Tongue-tied ties : effects of language, intergroup boundaries and goal attainment in intergenerational gameplay

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**TONGUE-TIED TIES: EFFECTS OF LANGUAGE,
INTERGROUP BOUNDARIES AND GOAL ATTAINMENT
IN INTERGENERATIONAL GAMEPLAY**

SNG RONG HUI JEREMY

A thesis submitted to the Nanyang Technological University
in fulfillment of the requirement for the degree of
Master of Communication Studies

Wee Kim Wee School of Communication and Information

Supervisor: Assoc Prof Jung Younbo

RUNNING HEAD: TONGUE-TIED TIES

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ABSTRACT

As the world population ages, interactions between the young and old in everyday life will be more frequent. These trends raise new challenges but also present new opportunities for intergenerational communication. Around the globe, scholars are finding language barriers between different generations even within the family. The use of language, particularly regional dialects, tends to reflect one's social identity even more so than visual cues (Dragojevic & Giles, 2014). This may trigger stereotypes of different age groups and negatively influence intergenerational perceptions even before interaction has taken place. Drawing from social identity theory (Henri Tajfel, 1974), the salient categorization model of intergroup contact (Brown & Hewstone, 2005; Hewstone & Brown, 1986a) and current literature on intergenerational communication, I examine how digital games can be used to lower language barriers and promote intergenerational bonding through the introduction of common goals during gameplay. Specifically, a longitudinal field experiment was conducted with 50 pairs of young and elderly participants over 3 weeks to investigate the effects of language (common language vs. no common language) and goal attainment (success vs. failure) on various dependent variables, including intergroup anxiety, perceptions of game partners, general attitudes towards the outgroup as well as game enjoyment. The results show that digital gameplay generally reduced intergroup anxiety over time for both groups. Interacting with someone who could speak a common language helped to increase confidence about future interactions with other outgroup members. Even among those who did not speak a common language, positive outcomes were observed such that youths reported improved attitudes towards the general elderly outgroup. Furthermore, findings revealed that introduction of a common goal enhanced

game enjoyment among those who did not speak a common language. Potential implications for research and practice are also discussed.

Keywords: intergenerational communication, intergroup communication, language, goal, digital games, elderly

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CHAPTER ONE INTRODUCTION

The world population is ageing. Currently, one out of nine people in the world is above 60 years old, and one out of five people will be in this age group by 2050 (United Nations, 2013). This means that the chances of interaction in everyday life between the young and the old are increased, especially nonfamilial interactions with people not within the family (Thang, 2010). In spite of increased chances for intergenerational interactions, previous research has demonstrated that intergenerational perceptions between young people and the elderly are often less than positive (Giles, Ryan, & Anas, 2008). The young tend to view the elderly as narrow-minded, out of touch with society, and prone to complaining about their lives (Williams & Garrett, 2012). On the other hand, the elderly are likely to see the young as troublemakers (Alcock, Camic, Barker, Haridi, & Raven, 2011) and having ageist sentiments (Giles & Gasioerek, 2010). This is a trend that spans across Western and Eastern cultures (Giles et al., 2003), and Singapore is no exception (Thang, 2011).

But rather than seeing it as a problem, the increased contact between the young and old can present opportunities for mutually beneficial intergenerational communication. In fact, the potential benefits of intergenerational interaction have been well-documented. For the elderly, increased contact with young people can heighten their positive affect (Jarrott & Bruno, 2003), encourage lifelong learning (Xie et al., 2012), and improve their physical and mental well-being (Power, Eheart, Racine, & Karnik, 2007). It also facilitates active aging through increasing social engagement outside of their homes (Fitzgerald & Caro, 2014; Molpeceres, Pinazo, & Aliena, 2012). As for the young, awareness and respect for the needs of the older generation can be inculcated (Ellis &

Bruckman, 2002), along with an increase in social maturity that persists even years after their participation in intergenerational programs (Femia, Zarit, Blair, Jarrott, & Bruno, 2008). Studies in Europe and Singapore have also found that youths engaged in intergenerational initiatives subsequently show more interest in their own elderly family members, which eventually contributes to social cohesion and national solidarity as a whole (Hatton-Yeo, 2002). Evidently, intergenerational programs offer many exciting and promising benefits to be reaped, and this has not gone unnoticed as Jarrott and Smith (2011) report an increase in nonfamilial intergenerational programs that aim to encourage the elderly to interact with youth outside of their family, including service-learning or nursing home visits.

However, there are many barriers and challenges to successful and effective implementation of such programs. One main difficulty is finding suitable activities that can cater to both young and old (Jarrott & Smith, 2011). In most intergenerational initiatives, the elderly is often forced to participate in child-oriented games like coloring or playing with toys. This may lead to infantilization of elders, subsequently resulting in undesired effects such as loss of interest and even resentment (Salari, 2002). According to Wright (2008), activities that are conducive for intergenerational interactions should cater to the different needs, passions and skills of each generation.

Yet, each generation grows up with different technologies and experiences, which makes it challenging to establish commonalities with older generations. The current generation of young people are "digital natives" (Prensky, 2001) who are well-acquainted with technology and grow up "surrounded by and using computers, videogames, digital music players, video cams, cell phones, and all the other toys and tools of the digital age"

(p. 1). The digital natives therefore exhibit more familiarity and adeptness at using such digital technology than previous generations before them, thus giving rise to age-based differences in digital literacy (Herring, 2008).

Despite this, multiple scholars have suggested that the digital divide (Tapscott, 1998) that is so commonly associated with the generation gap can in fact be seen as an opportunity for intergenerational bonding (Aarsand, 2007; Kooiman & Sheehan, 2014; Ward & Smith, 1997). Ward and Smith (1997) first pointed out that while developments in technology may hinder intergenerational communities, it may also help bridge the gap in various ways such as connecting grandparent and grandchild via email exchanges or distributing information regarding intergenerational programs.

More recently, Aarsand (2007) argues that new technology in fact presents a common space where different generations can meet and participate in activities. In this sense, in spite of a rigid gap between generations, the use of new digital technologies by the young and old offers opportunities for interaction. The older generation's lack of experience with technology can create more opportunities for meaningful interaction when they consult the young and ask questions (Aarsand, 2007). This is beneficial to both parties because the value of the younger generation is reaffirmed during this exchange, while the older generation's knowledge of technology is increased (Kooiman & Sheehan, 2014). Technology therefore functions as a topic of mutual interest that allows different generations to exchange knowledge and information, resulting in an increased involvement with one another (Gee, 2005; Van Dyke, Haynes, & Ferguson-Mitchell, 2009).

Furthermore, play is an important feature of grandparent-grandchild interaction (H. Davis, Vetere, Gibbs, & Francis, 2012). One of the roles that grandparents take on is to be playmates for their grandchildren (Bratton, Ray, & Moffit, 1998; T. Miller, Pedell, Sterling, Vetere, & Howard, 2012). Shared playful activities can easily engage both the young and old (Harley, Vetere, Fitzpatrick, & Kurniawan, 2012), and these shared playful interactions are crucial to strengthening the grandparent-grandchild relationship (H. Davis et al., 2012).

In line with the belief that the digital divide can be an opportunity for intergenerational interactions, and given the evidence that play features prominently in grandparent-grandchild relationships, several studies have examined the use of digital games in intergenerational bonding. These studies have found digital games to be a suitable activity for facilitating intergenerational interactions (Chiong, 2009; H. Davis et al., 2012; IJsselsteijn, Nap, Kort, & Poels, 2007; Volder & Greenberg, 2011) and improving intergenerational perceptions (Chua, Jung, Lwin, & Theng, 2013; Khoo, Merritt, Cheok, Lian, & Yeo, 2007). Compared to conventional activities like board games and television viewing, digital games can be more effective in bringing people together due to game enjoyment. Game enjoyment is crucial to understanding game experiences (Vorderer, Hartmann, & Klimmt, 2003), and while there is no consistent definition of game enjoyment in the field (Mekler, Bopp, Tuch, & Opwis, 2014), Fang, Chan, Brzezinski, and Nair (2010) note that scholars often use the term to refer to positive reactions derived from playing games, such as positive affect and positive subjective player experiences during game play. Game enjoyment has also been shown to relate to psychological outcomes such as intrinsic need satisfaction (Mekler et al., 2014),

and social outcomes such as enhanced interpersonal relationships (Klimmt & Hartmann, 2008). A study by Chua and colleagues (2013) demonstrates how game enjoyment may influence interpersonal outcomes. They assigned intergenerational pairs to play either digital games or traditional activities like card games and handicrafts, and found that digital game enjoyment played a key role in enhancing the elderly's perceptions of the young. Indeed, older adults find meaning in digital games because they see it as a way to stay in touch with young people and stay connected with children and grandchildren (De Schutter & Vanden Abeele, 2010). Digital games not only allow increased opportunities for positive interactions but also provide conversation topics, which subsequently bring grandparents, parents or children closer (L. Davis, Larkin, & Graves, 2002; Flora & Faulkner, 2006; Kooiman & Sheehan, 2014; Siyahhan, Barab, & Downton, 2010).

