As opposed to Piaget's notion that children's development must necessarily come before their learning, Vygotsky argues social

development takes place at first; such as children observing their parents' behaviours, listening to them, and then trying to imitate them. During these imitations, parents' guide, correct, and challenge their children. Learning through play provides experiences for children that are not comparable with other kinds of teaching methods. Through play, children engage in first-hand experiences, as opposed to other methods where students receive guidance from a teacher. As Bond (1986) assumed, learning through direct personal experience has a greater impact than being advised based on someone else's experience, which is inevitably second-hand. He believes play is an exciting and rewarding method of social education because of the way children use social interaction within groups. Through child-centred play, children take on different roles and learn from their social surroundings. As a result, children become more competent and begin to regulate their thoughts and behaviours.

Nowadays, there are a growing number of researchers who believe that a reason for the failure of many children in school is a lack of knowledge and skills in communication with others, which is the foundation of any relationship. Developing appropriate communication skill is essential to achieve optimal growth in social, educational, and professional areas (Ryan & Edge, 2012). Children with this skill can successfully navigate any communication issues they face (Jafari, Mohammadi, Khanbani, Farid & Chiti, 2011). Through play, children learn many basic social-emotional skills to communicate and express their feelings to others (Rye, 2008).

Research question

Do physical education games contribute to development of social skills?

Method

This research was conducted in March 2012. It was an empirical study using a quasi-experimental design with pre-test, middle-test and post-test groups. It was designed to examine the impact of group play on the communication skills of female upper primary students. A random selection technique was used to divide participants into two groups of 33 students. The pre-test was administered to examine whether there was a meaningful difference between the two groups. The results revealed no statistically significant differences. The experimental group was taught using game-based methods where students were involved in group play for six weeks, while the control group continued its regular instruction for the same time (two sessions of 60 minutes per week). The regular instruction for the control group in this grade included both individual and group games. But there was more emphasis on individual games especially when weather conditions were not appropriate for outdoor activities and students needed to stay in the class. Students did some individual activities to minimise noise and interruptions to activities in other classes. Also, according to teachers, it was usual that when they were behind schedule in some courses, such as mathematics, science, and literature, they used some physical education time for catching, thereby reducing opportunities for physical group games.

A specialist physical education teacher and the researcher mediated the play activities for the intervention group. To avoid creating the possibility that the control group would not "try hard" in the *Willingness to Communicate* (WTC) questionnaire described below, we tried to avoid the control group girls gaining an impression that they were receiving a different, "second best" set of activities. For this reason, two classes which were located into two separate floors were chosen and tried to keep secret the identity of the classes involved in the study.

After six weeks, a middle-test was conducted and the result of each group was compared with its pre-test. Also, the middle-test of the experimental group and the control group was compared. Statistics revealed there was no meaningful difference between the middle-tests of two groups, also between the pre-test and the middle-tests of each group. The program continued for another six weeks, to control the effect of time which was predicted to be one factor that affected the outcomes. After 12 weeks a post-test and a covariance test were conducted by using *SPSS* at a significant level $p < .05$ to compare group results.

To examine the effects of group play on communication skills some group games were used, selected for their popularity in Iran. These games were dodgeball, volleyball, *ganiye*, *haft-sang*, *zou*, *ay tokhmemorge gandide*, a match to control balance and speed, relay race, and passing a ball. These games are described below.

Designed games

Ganiye

Two groups with the same number of players are assembled on a playground which is approximately the same size as a volleyball court. For establishing two groups, two leaders who are selected by players take turns at choosing a person as a teammate, until all players are in one of two groups. First, a coin is flipped to decide which team will start the game. The team that wins the coin toss (Team A) takes its position inside the playground. The other group (Team B) stands around the perimeter of the playground. Members of Team B try to touch the members of Team A while they run from the playground and try to avoid being touched. Each person who is touched must leave the playground. This trend will continue until all members are touched and go out of the playground. The teams then switch places, and the game starts again.

Ay tokhmemorge gandide

All participants stand in a circle. One person (Person A) starts the game by running around this circle while singing a poem. Person A has a scarf in her/his hand and will suddenly put it on top of one person's head (Person B). Other participants encourage Person A and guide her/him on a route to escape. Person B tries to catch Person A. If Person B can do that, Person A must sit inside the circle and cannot continue the game next time. Person B continues the play.

Zou

Two groups with the same number of participants are assembled on a playground which is roughly the same size as a volleyball court. To form two groups, players choose two leaders, and then the leaders take turns selecting a player, until all players belong to one of two groups. A coin is flipped to decide which team will start the game. The team that wins the coin toss (Team A) takes their positions inside the playground. The other group (Team B) stands around the perimeter of the playground. One member of Team B comes and tries to touch the members of Team A while producing the sound “*zouuuuuuuuuuu*” nonstop. If he/she cannot continue to create that sound without stopping, they must change places with another teammate. Each person who is touched must leave the playground. This process will continue until all members are contacted and go out of the playground. The teams then switch places, and the game starts again.

Match to control balance and speed

Two groups with the same number of players, and two curved lines drawn on the floor are required. The races start at the same time. Members have to run on the tracks with one leg while trying to control their balance. If a student loses her/his balance, they have to start again. When one member of a group finishes the course, the next person will do the same thing. This game will continue until all members have completed the course. Speed and balance are significant in this game since the team that finishes first will be the winner.

Haft sang

Two groups with the same number of students are assembled on a playground which is nearly the same size as a volleyball court. For establishing two groups, two leaders are chosen by players. Then the leaders take turns in selecting a player, until all players belong to one of two groups. Also, seven stones and a ball are required for this game. A coin is flipped to decide which team will start the game. The team that wins the coin toss (Team A) take their positions inside the playground and tries to hit the stones that have been stacked on top of each other with the ball. Members of Team B try to restack the stones, while members of Team A try to stop them with the ball. Each person who is hit with the ball must leave the playground. The team that restacks the most stones before their players are eliminated is the winner. The teams then switch places, and the game starts again.

Passing the ball

Participants are divided into several groups with the same number of players. Members of each team stand in a line, and the game begins when a signal is given. The first team member passes the ball to the next person. The object is to pass the ball down the line as quickly as possible, and the team that finishes first wins. If the ball is dropped, that team has to start from the beginning.

Relay race

Participants are divided into several groups with the same number of players. One member of each group starts running toward a specific point at the same time. When the first person reaches that point, the second member of that team begins running. This play continues until all members of the group have run the course. The team that finishes first is the winner.

The 12 games in were administered in the following order during weeks 1-6, then were repeated in weeks 7-12 in the same order.

Session	Name of game	Number of groups and number of participants in each group
First	Dodgeball	Four groups, eight people in each group
Second	Match to control balance and speed	Four groups, eight people in each group
Third	Zou	Four groups, eight people in each group
Fourth	Ay tokhmemorge gandide	All students in one group
Fifth	Ganiye	Four groups, eight people in each group
Sixth	Dodgeball	Four groups, eight people in each group
Seventh	Haft sang	Four groups, eight people in each group
Eighth	Volleyball	Four groups, eight people in each group
Ninth	Volleyball	Four groups, eight people in each group
Tenth	Relay race	Four groups, eight people in each group
Eleventh	Passing a ball	Four groups, eight people in each group
Twelfth	Ganiye	Four groups, eight people in each group

Hypotheses

This study was done to examine whether group play has any effect on the communication skills of female students in a fifth-grade elementary school class in Tehran, Iran. The alternative hypothesis was: There is a positive relationship between group play-based teaching and development of upper primary students' social skills in the field of communication.