In addition, digital console games are also easily able to accommodate players of different ages, gender, or levels of expertise (Volda & Greenberg, 2011). The game console has even been described as a digital hearth, functioning as an important shared social space in environments such as the home (Volda & Greenberg, 2009). This is not unlike the television which served as an electronic hearth (Tichi, 1992) for the family to gather around and watch programs together. But while communal TV watching has declined due to the rise of personalized digital entertainment (Chambers, 2012; Livingstone, 2009), game consoles such as the Nintendo Wii are finding their place in the domestic living room as a communal activity for the family (Bryant & Drell, 2010; Chambers, 2012). This is not as surprising as digital gaming is, at its core, a social activity (Gee, 2003).

Nevertheless, communication variables such as language are often neglected in the current studies on video games. Given that opportunities for social interaction is a strong motivation in collocated gameplay (Vaida & Greenberg, 2009) and that language has important implications on social behavior (Kashima, Kashima, & Kidd, 2014), there is a need to examine the impact on social interaction outcomes when language barriers exist between players. This is because there is more and more evidence that language may serve as an intergroup boundary in intergenerational interactions. Scholars have shown that there is a widening language gap between the young and old, even within the same family (Dong & Dong, 2013; S. Ng & He, 2004; Sandel, Chao, & Liang, 2006). They have identified communication difficulties between the first generation of grandparents, who are usually only fluent in their native language, and their grandchildren who are only able to speak dominant languages such as English (Campbell & Christian, 2003). As a result, language barriers between the young and old are hindering the success of intergenerational programs (Ayala, Hewson, Bray, Jones, & Hartley, 2007; Thang, 2011). When both generations are not able to communicate fluently in a common language, merely bringing them together in such programs often result in awkward silences without any conversation happening (Thang, 2011). Scholars have suggested that language can at times be a stronger social identity cue compared to visual cues such as ethnic group (Dragojevic & Giles, 2014). Since age can be marked by obvious cues like visual appearance and voice quality (Williams & Garrett, 2002), it would not come as surprising if in such scenarios, language is the more salient indicator of group boundaries, rather than age. The question of how speaking different languages

can impact intergenerational interactions during collocated gameplay is thus an important one to address.

Despite language differences, there may be ways in which digital games are able to facilitate meaningful interactions. For example, online games have been shown to unite players from different cultural backgrounds in the presence of language barriers (Chik, 2011). This may be due to gameplay factors such as common goals which encourage players to work together regardless of differences (Thorne, Black, & Sykes, 2009). Existing literature that use digital games in intergroup research have mostly examined the effect of goal structures such as competition vs. cooperation, and their findings generally point to the latter as bringing more positive outcomes (Gajadhar, Nap, de Kort, & IJsselsteijn, 2010; Peng & Waddell, 2014; Rice et al., 2013; Velez, Mahood, Ewoldsen, & Moyer-Gusé, 2014). However, the subsequent impact on game partner perceptions when cooperation results in failure to achieve common goals has not been fully explored.

Outside of the video gaming context, Worchel, Axsom, Ferris, Samaha, and Schweizer (1978) found in a business setting that goal failure negatively influences outgroup evaluation. Krahe (2013) has suggested that groups may pin the responsibility on the outgroup when intergroup cooperation results in failure. The question of whether failure to achieve goals will impact game partner perception in an intergenerational context thus remains an important question to be answered, given the emerging interest in using digital games to facilitate bonding between generations (Chua et al., 2013; De Schutter & Vanden Abeele, 2010; Khoo et al., 2007; Rice et al., 2013; Siyahhan et al., 2010).

To summarize, there has been a growing need to examine the impact of language barriers and goal attainment on the effectiveness of digital games to enhance intergenerational perceptions, and yet there has been little research that empirically addressed this important question.

Therefore, the purpose of this study is twofold. Firstly, I hope to illustrate how interaction through digital games can bring about positive changes in our society, specifically to enhance intergenerational perceptions.

Secondly, my study is novel in looking at how player factors (common language vs. different language spoken by players), together with gameplay factors (successful goal achievement vs. failure) can influence gameplay outcomes. Through a longitudinal field experiment involving the Nintendo Wii, I hope that this will highlight the potential significance of language in game studies, especially in multilingual multiplayer contexts. In doing so, this may not only aid design and implementation of future intergenerational programs involving collocated digital gameplay but also suggest new directions for future studies examining multiplayer gaming.

CHAPTER TWO LITERATURE REVIEW

Social Identity and Intergenerational Communication

According to Sherif (1966), intergroup behavior can be understood as the behavior when individuals in one group interact with members of another group "in terms of their group identifications" (p. 12). While age is a continuous linear variable and not categorical in nature, it can be seen as periodic in nature, and people can thus be assigned to distinct age groups such as young, middle-aged, and old (Williams & Garrett, 2005). Intergenerational communication may thus be viewed as an intergroup encounter between groups of people, differentiated by age, who hold different values and beliefs (Giles & Coupland, 1991, p. 34). During intergenerational interactions, age apparently functions as a salient intergroup boundary where people perceive themselves as belonging to different social groups based on age categories (Williams & Garrett, 2005). In this context, these age categorizations are one way through which people derive their social identity.

Social identity is a useful concept to help us understand how age categorizations can have behavioral implications in intergenerational encounters. Tajfel (1974) defines social identity as "that part of an individual's self-concept which derives from his knowledge of his membership of a social group (or groups) together with the emotional significance attached to that membership" (p. 69). According to social identity theory (Henri Tajfel & Turner, 1986), individuals tend to form stereotypical perceptions of different social groups and mentally classify themselves and others according to these abstract categories. These categories are then internalized as part of their self-concept. In other words, social identity is formed based on the social categories or groups that we identify with (Williams & Nussbaum, 2001). Research has shown that both young and

old adults have clearly-defined stereotypes of different age groups, and this strongly impacts interaction outcomes and intergroup behavior (Hummert, Garstka, Ryan, & Bonnesen, 2004; Taylor, 1992). Due to individuals' innate desire for positive evaluations of themselves, they tend to engage in intergroup behavior (e.g. social comparison) that favors the group they belong to (ingroup) over other groups (outgroups), so as to maintain the positive valence of their own social identity (Hogg, Abrams, Otten, & Hinkle, 2004; Turner, 2010; Williams & Garrett, 2012). Social identity can therefore help further our understanding of intergenerational communication.

A key underlying assumption of social identity theory is that one can hold multiple social identities that vary in salience according to different social situations and contexts (Hogg, Terry, & White, 1995; Henri Tajfel, 1981; Williams & Nussbaum, 2001). Even though age-based social identity has been shown to exert a key influence in intergenerational communication outcomes (Harwood, Giles, & Ryan, 1995; Hummert et al., 2004; Williams & Giles, 1996), scholars have suggested that the boundaries indicating age-based social identity may be more communicatively and contextually negotiable than that of other forms of social identity, such as race (Williams & Garrett, 2012). According to Williams and Giles (1996), intergenerational intergroup contact occurs only when interactants perceive age as a salient intergroup boundary. They conducted a study asking youths to provide retrospective accounts and evaluations of interactions with the elderly, and found that reported satisfaction was greater in conversations where age salience was low than conversations where age salience was high (Williams & Giles, 1996). Besides demonstrating the potential impact of age categorizations on communication outcomes, this finding also shows that there are

intergenerational situations where age differences are not the most salient (Fox & Giles, 1993). If one can have multiple social identities that are selectively expressed based on different contexts (Henri Tajfel, 1981), then age differences may not always be the sole differentiator of group membership during intergenerational contact situations.

Language as a Salient Intergroup Boundary

In fact, other than age differences, language is fast becoming another key difference separating the young and old (Thang, 2011). The idea of language as a key indicator of group membership has been explored by past scholars (Giles & Johnson, 1981; Gumperz, 1982; Hansen & Liu, 1997). Gumperz (1982) put forth that language is largely responsible for the establishment and maintenance of one's social identity and ethnicity. He found that people engaged in code-switching between different languages or variations of the same language, so as to assume various social identities in different contexts.

In a similar vein, the ethnolinguistic identity theory developed by Giles and Johnson (1981) focuses on language as a key marker of ethnic group membership and social identity. According to them, individuals will make comparisons between their own ethnic group and outgroups. If the comparison results in a favorable evaluation of their own ethnic group, the individual achieves a positive social identity. However, if one finds their own ethnic group in a negative position, then they may utilize strategies to achieve a more positive social identity, such as assuming characteristics of the other dominant ethnic group. Given that language is a key feature of ethnic group membership, they may make linguistic adaptations such as speaking the language of the dominant outgroup (Giles & Johnson, 1981). But research based on ethnolinguistic identity theory has

largely focused on the study of language shifts and maintenance among immigrant groups (Abrams & Giles, 2007; Bolonyai, 1998; Luo & Wiseman, 2000).

In intergroup research, little attention has been given to studying language as a key identifier of intergroup boundaries (Wright & Tropp, 2005). Wagner and Machleit (1986) noted that the sharing of a common language is a prerequisite for successful intergroup interactions. Presumably, the groups must share a common language and communicate easily with each other so as to facilitate easy cooperation (Forbes, 2004). Negative intergroup attitudes can then be changed when sustained communication between groups leads to positive outcomes (Pettigrew, 1998). But only a handful of studies have examined intergroup interactions among those who do not share a common language. For instance, Clément, Gardner and Smythe (1980) examined interactions between student groups speaking different languages. They found that students who had more voluntary contact with the outgroup reported more positive attitudes towards outgroup members. However, they also noted that these students were also the ones who had the most favorable attitudes to begin with. Beyond that, there is little research examining whether a common language is a necessary condition for intergroup contact to result in positive attitudinal changes.