Statistical population and sampling

The statistical population included all female students of elementary schools in Tehran, Iran. It consisted of 211,610 public and 20,172 private school students. Clustered sampling was used to choose participants. Of the 21 educational districts in the city, one school from district number 18 was randomly selected. Of the five elementary school grades at this school, two classes from grade five participated in the study. Female classrooms were chosen since Iranian schools are segregated, and girls' schools were more approachable for a female researcher (Speak, Escobedo, Russo & Zerbe, 2018). Fifth graders are at a crucial stage in the Iranian school system; it is the last grade in elementary, and they will step into the junior high school where there are culturally expected to show

better communication skills. Iranian fifth grade students are 10 years old. According to the schools, all girls were typically developing. Random sampling was used to make intervention and control groups comparable in terms of relevant control variables such as linguistic skills. No significant differences in the mean scores of the two groups in the pre-test were found, as demonstrated below. Then the classes, which each had 32 students, were assigned to *Control*, which continued its routine program, and *Experimental*, which played designed group games.

Data gathering and analysis

The measurement of *Willingness to Communicate* (WTC) developed by McCroskey and Richmond (1987) was translated into Persian and used to examine if group plays had any effect on the development of communication skills in upper primary students. The *Willingness to Communicate* scale measures a person's self-reported willingness to communicate. The scale has 20 items which depict situations in which a person might choose to communicate or not to communicate, divided into two groups and seven subgroups (Appendix). Each group estimates one ability, such as the ability to communicate with friends, strangers, or in public speaking, based on the percent of instances where the survey respondent would choose to communicate (0 = never to 100 = always). An overall score above 82 shows a high level of willingness to communicate and scores lower than 52 show a low willingness to communicate.

The validity and reliability of WTC are outlined and discussed by McCroskey (1992), who is concluded that the scale is of sufficient quality to be recommended for research and screening purposes. Also, the validity and reliability of the questionnaire were tested in some previous studies (Chan & McCroskey, 1987; McCroskey & Baer, 1985; McCroskey & Richmond, 1990; Barraclough, Christophel & McCroskey, 1988; Yashima, 2002). Adding to this, although some other measurements examine this skill, WTC was chosen as it has been used in previous studies in Iran, and its radiality and validity was examined also in them. For example, in one study by Mohammad Khani (2010), the validity of this measurement has been estimated at 0.9. Reliability of this measurement was examined by Ganji (2003) in Iran, which was estimated at 0.8.

At first, WTC was conducted to establish a baseline and examine whether two groups are comparable. A two-month (12 sessions) treatment plan was administered to study its effects on students' social skills in the field of communication. After six sessions the WTC was applied again to establish a control of time/ maturation effects. Final administration of the test was done in session twelve to test the hypotheses. A t-test was performed on the students to compare the experimental and control groups. It tested the equality of the means before and after applying the intervention. The same test was used to examine the time/maturation effects.

Findings

First of all, as most Iranian use of the concept of WTC has been in the context of EFL (English as a foreign language) teaching and learning, the appropriateness of WTC

instrument items in the context of physical education activities is examined. Several professors reviewed the WTC, and it was viewed as covering the concept it purports to measure. They believed this test has face validity and can measure communication development in physical education activities.

Then to test the hypothesis “There is a positive relationship between group play-based teaching and improvement of upper primary students’ social skills in the field of communication”, a three-stage process was used as described below.

Stage 1

Comparing the pre-tests of control and experimental groups revealed no statistical difference between the two groups (Table 1).

Table 1: Comparison of control and experimental group pre-tests

Group	n	Mean	Std. dev.	t	df	p	Mean diff.
Control	32	6.33	2.407	0.822	64	0.414	0.46
Experimental	32	6.79	2.073				

Stage 2

A middle-test was administrated after the students had spent six sessions playing the selected group games, to investigate the effect of duration on the student’s development of communication skills. Statistics revealed no significant difference between the pre-test and the middle-tests of the groups, or between the control group and the experimental group. While time was not the only variable that was measured, it was concluded that after six weeks, not enough data had been collected to establish time as an independent variable. Therefore, to understand the significance of duration on the children’s social skills development, the program continued for another six sessions.

Stage 3

After 12 sessions, the post-tests showed no significant difference between pre-test and post-test for control group. However, significant differences were found between pre-test and post-test for the experimental group (Table 2), and between post-tests for control and experimental groups (Table 3).