Yet language can be an important determinant of group membership and intergroup behavior, as even young children are attentive to linguistic differences and their significance in determining group membership (Aboud, 1977). Fluency in the dominant language of society can lead to unequal group status and group discrimination (Giles, Bourhis, & Taylor, 1977). On the other hand, sharing a common language may facilitate more positive intergroup attitudes. Specifically, Wright and Bougie (2007)

demonstrated that use of a minority language in the classroom can induce more positive intergroup attitudes towards the minority outgroup. They explain that a common language creates avenues of social interaction (Wright & Bougie, 2007), and understanding the language of an outgroup increases one's perceived similarity to the outgroup (Triandis, 1994).

Language and Intergenerational Communication

The existing literature on intergenerational communication proves useful in helping us understand the role of different language and speech styles in interactions between different generations. For example, scholars have found that young people tend to over accommodate to the elderly, become too polite or warm, or use infantile language. This can lead to negative interaction outcomes such as irritation, frustration and feelings of patronization by the elderly (Giles & Coupland, 1991; Giles, Fox, & Smith, 1993; Salari, 2002). But the current empirical studies on language and intergenerational communication are often limited to participants who can speak a common language (Giles et al., 1993; Hehman, Corpuz, & Bugental, 2012) or English speakers only (Gould & Dixon, 1997; Kemper, Vandepute, Rice, Cheung, & Gubarchuk, 1995).

But in today's context, we can no longer comfortably assume that different generations will always be able to speak a common tongue. Scholars have noted that speaking different languages are creating barriers to successful intergenerational interaction (Ayala et al., 2007; Thang, 2011). With globalization and increased human mobility, families are finding that language is surfacing as an issue in parent-child communication, even more so for grandparent-child communication (Dong & Dong, 2013; S. Ng & He, 2004; Sandel et al., 2006). This is because heritage languages are

increasingly replaced by other majority or national languages such as English. Scholars studying immigrant populations in the United States note a recurring pattern of language shift: the first generation may pick up some English but remains most fluent in the native tongue, the second generation acquires more English language skills and becoming more bilingual, and the third generation would eventually become English monolinguals with little to no fluency in their grandparents' language (Campbell & Christian, 2003; Edwards, 1994; Fishman, 1966). As such, the first generation of grandparents who are only fluent in their native language may not communicate easily with the third generation of grandchildren without the help of bilingual parents.

Language Shifts in Singapore

In Singapore's context, a similar language shift is occurring as well. Singapore is represented by three main ethnic groups: Chinese, Malays and Indians (Singapore Department of Statistics, 2010). Each ethnic group would further differentiate themselves as speakers of different languages depending on their region of origin (Kwan-Terry, 2000). For instance, the Chinese community is divided into different groups speaking a variety of Chinese dialects, which are vernacular variations of the Chinese language that are mutually unintelligible (C. Ng, 2011). Some major Chinese dialect groups in Singapore include Hokkien, Teochew, Hainanese and Cantonese (Göransson, 2009; F. F. Lee, 2000). Similarly, for other ethnic groups, the Malay community may speak Bahasa Melayu or Baba Malay, and the Indian community may speak Tamil or Hindi, among other Indian languages. According to Kuo (1980), there used to be a minimum of 25 identifiable languages or language communities in Singapore. People therefore not only identified themselves based on ethnicity, but also their regional identity based on the

regional language they spoke. For example, Chinese Hokkien speakers would feel a greater sense of affinity with fellow Chinese Hokkien speakers compared to other Chinese who did not speak Hokkien (Kwan-Terry, 2000).

However, various campaigns and policies have led to dramatic changes in the language landscape of Singapore, which also altered the ways people perceived their ethnic identity and led to the decline of their regional identity. In the interest of nation-building and establishing a common national identity, English was introduced as an inter-ethnic lingua franca to facilitate better communication among different ethnic groups (Kwan-Terry, 2000; Wee, 2002). Mandarin, Bahasa Melayu and Tamil were also introduced as official mother tongues representing the major ethnic communities of Chinese, Malay and Indian respectively. Use of dialects were also banned from television programs and radio broadcasts (Wee, 2010). The official mother tongues would serve as ethnic identity markers of its associated ethnic group (Stroud & Wee, 2007), replacing the role of dialect in construing one's identity.

These language policies have been largely successful albeit at a price that has gone unnoticed for many years. For instance, many of the older generation in Singapore unfortunately missed out on the implementation of public education and are either illiterate or can only speak their mother tongues such as Chinese dialects, Malay or Tamil (Theng, Chua, & Pham, 2012). The younger generation who are more educated are only taught English and Mandarin in schools and at home, and discouraged from learning Chinese dialects (Göransson, 2013). The success of the language policies can be seen from the increased use of English and the declined use of other languages at home. The number of Chinese families using English at home has increased from 11.6% in 1980 to

32.6% in 2010. On the other hand, use of Chinese dialects has fallen drastically from 76.2% in 1980 to 19.2% in 2010 (Kwan-Terry, 2000; Singapore Department of Statistics, 2010). This has resulted in significant language barriers in intergenerational communication which may serve to perpetuate generation gaps if not addressed (Göransson, 2013; Tay & Teng, 2015; Thang, 2011). Besides hindering verbal communication with the older generation, the decline in use of Chinese dialects has given rise to certain negative stereotypes linked to those who speak these languages. Tan and Ng (2010) found through semi-structured interviews that people who spoke dialect, especially the older age groups, would be perceived as uncouth, unrefined, and not very highly-educated. Such stereotypes of dialect speakers may further discourage youths from interacting with the elderly. Local policymakers seem to have acknowledged the importance of language in intergenerational bonding, as can be seen from their attempts to reduce these language barriers through new community initiatives that offer basic dialect training to youths by senior volunteers (Thang, 2011).

The use of language policy as a strategy to manage a multiethnic society such as Singapore (Stroud & Wee, 2007) also reveals the fact that language can be a salient indicator of social identity and can alter perceptions of group membership. Through qualitative in-depth interviews, Stroud and Wee (2007) have found that the use of Chinese dialects in Singapore can change views of one's social identity, producing effects such as facilitating bonding between people from different socio-economic groups. A male interviewee expressed that while serving in the Singapore military, he often spoke in dialect when interacting with those who were less educated in order to avoid being seen as elitist. This also helped him to build better friendships (Stroud & Wee, 2007).

Furthermore, the researchers reported an instance where a young medical social worker in Singapore spoke dialect so as to make elderly patients feel more comfortable, and subsequently help them open up to caregivers. These qualitative findings corroborate the idea put forth by Dragojevic and Giles (2014) that regional dialects can be perceived as representative of various social identities including geographic background and social class. They further argue that it may potentially be a stronger cue for social categorization than other visually observable cues like ethnicity (Dragojevic & Giles, 2014) or in the context of this study, age group.

Given that language can be a key indicator of one's dialect group, if a young person is able to converse with an elderly in a dialect language e.g. Hokkien, the intergroup boundary of age may become less salient as both individuals may perceive themselves as belonging to the same dialect group (i.e. Hokkien). This may therefore result in more positive intergenerational perceptions.

It is important to note that the presence of language barriers between generations is not unique to Singapore (Tan & Ng, 2010). Researchers in other parts of the world including United States (Schofield et al., 2012), Australia (Tannenbaum, 2005), New Zealand (S. Ng & He, 2004), Canada (Park & Sarkar, 2007) and Taiwan (Sandel et al., 2006) are identifying similar language shifts that impede interaction between different generations. How language differences or commonalities may contribute to intergenerational perceptions thus remains an important question to be answered.

Language in Video Game Play

The significance of language during video gameplay has not been well understood, although there is some indication of its importance in player interactions.

Leppänen & Piirainen-Marsh (2009) found that players used commentary during gameplay to create opportunities for humor and enjoyment. Sharing a common language may therefore be a necessary prerequisite for game enjoyment with game partners. Moreover, conversation is often used to construct a shared awareness of game engagement, such as offering words of encouragement, or words of consolation during play (Voids, Carpendale, & Greenberg, 2010). This verbal exchange may help increase interpersonal attraction towards game partners and subsequently result in more positive perceptions regarding the partner. According to Berscheid and Walster (1978), interpersonal attraction can be defined as one's tendency to assess another person in a positive or negative manner. McCroskey and McCain (1974) further specified three dimensions of interpersonal attraction: a social dimension (based on personal liking), a task dimension (based on ease or value of working with the other person), and a physical dimension (based on clothing and appearance). Of the three, the dimension of social attraction is most relevant to the context of this study, and therefore will be operationalized as such. This is because many studies have shown that playing video games together can lead to greater liking (i.e. social attraction) towards game partners (Chua et al., 2013; Dabbish, 2008; Greitemeyer & Cox, 2013; Velez et al., 2014).

To summarize, this study examines language as a communication variable in the context of video game play, so as to increase our understanding of how language plays a role in communication between generations. When participants are unable to communicate fluently using a common language, this may serve to perpetuate the intergenerational gap even more in spite of the fun activity. In other words, intergroup anxiety and outgroup attitudes may worsen. Intergroup anxiety refers to feelings of

uncertainty and threat experienced by people in intergroup encounters (Pettigrew, 2008).

Intergroup anxiety is a key variable in understanding intergenerational encounters, as many studies have demonstrated its role in promoting positive interaction outcomes and willingness to interact with outgroups in the future (Bousfield & Hutchison, 2010; Chua et al., 2013; Drury, Hutchison, & Abrams, 2016; Powers, Gray, & Garver, 2013).

Attitudes can be defined as “learned predispositions to respond in a consistently favorable or unfavorable manner with respect to a given object” (Fishbein & Ajzen, 1975, p. 6). In other words, attitudes describe the positive or negative evaluations about an object of thought. Specific to the intergenerational context of this study, outgroup attitudes refer to positive or negative evaluations held regarding members of the other age group.

Thus the following hypotheses are proposed:

H1: Over time, elderly participants in the common language condition will report:

(a) greater decrease in intergroup anxiety, (b) greater improvement in specific partner attraction, (c) greater improvement in outgroup attitudes, and (d) higher level of game enjoyment compared to those in the different language condition.

H3: Over time, youth participants in the common language condition will report:

(a) greater decrease in intergroup anxiety, (b) greater improvement in specific partner attraction, (c) greater improvement in outgroup attitudes, and (d) higher level of game enjoyment compared to those in the different language condition.

Goal Attainment and Intergroup Interactions

Existing literature on digital games suggests that it is possible for players who do not speak the same language to play together. A Chinese-speaking player explains that playing with others was possible because the communication during gameplay was not

about "chatting in perfect English, it was getting the meaning across that counted" (Chik, 2011). This may be due to gameplay elements, such as progression goals, that help to bond players who speak different languages.

Specifically, goal-oriented cooperative play is able to stimulate social activity in various forms, from phatic communication and helping behaviors to even serious friendships and romance, often in multilingual contexts with people from different parts of the world (Thorne et al., 2009). This is because cooperative games often establish common goals that players must strive to achieve together (Dabbish, 2008). In a study comparing competitive and cooperative gameplay with outgroup members, Velez et al. (2014) found that working with an outgroup member to achieve in-game goals reduced hostile feelings towards the outgroup, and players also exhibited more helping behavior in a follow-up task. In addition, using a casual word-finding game, Dabbish (Dabbish, 2008) established that game progression such as higher game scores increased liking for game partners in cooperative gameplay but not competitive gameplay. But little is known about whether actual success or failure in achieving the goal has any impact on interaction outcomes, especially in video game contexts.

Hunger and Stern (1976) explored in an organizational context whether a common goal must be achieved for it to reduce conflict between groups. They found that goal failure did not lead to more hostility, although it also did not reduce conflict. They suggested that possible negative feelings towards the outgroup upon failure of goals could have been negated by positive feelings induced by the mere act of cooperating together. Along the same lines, Worchel and colleagues (1978) gave college students business-like tasks to complete and found that upon goal failure, outgroup evaluation

becomes more negative. One possible reason is that groups may engage in scapegoating and attribution of blame to the outgroup, hence worsening relationships (Krahe, 2013). Building upon these limited findings, I intend to examine the impact of goal attainment in intergenerational interactions during video game play and thus propose the following hypothesis:

H2: Over time, elderly participants in the goal success condition will report: (a) greater decrease in intergroup anxiety, (b) greater improvement in specific partner attraction, (c) greater improvement in positive outgroup attitudes, and (d) higher level of game enjoyment compared to those in the unsuccessful goal attainment condition.

H4: Over time, youth participants in the goal success condition will report: (a) greater decrease in intergroup anxiety, (b) greater improvement in specific partner attraction, (c) greater improvement in positive outgroup attitudes, and (d) higher level of game enjoyment compared to those in the unsuccessful goal attainment condition.

Generalization from Individual to Outgroup

Generalization of intergroup contact effects beyond the immediate interaction is another key focus of research on intergroup communication (Dovidio, Gaertner, & Kawakami, 2003). If the positive experiences of interacting with outgroup individuals are not generalized to other outgroup members, then the interaction would hold little significance for intergroup communication, limiting the practicality of contact theory (Pettigrew & Tropp, 2006, 2013). A meta-analysis of intergroup contact research done in the past century reveals that most positive contact effects between individuals tend to be

generalized to the entire outgroup (Pettigrew & Tropp, 2006). This generalization effect occurs when individuals' membership to different groups remains salient during the interaction (Pettigrew, Tropp, Wagner, & Christ, 2011). In this way, the outgroup member in the contact situation would be associated with the entire outgroup. Greater liking for the specific outgroup member fostered during the interaction may hence be generalized to the entire outgroup.

In an intergenerational contact situation, membership to different age groups should remain salient due to factors such as visual differences. Therefore, it is expected that greater liking for the specific interaction partner would be transferred to the rest of the outgroup. In other words, interpersonal attraction towards the partner generated after game play will mediate the effect of both language and goal attainment on outgroup attitudes.

H5: Among the elderly, specific partner attraction towards the interaction partner will mediate the effect of language on outgroup attitudes.

H6: Among the elderly, specific partner attraction towards the interaction partner will mediate the effect of goal attainment on outgroup attitudes.

H7: Among youths, specific partner attraction towards the interaction partner will mediate the effect of language on outgroup attitudes.

H8: Among youths, specific partner attraction towards the interaction partner will mediate the effect of goal attainment on outgroup attitudes.

Interaction between Language and Goal Attainment

Interestingly, some research hints at possible interaction effects between goal attainment and group boundaries. Worchel and colleagues (1978) assigned college students to small groups and asked them to work on a word task and a problem-solving task. Goal achievement was manipulated by the experimenter who announced whether the scores they achieved on both tasks had met the preset criterion (success) or not (failure), which determined whether they obtained extra course credits. Group boundary salience was manipulated by having different groups wear different uniforms. The researchers found that successful goals increased intergroup attraction, but only to the extent that group boundaries were eliminated. On the contrary, goal failure combined with salient group boundaries resulted in lowest intergroup attraction. The authors explained that when groups failed to reach the goals, they looked for someone to put the blame on. Salient group boundaries made it easier to identify the outgroup, therefore participants were more likely to use outgroup members as the scapegoat. From their perspective, group salience should be low during contact situations.

This perspective is in line with the decategorization model of intergroup contact proposed by Brewer and Miller (1984), which states that contact will be most effective when interactions are personalized and group salience is minimized. They reason that if group membership cues are present during interaction, ingroup biases are likely to be reinforced (Brewer & Miller, 1984). As such, interactions should be designed to increase opportunities for knowing outgroup members as individuals rather than homogeneous and undifferentiated members of a social group.

However, Hewstone and Brown (1986a) proposed a different approach to intergroup contact based on social identity theory. According to their salient categorization model of intergroup contact, positive intergroup contact is best generalized to the whole outgroup under conditions of high group membership salience (Brown & Hewstone, 2005; Hewstone & Brown, 1986a). This is because when group salience is high, the contact is likely to be experienced as an intergroup situation (as opposed to an interpersonal situation) under low group salience conditions. This ensures that interacting partners see themselves as representative of their social group, and any change in attitudes would be transferred to the entire social group (Brown & Hewstone, 2005). When the contact is experienced as an interpersonal situation, any attitude change would be limited to the interaction partner and unlikely to be generalized to the outgroup. Empirical findings situated in various intergroup contexts thus far generally support the model by Hewstone and Brown (1986a) that generalization best occurs when there is sufficient group salience (Batson et al., 1997; Brown & Hewstone, 2005; Desforges et al., 1991, 1997; Pettigrew et al., 2011; Scarberry, Ratcliff, Lord, Lanicek, & Desforges, 1997).

Putting together the literature reviewed thus far, the conditions facilitating generalization of attitudes to the outgroup may differ depending on the valence of the interaction. When cooperation results in success (i.e. positive contact), group salience should be high to encourage generalization to the outgroup. When cooperation results in failure (i.e. negative contact), group salience should be low to minimize the possibility of generalization so as to avoid negative intergroup outcomes. In the context of this study, language functions as an indicator of group membership, contributing to intergroup

salience. Language and goal attainment may interact such that for those who achieved game goals successfully (positive cooperative contact), those who are fluent in different languages (high group salience) will report most positive changes in outgroup attitudes. If language and goal attainment effects indeed interact in the hypothesized direction, then introducing simple goals into an activity may be a convenient way to facilitate the generalization of positive attitudes beyond the specific interaction partner to the rest of the outgroup, especially in intergenerational interactions with high age salience. Thus, I propose the following hypotheses:

H9(a): Over time, there will be an interaction effect in that among elderly participants who achieved the goal, those in the different language condition will report a greater improvement in outgroup attitudes, compared to those in the common language condition.

H9(b): Among elderly participants who did not achieve the game goal, those in the common language condition will report a greater improvement in outgroup attitudes, compared to the pairs in the different language condition.

H10(a): Over time, there will be an interaction effect in that among youth participants who achieved the goal, those in the different language condition will report a greater improvement in outgroup attitudes, compared to those in the common language condition.

H10(b): Among youth participants who did not achieve the game goal, those in the common language condition will report a greater improvement in outgroup attitudes, compared to the pairs in the different language condition.

CHAPTER THREE METHODOLOGY

Experiment Design

A 2 (language use: common vs. different) x2 (goal attainment: success vs. unsuccessful) x2 (time: pre-test vs. post-test) mixed factorial analysis of variance design was used to test the hypotheses in a field setting, with language use and goal attainment as between-subject factors and time as a within-subject factor (see Table 1). Language use was divided into common (both partners spoke Chinese dialects) or different (youths spoke English or Mandarin while the elderly spoke in dialect only). Goal attainment was divided into success and unsuccessful conditions. To manipulate goal attainment, participants were informed by the confederate in the beginning: “Your game scores would be recorded and your goal is to work together to achieve the high score for today. At the end of the session, I will announce whether you are successful in achieving this goal.” Regardless of the actual game score they had achieved, participants assigned to the success condition were informed after each of the 3 sessions that they had achieved the goal, while those in the unsuccessful condition were told they did not achieve the goal. To strengthen the manipulation, participants in the successful group were awarded a small sticker after each session, for their success.