Table 2: Comparison of pre-test and post-test means, by group

Group	n	Mean	Std. dev.	t	df	p	Mean diff.
Control, pre-test	32	6.76	1.883	0.747	31	0.461	0.42
Control, post-test	32	6.34	2.272				
Experimental, pre-test	32	6.74	2.129	-3.608	31	.001	-1.91
Experimental, post-test	32	8.65	2.288				

Table 3: Comparing post-test of experimental group with control group

Group	n	Mean	Std. dev.	t	df	p	Mean diff.
Control, post-test	32	5.58	2.990	3.424	63	0.001	2.54
Experimental, post-test	32	8.12	3.049				

The hypothesis of a positive relationship between group play-based teaching and development of upper primary students' social skills in the field of communication was accepted as proven.

Discussion

The purpose of this experiment was to assess the effects of group play on the communication skills of female students in a fifth-grade elementary school. The WTC instrument was used as a measure of social skills acquisition in the field of communication. In agreement with the hypothesis, the experimental group was superior to the control group in the development of communication skills, when twelve weeks of group play sessions were integrated into the school program. These differences were significant on the post-test (after twelve sessions), though when a middle-test was administered after six sessions, statistics revealed there was no significant difference in the development of communication skills between the pre-test and the middle-tests of groups; and the middle-tests of the control group and the experimental group. Thus duration or total time of group play sessions is an influence upon the children's development of communication skills.

The finding of this study expand upon results from similar previous studies (La Greca & Santogrossi, 1980; Holloway & Reichhart-Erickson, 1988; Koenig, De Los Reyes, Cicchetti, Scahill & Klin, 2009; Hromek & Roffey, 2009; Vidoni & Ward, 2009; Hildmann & Hildmann, 2009; Vidoni & Ulman, 2012; Craig, Brown, Upright & DeRosier, 2016). This experiment corroborates the findings of Hromek and Roffey (2009) who argued that play is a powerful way of developing social and emotional learning, such as communication and cooperation, in young people. Communication skills are needed to succeed at work and in life. Also, these skills help children achieve skills interpersonally, and positive communication relationships are critical for children's emotional and behavioural health. So, communication skills are needed, and group games can create opportunities for successful practice with others. As the physical education games involve only friend and acquaintance categories, with the stranger category not involved, students have this opportunity to practise this skill appropriately. Also, following the assumptions by Lau and Ho (2017; cited in Lau, 2018) the natural affiliation between children, play, and the desire to have fun with others make a play an ideal method for teaching communication skills. As Lau and Ho (2017) found, learning through play and free exploration in play can make these important learning activities in the classroom and school.

It seems that the common element among these studies is that students learn from each other in a social context. Having an active role in increasing awareness about others'

emotions, instead of having a passive role or only being an audience of other's experiences, creates a situation for practising, learning and improving communication skills. Also, it has the potential to lead to the wider development of skills such as social understanding, being aware of other individual's customs and culture, communication, and empathy. This assumption is in line with Hinkley, Brown, Carson and Teychenne's (2018) findings. They believed children can learn essential social skills through their everyday outdoor play, as they can provide opportunities for interaction, specifically conversation, communication, cooperation and management of conflict.

Moreover, during the school years, children expand their communication skills noticeably, since school is the first social community that they enter. This time can have a significant effect on each person's life. Educators creating situations for students to communicate can create opportunities for practising this skill development. Furthermore, during this period a child's personality and behavioural characteristics are founded. They are always learning from imitation, which will continue to shape their characters through their school years. Therefore, educational experience is of high significance, so educational authorities need to find effective methods for teaching and learning, such as group games. As Hong, Shaffer and Han (2017) proposed, a learning group approach works for children's development in the areas of relationship, communication, and play skills.

The present experiment revealed that to encourage the growth of communication skills, educators need to facilitate appropriate opportunities, such as group activities. This assumption is in line with the Yildiz, Şimşek and Ağdaş (2018) findings. They believed group activities can stimulate higher academic achievement, more positive attitudes towards school, and higher permanent learning levels, compared with traditional teaching methods. Being a member of social groups creates rights and responsibilities for all members. In the course of exercising these rights and taking responsibilities, as well as communicating with their peers, children learn communication, while talking to each other and expressing their feelings through the games. As Liu et al. (2015) stated in their study on playing group games:

Improvement in children's social awareness and social status was noted following the intervention. Children's competence in playing group games was found to be positively correlated with their social acceptance. The findings support the value of early social intervention in classrooms as a practical way for preparing students for primary school life. (p.217)

Research done with children who suffer from mental or physical health issues, such as autism, has revealed that group play has positive effects on social skills growth in various fields, such as communication, cooperation, and taking turns (Plavnick & Dueñas, 2018; Kasari et al., 2016; Jung & Sainato, 2015; Ducheneaut et al., 2005; Goldstein et al., 2014; Licciardello, Harchik & Luiselli, 2008; Coplan, Schneider, Matheson & Graham, 2010). Although the results of these studies might not be applicable for other children, their results can demonstrate the role of group games in educating children in various mental and physical situations. Jafari et al. (2011) assessed the effect of play therapy on the behavioural problems of maladjusted pre-school children. Results showed a significant

difference in the mean of post-tests of the experimental and control groups, and that a deficit of attention in hyperactive children was reduced after play therapy. They also found that play therapy had significant effects on the behavioural problems of children who received the intervention. Hatami, Yousefi and Delavar (2012) reported on the impact of group play and play therapy on children with behavioural disorders. They showed a positive correlation between play therapy and reduction of communication disorders. Legoff and Sherman (2006) adapted LEGO play for increasing motivation to participate in social skills intervention and providing a medium through which children with social and communication handicaps can interact effectively. They found participants in LEGO play improved social skills significantly more than the control group. Craig et al. (2016) showed that virtual game-based delivery of social skills training can be an appropriate method for improving children's social skills and behaviour.

Conclusion

This study aimed to identify whether group play had any positive effect on the communication skills of upper primary students. Results revealed that group play could provide opportunities for children to develop their communication skills, through incorporating practice in social activities, and in expressing social interests, and. Statistical analyses showed that group play has a useful role in improving students' communication skills. Thus, it can be stated that one way to enhance children's communication skills is group games. Based on the findings, it can be argued that group games as an educational method should be given greater attention in teaching programs.

I believe that communication skills instruction should be integrated into curricula as one of the main outcomes from physical education. Sport education in the curriculum is ideally suited for facilitating this outcome. Group games create opportunities for students to develop communication skills which they will use in their adult lives. Also, observing other children's ways of communicating can be a way of learning this skill. Through group games, children develop insights into their perspectives upon rules, routines, and experiences, within the school setting. Such insights can alert educators to areas of both well-matched and mismatched understandings of communication skills and expectations of others. Such ideas offer upper primary educators essential opportunities to support children in making transitions to new skills. They can assist children in developing an understanding of skills and values, from one community to the next.

The population for this study was limited to girls. As Iranian schools are segregated, the researcher used female elementary schools and convenience sampling, so results cannot be generalised to both sexes. However, it is hoped that the replication of this study or one that is similar is possible. Also, this study suggests that educators focus on the need for effective teaching methods for communication skills. Creative teachers tend to look for new methods which are interesting for students. Play has been favourable for children, and a number of subjects in the upper primary can be taught through it. It is recommended that teachers employ group games in their lessons to aid students in their development of social skills.

This study also provides some suggestions for further research. The present research has focused mainly on one aspect of social skills. Therefore, a recommendation for new research is that some studies can be done in other issues of social skills, such as cooperation, problem-solving, and taking turns, to examine the effect of group games on them. Adding to this, although there are numerous studies conducted by previous researchers on the effect of group play on various field of social skills, most of them are done on children who have some disabilities, such as autism, and there has not been enough study on children who do not have any physical or mental issues. Hence, more studies on these groups of children will shed light on a better understanding of playing and their development. Also, further research can use other relevant instruments to corroborate the WTC findings or improve upon the WTC findings, as most of the Iranian studies used the WTC instrument in the context of teaching and learning English as a foreign language, and there is not enough studies using WTC in the context of physical education games. Furthermore, the use of qualitative research methods, especially interviews with one or more of the categories teachers, principals, girls and parents is recommended for further research.