Table 1
Experimental Design (N = 50)

	Goal Success	Goal Failure
Common Language (Chinese dialect)	Condition 1 (N = 14)	Condition 3 (N = 13)
No Common Language (Eng/Mandarin vs. dialect)	Condition 2 (N = 11)	Condition 4 (N = 12)

Sample

The experiment was held over a period of five months, from December 2015 to April 2016 at three senior activity centers operated by non-profit welfare organizations in Singapore. A total of 55 elderly participants were initially recruited from these three senior activity centers located in various residential estates in Singapore. These senior activity centers provide a place for their elderly members to pass time as well as meet other elderly, with a few regular activities scheduled throughout the week such as singing, crafts, and bingo. Most of the elderly at these centers live alone in government rental apartments and come from the lower socio-economic group, with limited or no education. Social interactions with youths are sporadic, mostly limited to occasional one-time visits from neighboring schools.

A corresponding 55 youth participants were recruited from local junior colleges and polytechnics (See Table 2 for participant demographics). Both the seniors and youths received S\$20 worth of vouchers at the end of the study as a token for participation. To prevent ethnicity from becoming a confounding variable, only Chinese participants were recruited for the purposes of this study.

Table 2
Participant demographics

	Elderly	Youths
Male	10	16
Female	40	34
Age, mean and SD	50-87 M = 71.92 SD = 1.66	17-22 M = 18.76 SD = 1.66
Total number	50	50

At the end of the data collection, a total of 50 pairs remained for data analysis (refer to Table 1 for distribution of pairs across conditions). Attrition was mainly due to school commitments of youth participants or lack of interest and health conditions of the elderly.

Procedure

At the start of the experiment, the confederate briefly explained to participants the purpose of the activity and what they had to do, before asking them to fill out an informed consent form. Participants then filled out a pre-survey, after which they were paired up based on their language proficiencies as well as their schedules. Each pair then did a brief self-introduction stating their name, and those who did not share a common language were informed accordingly, and asked to try their best to communicate with each other. After that, participants then separated briefly to fill up the pre-test section on partner attraction, based on their initial impressions of each other. Each pair was then randomly assigned to either the successful or unsuccessful condition, before beginning gameplay.

Three interaction sessions were scheduled once a week over three weeks. Participants remained in the same pairs for all three sessions. Each session lasted for about 30 minutes, across all experimental conditions. The duration and frequency of game play sessions are decided after reviewing past studies involving console game play by the elderly (Aarhus, Grönvall, Larsen, & Wollsen, 2011; Chua et al., 2013; Gajadhar et al., 2010; Marston, 2013; Rice et al., 2011; Theng et al., 2012).

At the end of the third session, participants completed a post-test survey. Two versions of the pre- and post-test survey were developed (i.e., English and Mandarin) to

cater to elderly participants who did not understand English. The survey items were translated to Mandarin by native speakers, and then back-translated to English to ensure accuracy. Due to varying levels of literacy, all survey responses from the elderly participants were collected through an oral interview, with the assistance of experimenters who are proficient in Mandarin and Chinese dialects.

Stimuli (Refer to Appendix B for list of games)

Previous research showed that games found to be suitable for varied levels of expertise were those that were short in duration, required simple actions using the input device, with a gentle learning curve (IJsselsteijn et al., 2007; Theng et al., 2012). As such, three game titles on the Nintendo Wii console were selected for this experiment, including “Wii Sports”, “Cooking Mama: World Kitchen”, and “Wii Play”. These titles have been used in past studies conducted in similar settings (Chua et al., 2013; Theng et al., 2012), and were found to be suitable for seniors’ use. Each title consists of several mini games that required only simple actions and could be learnt within the limited time per session.

During each session, participants were free to pick from any of these titles to play, so as to accommodate different individual preferences in game genre and settings. However, the confederate recommended each pair to begin with the bowling game in Wii Sports as it involved only one button and one simple motion, and there was no time limit which meant the elderly could play at their own pace. This also enabled most elderly to be acquainted with the controller and Wii gameplay. To prevent boredom and staleness, each pair was also free to switch titles whenever they liked.

Measures (Refer to Appendix A for survey items)

Intergroup anxiety was measured at pre and post-test by asking participants to indicate how they would feel if they were standing in a room filled with members of the other age group, and they were the only person in their age group (Chua et al., 2013). They responded to a list of five adjectives including “Awkward” and “Relaxed” (reversed) on a 7-point Likert scale. Higher scores indicated greater intergroup anxiety. The final measure was obtained by averaging the scores for the five items, and deemed to be reliable among both youths ($M = 3.85$, $SD = 0.99$, Cronbach’s $\alpha = .76$ for pre-test and $M = 3.05$, $SD = 0.93$, Cronbach’s $\alpha = .75$ for post-test) and the elderly ($M = 2.01$, $SD = 1.13$, Cronbach’s $\alpha = .81$ for pre-test and $M = 1.69$, $SD = 1.03$, Cronbach’s $\alpha = .87$ for post-test).

Outgroup attitude was assessed at pre and post-test using five semantic differential items from Meshel and McGlynn (2004). Participants responded to pairs of adjectives e.g. “Unfriendly-Friendly” and “Foolish-Wise”, such that higher scores indicated more positive attitudes towards the other age group. The final measure was obtained by averaging the scores for the five items, and deemed to be reliable among both youths ($M = 5.48$, $SD = 0.78$, Cronbach’s $\alpha = .84$ for pre-test and $M = 5.89$, $SD = 1.00$, Cronbach’s $\alpha = .92$ for post-test) and the elderly ($M = 4.88$, $SD = 1.11$, $\alpha = .89$ for pre-test and $M = 5.87$, $SD = 1.25$, Cronbach’s $\alpha = .96$ for post-test).

Specific partner attraction was measured at pre and post-test using 12 items from the social dimension of the attraction scale from McCroskey, McCroskey and Richmond (2006). Participants indicated their response to several items such as “He/She is easy to get along with” and “I think he/she could be a friend of mine” on a 7-point Likert scale.

Higher scores indicated greater attraction towards the interaction partner. The final measure was obtained by averaging the scores for the 12 items, and deemed to be reliable among both youths ($M = 5.06$, $SD = 0.74$, Cronbach's alpha = .91 for pre-test and $M = 5.52$, $SD = 0.76$, Cronbach's alpha = .94 for post-test) and the elderly ($M = 5.28$, $SD = 0.97$, Cronbach's alpha = .96 for pre-test and $M = 6.34$, $SD = 0.80$, Cronbach's alpha = .97 for post-test).

Game enjoyment was measured in the post-test only, using eight items adapted from the Intrinsic Motivation Inventory (Ryan, Mims, & Koestner, 1983). Participants responded to statements such as “I enjoyed playing the game very much”, “This game was fun to play” and “I thought the game was boring” (reversed) on a 7-point Likert scale. Higher scores indicated greater game enjoyment. The final measure was obtained by averaging the scores for the eight items, and deemed to be reliable among both youths ($M = 5.50$, $SD = 0.89$, Cronbach's alpha = .82) and the elderly ($M = 6.28$, $SD = 0.90$, Cronbach's alpha = .98).

Finally, a manipulation check was included in the post-test questionnaire, consisting of two closed-ended questions “Did you have any difficulties in communicating with your game partner due to language differences?” and “Overall, did you and your game partner manage to achieve the goal?” Participants indicated their response as either Yes or No.

CHAPTER FOUR RESULTS

Manipulation checks were conducted using two dichotomous measures in the post-test questionnaire. All participants (100%) correctly reported whether they managed to achieve the goal, corresponding to their assigned goal condition. Those in the goal success condition recognized that they were successful in achieving the goal, and those in the goal failure condition reported that they were unsuccessful. Similarly, all participants (100%) correctly reported whether they experienced language difficulties in communicating with their game partners, according to their assigned language condition. Participants in the common language condition reported no major difficulties in communicating, and those in the no common language condition indicated some difficulty in communication with their game partners. Goal and language conditions were therefore successfully manipulated.

A 2 x 2 x 2 repeated measures ANOVA, with language use and goal attainment as between-subject factors and time as a within-subject factor, was conducted to examine their effects on intergroup anxiety, outgroup attitudes, and interpersonal attraction towards interaction partner. Table 3 shows the results from the repeated measures ANOVA analysis. Table 4 shows the mean differences in pre-test and post-test, as well as results of the post hoc paired-samples t-tests.

In addition, a 2 x 2 ANOVA was also conducted to examine the effects of language use and goal attainment on game enjoyment. Table 5 shows the ANOVA results.