Some potential limitations of this study also should be taken into consideration, as the participants of this study were only fifth-year students. Future researchers could replicate the study with boys, with larger groups, and groups of students from different grades, so that the results can be more widely generalised. Another limitation is that data collection was in 2012, some years ago. However, I believe that the context has changed little since 2012, owing to the slowness of social change. Iranian schools remain segregated by gender, and the Iranian curriculum has not changed significantly since 2012, suggesting that little change would be expected if the experiment were to be repeated in 2019.

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Appendix: Willingness to communicate (WTC)

Willingness to communicate is the most basic orientation toward communication. Almost anyone is likely to respond to a direct question, but many will not continue or initiate interaction. This instrument measures a person's willingness to *initiate* communication. The face validity of the instrument is strong, and results of extensive research indicate the predictive validity of the instrument. Alpha reliability estimates for this instrument have ranged from .85 to well above .90. Of the 20 items on the instrument, 8 are used to distract attention from the scored items. The twelve remaining items generate a total score, 4 context-type scores, and 3 receiver-type scores. The sub-scores generate lower reliability estimates, but generally high enough to be used in research studies.

Directions

Below are 20 situations in which a person might choose to communicate or not to communicate. Presume you have a completely free choice. Indicate the percentage of times you would choose to communicate in each type of situation. Indicate in the space at the left of the item what percentage of the time you would choose to communicate (0 = never to 100 = always).

- _____ 1. Talk with a service station attendant.
- _____ 2. Talk with a physician.
- _____ 3. Present a talk to a group of strangers.
- _____ 4. Talk with an acquaintance while standing in line.
- _____ 5. Talk with a salesperson in a store.
- _____ 6. Talk in a large meeting of friends.
- _____ 7. Talk with a police officer.
- _____ 8. Talk in a small group of strangers.
- _____ 9. Talk with a friend while standing in line.
- _____ 10. Talk with a waiter/waitress in a restaurant.
- _____ 11. Talk in a large meeting of acquaintances.
- _____ 12. Talk with a stranger while standing in line.
- _____ 13. Talk with a secretary.
- _____ 14. Present a talk to a group of friends.
- _____ 15. Talk in a small group of acquaintances.
- _____ 16. Talk with a garbage collector.
- _____ 17. Talk in a large meeting of strangers.
- _____ 18. Talk with a spouse (or girl/boyfriend).
- _____ 19. Talk in a small group of friends.
- _____ 20. Present a talk to a group of acquaintances.

Scoring

Context-type sub-scores	Group discussion	Add scores for items 8, 15, 19; then divide by 3.
	Meetings	Add scores for items 6, 11, 17; then divide by 3.
	Interpersonal	Add scores for items 4, 9, 12; then divide by 3.
	Public speaking	Add scores for items 3, 14, 20; then divide by 3.
Receiver-type sub-scores	Stranger	Add scores for items 3, 8, 12, 17; then divide by 4.
	Acquaintance	Add scores for items 4, 11, 15, 20; then divide by 4.
	Friend	Add scores for items 6, 9, 14, 19; then divide by 4.
To compute the total WTC score, add the sub scores for stranger, acquaintance, and friend. Then divide by 3. All scores, total and sub-scores, will fall in the range of 0 to 100.		

Norms for WTC scores

	High WTC	Low WTC
Group discussion	> 89	< 57
Meetings	> 80	< 39
Interpersonal conversations	> 94	< 64
Public speaking	> 78	< 33
Stranger	> 63	< 18
Acquaintance	> 92	< 57
Friend	> 99	< 71
Total WTC	> 82	< 52

Sources: McCroskey (1992); McCroskey & Richmond (1987).

Tayebeh Sohrabi is currently a Master of Education student at Memorial University of Newfoundland in Canada. Previously, she was a vice principal and teacher in Iran where she conducted her first masters thesis on students' social skills development. Her research interests include inclusivity in elementary curriculum and social skills in dual lingual children.
Email: tsohrabi@mun.ca

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