Table 3
Repeated Measures ANOVA results

Elderly												
	Anxiety				Outgroup attitude				Partner attraction			
	Λ	F	p	η_p^2	Λ	F	p	η_p^2	Λ	F	p	η_p^2
Time	.87	6.65*	.013	.13	0.63	26.5***	<.001	.37	0.43	60.5***	<.001	.57
Time*Lang	.88	6.25*	.016	.12	.92	3.82	.057	.077	.91	4.77*	.034	.094
Time*Goal	.79	12.3**	.001	.21	.88	6.40*	.015	.12	.91	4.74*	.035	.093
Time*Lang*Goal	1.00	0	1.00	0	1.00	.017	.90	0	.99	.31	.58	.007
Youth												
	Anxiety				Outgroup attitude				Partner attraction			
	Λ	F	p	η_p^2	Λ	F	p	η_p^2	Λ	F	p	η_p^2
Time	.59	32.3** *	<.001 1	.41	0.68	21.3***	<.001	0.32	0.34	23.2***	<.001	.34
Time*Lang	.92	4.09*	.049	.082	.90	4.84*	.033	.095	1.00	.003	.96	.000
Time*Goal	.82	10.3**	.002	.18	.87	6.69*	.013	.13	.84	8.73**	.005	.16
Time*Lang*Goal	.98	1.02	.32	.022	.98	.99	.32	.021	1.00	0	.99	0

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 4
Repeated Measures ANOVA results over time – Mean differences

Elderly											
Common lang.								No common lang.			
	λ	F	η_p^2	Pre-test	Post-test	Post - Pre difference	t	Pre-test	Post-test	Post - Pre difference	t
Anxiety	.87	6.65*	.13	2.12 (1.26)	1.51 (0.83)	-0.61	4.05***	1.89 (0.96)	1.90 (1.20)	0.01	-0.04
Partner attraction	.63	26.5***	.37	5.25 (0.91)	6.59 (0.50)	1.34	-7.06***	5.32 (1.04)	6.07 (0.93)	0.73	-3.70
Outgroup attitude	.43	60.5***	.57	4.81 (0.87)	6.16 (1.21)	1.34	-5.29***	4.96 (1.35)	5.53 (1.25)	0.57	-1.92
Goal success								Goal failure			
Anxiety	.87	6.65*	.13	2.22 (1.07)	1.48 (0.72)	-0.74	4.03***	1.80 (1.16)	1.90 (1.24)	0.10	-0.61
Partner attraction	.63	26.5***	.37	5.26 (0.92)	6.61 (0.54)	1.36	-7.14***	5.30 (1.04)	6.07 (0.93)	0.76	-3.85**
Outgroup attitude	.43	60.5***	.57	4.87 (0.91)	6.34 (0.81)	1.47	-6.44***	4.89 (1.30)	5.39 (1.44)	0.50	-1.67**
Youth											
Common lang.								No common lang.			
	λ	F	η_p^2	Pre-test	Post-test	Post - Pre difference	t	Pre-test	Post-test	Post - Pre difference	t
Anxiety	.92	4.09*	.082	3.78 (0.99)	2.70 (0.73)	-1.07	5.00***	3.94 (1.00)	3.45 (0.98)	-0.49	2.38*
Partner attraction	1.00	0.003	0	-	-	-	-	-	-	-	-
Outgroup attitude	.90	4.84*	.095	5.77 (0.70)	6.00 (0.96)	0.23	-1.63	5.15 (0.74)	5.77 (1.04)	0.62	-4.68***
Goal success								Goal failure			
Anxiety	.82	10.3**	.18	4.05 (1.02)	2.78 (0.88)	-1.26	5.34***	3.66 (0.94)	3.31 (0.91)	-0.34	2.27*
Partner attraction	.84	.84**	.16	4.98 (0.77)	5.73 (0.80)	0.75	-4.95***	5.13 (0.72)	5.31 (0.67)	0.18	-1.60
Outgroup attitude	.87	6.69*	.13	5.62 (0.71)	6.25 (0.70)	0.63	-4.58***	5.35 (0.84)	5.54 (1.13)	0.18	-1.38

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 5
2 x 2 ANOVA results for game enjoyment

Elderly			
Game enjoyment			
	<i>F</i>	<i>P</i>	η_p^2
Lang	.11	.74	.002
Goal	.006	.94	0
Lang*Goal	6.70*	.013	.13
Youths			
Game enjoyment			
	<i>F</i>	<i>P</i>	η_p^2
Lang	10.6**	.002	.19
Goal	4.67*	.036	.092
Lang*Goal	.26	.61	.006

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Main Effects across Time

Results revealed that among the elderly, there were significant changes over time in intergroup anxiety, $F(1, 46) = 6.65, p = .013$, partial $\eta^2 = .13$, outgroup attitudes, $F(1, 46) = 26.5, p < .001$, partial $\eta^2 = .37$ and partner attraction $F(1, 46) = 60.5, p < .001$, partial $\eta^2 = .57$. Among youths, there were also significant changes over time in intergroup anxiety, $F(1, 46) = 32.3, p < .001$, partial $\eta^2 = .41$, outgroup attitudes, $F(1, 46) = 21.3, p < .001$, partial $\eta^2 = .32$ and partner attraction, $F(1, 46) = 23.2, p < .001$, partial $\eta^2 = .34$.

Main Effects of IVs (Elderly)

Among the elderly, the results of the ANOVA revealed that over time, there was a significant main effect for language on intergroup anxiety, Wilks's $\Lambda = .88, F(1, 46) = 6.25, p = .016$, partial $\eta^2 = .12$. To identify significant changes in means across time and compare between the common and no common language groups, a post hoc paired

samples t-test was conducted after splitting the file by language. The results of the t-test indicated that there was a significant decrease in intergroup anxiety among elderly participants in the common language condition from pre-test ($M = 2.12$, $SD = 1.26$) to post-test ($M = 1.51$, $SD = 0.83$), $t(26) = 4.05$, $p < .001$. There was no significant change among those who did not share a common language with their partners. Therefore, H1a was supported.

There was a significant main effect of language on partner attraction, Wilks's $\Lambda = .91$, $F(1, 46) = 4.77$, $p = .034$, partial $\eta^2 = .094$. A paired samples t-test revealed a significant increase in partner attraction among those in the common language condition from pre-test ($M = 4.81$, $SD = 0.87$) to post-test ($M = 6.16$, $SD = 1.21$), $t(26) = 5.29$, $p < .001$. There was also a significant increase in partner attraction among those who did not share a common language with their partners, from pre-test ($M = 5.32$, $SD = 1.06$) to post-test ($M = 6.05$, $SD = 0.99$), $t(26) = 3.70$, $p = .001$. A simple comparison of differences in means show that the increase over time was greater for those in the common language condition. Therefore, H1b was supported.

No significant main effect of language on outgroup attitudes was found, Wilks's $\Lambda = .92$, $F(1, 46) = 3.82$, $p = .057$. H1c was not supported.

In addition, a two-way ANOVA was conducted to examine the effects of language on game enjoyment, which was measured in the post-test only. There were no significant differences in game enjoyment between those in the common language ($M = 6.27$, $SD = 0.79$) and no common language conditions ($M = 6.28$, $SD = 1.04$), $F(1, 46) = 0.11$, $p = .74$. Therefore, H1d was not supported.

For the other independent variable of goal attainment, there was a significant main effect on intergroup anxiety, Wilks's $\Lambda = .79$, $F(1, 46) = 12.3$, $p = .001$, partial $\eta^2 = .21$. A paired samples t-test revealed a significant decrease in intergroup anxiety among those in the goal success condition from pre-test ($M = 2.22$, $SD = 1.07$) to post-test ($M = 1.48$, $SD = 0.72$), $t(24) = 4.03$, $p < .001$. There was no significant change among those who did not successfully achieve the goal with their partners. Therefore, H2a was supported.

The main effect of goal attainment on partner attraction was also found to be significant, Wilks's $\Lambda = .91$, $F(1, 46) = 4.74$, $p = .035$, partial $\eta^2 = .093$. A paired samples t-test revealed a significant increase in partner attraction among those in the successful goal attainment condition from pre-test ($M = 4.87$, $SD = 0.91$) to post-test ($M = 6.34$, $SD = 0.81$), $t(24) = 6.44$, $p < .001$. There was also a significant increase in partner attraction among those who did not achieve the goal successfully with their partners, from pre-test ($M = 5.30$, $SD = 1.04$) to post-test ($M = 6.07$, $SD = 0.97$), $t(22) = 3.85$, $p = .001$. However, the increase over time was greater for those in the goal success condition, as shown by the greater increase in means among those in that condition. Therefore, H2b was supported.

There was a significant main effect of goal attainment on outgroup attitudes as well, Wilks's $\Lambda = .88$, $F(1, 46) = 6.40$, $p = .015$, partial $\eta^2 = .12$. The subsequent paired samples t-test revealed a significant improvement in outgroup attitudes among those in the successful goal condition from pre-test ($M = 4.87$, $SD = 0.91$) to post-test ($M = 6.34$, $SD = 0.81$), $t(24) = 6.44$, $p < .001$. There was no significant change among those who did not successfully achieve the goal with their partners. Therefore, H2c was supported.

A two-way ANOVA was again conducted to examine the effects of goal attainment on game enjoyment. There were no significant differences in game enjoyment between those in the successful ($M = 6.29$, $SD = 0.73$) and unsuccessful goal attainment conditions ($M = 6.26$, $SD = 1.07$), $F(1, 46) = 0.006$, $p = .94$. Therefore, H2d was not supported.

Main Effects of IVs (Youths)

Among youth participants, the results of the repeated measures ANOVA revealed that over time, there were significant main effects for language on intergroup anxiety, Wilks's $\Lambda = .92$, $F(1, 46) = 4.09$, $p = .049$, partial $\eta^2 = .082$. A paired samples t-test revealed a significant decrease in intergroup anxiety among those in the common language condition from pre-test ($M = 3.78$, $SD = 0.99$) to post-test ($M = 2.70$, $SD = 0.73$), $t(26) = 5.00$, $p < .001$. Intergroup anxiety also decreased significantly among those who did not share a common language with their partners, from pre-test ($M = 3.94$, $SD = 1.00$) to post-test ($M = 3.45$, $SD = 0.98$), $t(22) = 2.38$, $p = .026$. However, the differences in means show that the decrease over time was greater for those in the common language condition. Therefore, H3a was supported.

No significant main effect of language on partner attraction was found, Wilks's $\Lambda = 1.00$, $F(1, 46) = 0.003$, $p = .96$. Therefore, H3b was not supported.

There was a significant main effect of language on outgroup attitudes, Wilks's $\Lambda = .90$, $F(1, 46) = 4.84$, $p = .033$, partial $\eta^2 = .095$. A follow-up paired samples t-test showed a significant improvement in outgroup attitudes from pre-test ($M = 5.15$, $SD = 0.74$) to post-test ($M = 5.77$, $SD = 1.04$) among youths who did not share a common language with their partners, $t(22) = 4.68$, $p < .001$. There was no significant change

among those youths who shared a common language with their partners. Therefore, results were in the opposite direction of H3c.

In addition, a two-way ANOVA was conducted to examine the effects of language on game enjoyment among youth participants. There was a significant main effect of language, $F(1, 46) = 10.6, p = .002$, partial $\eta^2 = .19$, such that youths who spoke a common language with their elderly game partners reported higher game enjoyment ($M = 5.84, SD = 0.80$) than those who did not speak a common language with their partners ($M = 5.09, SD = 0.82$). Therefore, H3d was supported.

As for goal attainment, a significant main effect on intergroup anxiety was found, Wilks's $\Lambda = .82, F(1, 46) = 10.3, p = .002$, partial $\eta^2 = .18$. A paired samples t-test revealed a significant decrease in intergroup anxiety among those in the successful goal condition from pre-test ($M = 4.05, SD = 1.02$) to post-test ($M = 2.78, SD = 0.88$), $t(24) = 5.34, p < .001$. Intergroup anxiety also decreased significantly among those who did not successfully achieve the goal with their partners, from pre-test ($M = 3.66, SD = 0.94$) to post-test ($M = 3.31, SD = 0.91$), $t(24) = 2.27, p = .032$. However, the differences in means show that the decrease over time was greater for those in the successful goal attainment condition. Therefore, H4a was supported.

Goal attainment had a significant main effect on partner attraction, Wilks's $\Lambda = .84, F(1, 46) = 8.73, p = .005$, partial $\eta^2 = .16$. Further analysis revealed a significant increase in partner attraction from pre-test ($M = 4.98, SD = 0.77$) to post-test ($M = 5.73, SD = 0.80$) among youths who achieved the goal successfully with their partners, $t(24) = 4.95, p < .001$. Therefore, H4b was supported.

There was a significant main effect of goal attainment on outgroup attitudes, Wilks's $\Lambda = .87$, $F(1, 46) = 6.69$, $p = .013$, partial $\eta^2 = .13$. A paired samples t-test revealed a significant improvement in outgroup attitudes among those in the successful goal condition from pre-test ($M = 5.62$, $SD = 0.71$) to post-test ($M = 6.25$, $SD = 0.70$), $t(24) = 4.58$, $p < .001$. Outgroup attitudes did not differ significantly over time among those in the unsuccessful goal attainment condition. Therefore, H4c was supported.

A two-way ANOVA was again conducted to examine the effects of goal attainment on game enjoyment among youth participants. There was a significant main effect of goal attainment on game enjoyment, $F(1, 46) = 4.67$, $p = .036$, partial $\eta^2 = .092$, such that youths who achieved the goal successfully with their elderly partners reported greater game enjoyment ($M = 5.76$, $SD = 0.93$) than who were unsuccessful in achieving the goal ($M = 5.24$, $SD = 0.77$). Hence, H4d was supported.

Mediation Analysis

The single-step multiple mediator model by Preacher and Hayes (2008) was also used to examine indirect relationships between independent variables (language and goal) and outgroup attitudes, mediated by specific partner attraction.

In summary, H5, H6 and H8 suggesting that among elderly and youth participants, the effects of language and goal on outgroup attitudes would be mediated by specific partner attraction was supported with 95% confidence interval (see Table 5). However, H7 which posited that among youths, specific partner attraction towards the interaction partner will mediate the effect of language on outgroup attitudes was not supported.

For the elderly, language, together with the mediating variable of specific partner attraction, accounted for 23% of variation in outgroup attitudes ($R^2 = .23$). Goal attainment, together with specific partner attraction as a mediator, accounted for 28% of variation in outgroup attitudes ($R^2 = .28$).

For youth participants, goal attainment, together with the mediating variable of specific partner attraction, accounted for 49% of variation in outgroup attitudes ($R^2 = .49$). However, the effect of language on outgroup attitudes was not shown by mediated specific partner attraction.

Table 6
Results of the single-step multiple mediator model
with partner attraction as mediator

Elderly	
IV	95% CI
Language	[0.081, 0.93]
Goal	[0.030, 0.42]
Youths	
IV	95% CI
Language	[-0.041, 0.73]
Goal	[0.0006, 0.382]

Interaction effects

The 2 x 2 x 2 repeated measures ANOVA did not find any significant interaction effects between time, language and goal attainment on all dependent variables (see Table 3). Hence, H9a, H9b, H10a and H10b were not supported.

CHAPTER FIVE DISCUSSION

In the current study, the effects of common language and goal attainment on intergroup anxiety, partner attraction and outgroup perceptions were examined in the context of intergenerational game play. The results demonstrated the significance of having a common language between players as well as the impact of achieving a simple goal while playing.

Language and Intergroup Anxiety

For elderly participants, playing together with a youth who could speak their language helped to decrease intergroup anxiety. Likewise, youths who shared a common language with their elderly partners reported a greater decrease in intergroup anxiety at the end of the interaction sessions compared to those who did not. Evidently, being able to speak in a common language with their partner, an outgroup member, during their interaction helped them to feel more confident about future interactions with other outgroup members.

A deeper examination of the results leads to interesting differences between the role of language perceived by the youths and elderly. Youths who interacted with the elderly in the absence of a common language experienced a significant decrease in intergroup anxiety, providing support for the “mere exposure” effect (Pettigrew et al., 2011; Zajonc, 1968) of intergroup contact which posits that increased contact with outgroup members can in itself bring about positive outcomes.

However, the same elderly who interacted with these youths in the absence of a common language actually showed a slight increase in intergroup anxiety over time, although this increase was not significant. This suggests that language may have a

different impact on the elderly compared to youths. As argued by Giles, Bourhis and Taylor (1977), fluency in the dominant language of society can result in unequal group status and discrimination. Participants in the no common language condition comprise of youths who can speak only English and Mandarin, and elderly who can only speak Chinese dialects. Previous literature reviewed suggests that dialects tend to be associated with the older generations as well as those who are perceived as not very highly-educated (Tan & Ng, 2010). Given that English and Mandarin are dominant languages in Singaporean society, speaking a less-dominant language during the interaction may have resulted in an unequal group status perceived by the elderly, making the intergroup boundaries of age even more salient. According to Jones et al. (1984), members of minority groups are often very aware of their group's lower status. As a result, they are less likely to perceive equal status during the intergroup encounter (Riordan, 1978; Robinson & Preston, 1976). Repeated emphasis of their group's lower status (in this case through repeated attempts to communicate despite language barriers) may cause negative effects on the feelings of minority group members, while the majority group members may not be affected at all (Pettigrew & Tropp, 2013). It is therefore likely that during the encounter, some of the elderly may have felt more anxious than before, while the youths, who are speaking dominant languages, remain unaffected. Consequently, this may have negated or nullified the positive outcomes of digital games, rather than reducing intergroup anxiety. As other scholars have pointed out, not all intergroup encounters end up with positive outcomes (Dijker, 1987; Hewstone & Brown, 1986b; Paolini, Harwood, & Rubin, 2010; Pettigrew et al., 2011). In this case, high category salience induced by language differences may cause efforts for positive intergroup contact to be unsuccessful.

Language, Partner Attraction and Outgroup Attitudes

Among the elderly, findings were in line with the hypothesis that having partners who could speak their language would lead to more positive changes in partner perceptions over time, as well as more improvements in outgroup attitudes.

Speaking a common language may help the elderly to identify with the young as belonging to a common social group based on dialect, increasing positive feelings for the outgroup member they were interacting with (in this case someone outside of their age group), thereby resulting in a greater improvement in partner perceptions compared to the no common language condition.

Mediation analysis also revealed that partner attraction mediated the effect of language on outgroup attitudes, implying that speaking a common language during video game play helps the elderly to first develop greater attraction towards their play partners, which subsequently resulted in development of more positive attitudes towards other members of the other age group who were not part of the interaction. This is in line with the argument put forth by Pettigrew (1998) that changes in perceptions towards other members of the outgroup must first be preceded by a change in perception towards the specific outgroup member one has interacted with.

It is interesting to note that the elderly reported significant improvements in partner perceptions over time even when their partners did not speak the same language as them. As suggested by Chua et al. (2013), this may be due to the fact that most of the elderly participants are retirees staying alone or with other elderly. Visits by youths at the senior activity center are rare and mostly limited to one-time interactions, so it is likely that this novel experience of having regular gaming sessions with someone younger

caused the elderly to naturally view their youth partners more positively over time. However, among the elderly in the no common language condition, this positive change stopped at the individual level and did not extend to attitudes toward general outgroup members. Since Chinese dialects are mostly spoken by the older generation in Singapore, it may come as a surprise to elderly participants that youths who could not speak Chinese dialects were willing to commit to weekly interaction sessions at the elderly center. The elderly in the no common language condition may thus have seen their youth partners as an exception rather than being representative of the outgroup. According to past research, representativeness of the outgroup is essential to facilitate the generalization of positive feelings for the interaction partner to more positive attitudes towards the outgroup (Hewstone & Brown, 1986a; Pettigrew, 1998). Therefore, in this case the positive change in partner perceptions failed to generalize to outgroup attitudes.

As for youths, there was no main effect of language over time found on partner perceptions. A possible explanation comes from Brewer and Miller (1984) who assert that intergroup contact settings can be task oriented or interpersonally oriented. According to them, a task-based orientation encourages a focus on task requirements and task performance. This prevents one from learning more about their interaction partner other than their salient outgroup identity (Brewer & Miller, 1984). In this case, youth participants likely saw the interaction sessions as a form of ad hoc community service as part of school requirements, thus adopting a task orientation in their interaction with the elderly. This inhibits the development of interpersonal relations with their elderly partners, which explains why partner perceptions did not change significantly over time.

This may also be the reason why partner perceptions were not found to mediate the effect of language on outgroup attitudes among youths.

However, there was a significant main effect of language on outgroup attitudes, but in the opposite of the hypothesized direction. It was expected that youths who could speak the same language as their elderly partners would show a more positive improvement in outgroup attitudes. Yet, results showed that there was no significant improvement among youths in this condition. Instead, it was the youths who could not communicate in the same language as their elderly partners who showed a significant improvement in outgroup attitudes. Looking at the pre-test means, youths in the common language condition held more positive outgroup attitudes ($M = 5.77$, $SD = 0.70$) compared to those in the no common language condition ($M = 5.15$, $SD = 0.74$). As youths in the common language condition are those who can speak Chinese dialects, they may already have rather positive attitudes towards the elderly in general, due to the perception that they belong to a larger common dialect group despite age differences. Therefore, there was no significant improvement in outgroup attitudes found among youths in this common language condition. But among those who did not share a common language with their elderly partners, they may have started off with stereotyped perceptions of the elderly e.g. boring or out of touch with the latest trends (indicated by lower pre-test means compared to the common language group). Throughout the weeks, a positive violation of expectations might have occurred such that they were surprised by the elderly's willingness to learn and play video games throughout the weeks. Coupled with the relatively pleasant and positive experiences during video game play as indicated by the mean score for game enjoyment ($M = 5.09$, $SD = 0.82$) which was greater than the

median of 4 on a 7-point scale, their perceptions of the elderly in general may have changed for the better, therefore explaining the significant improvement in outgroup attitudes over time. As explained by various scholars (Gibbons, Stephan, Stephenson, & Petty, 1980; Linville & Jones, 1980; Stephan & Stephan, 1985), positive outcomes or the experience of positive feelings during intergroup interactions can indeed lead to amplified positive evaluations of the outgroup. Chua et al. (2013) have also suggested that seeing the elderly readily accept new digital technology can help dissolve the negative stereotypes of elderly that youths may be holding.

Goal Attainment and Intergroup Anxiety

The other independent variable investigated in this study is goal attainment. As hypothesized, the elderly who achieved the goal together with their youth partners showed a greater decrease in intergroup anxiety as compared to those who did not achieve the goal. Specifically, those elderly who achieved the goal successfully reported a significant decrease in group anxiety, while there was no significant change in anxiety among those who were unsuccessful in achieving the goal. The results among youths differed slightly in that intergroup anxiety was reduced regardless of the success of the cooperation. However, in line with the hypothesis, those who successfully achieved the goal showed a greater reduction in intergroup anxiety.

Goal Attainment, Partner Attraction and Outgroup Attitudes

With regard to partner perception and outgroup attitudes, results for both the elderly and youths were as hypothesized. Those who achieved the goal successfully with their partners reported a greater increase in partner perception, as well as more improvement in outgroup attitudes, than those who were unsuccessful. In particular,

similar to the previous finding that the elderly developed significantly better perceptions of their partners regardless of language barriers, the elderly also reported significant improvements in partner perceptions regardless of the outcome of their cooperation. As suggested earlier, this may be attributed to the novelty of having regular digital game sessions with youths.

The mediation analysis for elderly participants indicates that the positive impact of goal attainment on outgroup attitudes was mediated by partner perceptions, similar to the findings for common language use earlier on. But among the youths, while partner perception was not found to mediate the impact of language on outgroup attitudes, it mediated the impact of goal attainment on outgroup attitudes. As discussed earlier, youths might have approached the activity with a task-oriented perspective rather than an interpersonal orientation, hence explaining the lack of main effect of language on partner perception. Since a task orientation encourages evaluation of outcomes based on task performance, attraction towards interaction partners will be affected by success or failure of the task (Brewer & Miller, 1984). Therefore, those who had successfully achieved the goal may as a result rate their interaction partners more positively due to the successful cooperation outcome. Thus, the route by which goal attainment impacts outgroup attitudes would be similar to the two-step model suggested earlier, with increased partner attraction as a preceding factor.

Comparing the findings with previous literature, the results of this study generally support the findings by Hunger and Stern (1976), in that goal failure did not lead to significantly more negative perceptions of the outgroup. However, this study takes a step further to show that in some cases, the mere act of working together on a common goal

(regardless of the outcome) is sufficient to induce significantly more positive changes, such as reduced intergroup anxiety for youths, and more positive partner perceptions for the elderly.

Language, Goal Attainment and Game Enjoyment

Game enjoyment was measured as a post-test variable only, and the findings among youths supported the hypotheses that those who share a common language, or were successful in achieving the goal with their partners experienced a significantly higher level of game enjoyment than those who did not. While findings among the elderly did not indicate any main effects of either independent variable, further analyses revealed an interesting unexpected significant interaction between the effect of language and goal attainment on game enjoyment, $F(1, 46) = 6.70, p = .013$, partial $\eta^2 = .13$. Simple effect analyses showed that while there was no significant difference between the two goal groups in the common language condition, $F(1, 46) = 2.77, p = .103$, there was a significant difference between the two goal groups that did not share a common language, $F(1, 46) = 3.95, p = .05$. Follow-up pairwise comparisons between the means for groups without a common language revealed that those elderly who successfully achieved the goal reported a higher level of game enjoyment than those who did not achieve the goal. This means that when communication is hindered, goal achievement matters in determining game enjoyment. However, when communication is smooth, the goal itself does not matter much in terms of game enjoyment. So, this implies that in addition to the game itself, how to play also matters in that either communication between players during gameplay or achieving a common goal could enhance enjoyment of the game. In the context of digital gameplay, game enjoyment is essential in determining intergroup

outcomes, as demonstrated by Chua et al. (2013) who found in a similar context that greater game enjoyment leads to more positive partner perceptions and reduced intergroup anxiety. Therefore, ways to increase game enjoyment (such as introducing a simple goal) can play an important role in promoting pleasant intergroup interactions in multilingual contexts.

Language, Goal Attainment and Generalization to Outgroup Attitudes

The interaction hypothesis posited that for groups in the successful goal condition, those experiencing high intergroup salience (no common language) would show a greater improvement in outgroup attitudes than those with low group salience (common language), as generalization best takes place under conditions of high group salience (Hewstone & Brown, 1986a). On the other hand, for groups in the unsuccessful goal condition, those with low group salience will show a greater improvement in outgroup attitudes, because based on existing literature, participants may attribute blame to the outgroup member when failure occurs. However, the hypothesized interaction was not supported in this study. This may be because in an intergenerational contact situation, especially in Asian culture, the elderly are typically treated with respect due to their experience and age. Therefore, youths may not be inclined to blame the elderly for the unsuccessful cooperation effort. Furthermore, this intergenerational interaction is situated in the context of video games, where youths likely assume the higher status of the expert (Chua et al., 2013). This gives even less reason for youths to blame the elderly for the unsuccessful outcome, while the elderly is more likely to attribute the failure to their own lack of experience with technology instead. Finally, Pettigrew (1998) has pointed out that for generalization to occur from the specific outgroup member to the rest of the outgroup,

one must first develop cross-group friendships with the specific member. The entire process may require more time than the three sessions in this study, which might explain the lack of interaction effects.

CHAPTER SIX IMPLICATIONS FOR RESEARCH

The findings of this study highlight the role of language factors in intergenerational communication, showing that intergenerational interactions are not only marked by age differences, but can also be influenced by language differences. A common language can help foster positive feelings between the young and old, while language barriers may hinder efforts to bring them together. This also reminds us of the importance of language in studying intergroup encounters. Most intergroup research begin with the assumption that interacting groups will share a common language, but this may not always be the case as this study has shown. The variable of language as an indicator of group membership has been understudied in intergroup communication (Wright & Tropp, 2005), even though language has important implications on social behavior (Kashima et al., 2014). More attention is required on the role of language in the context of intergenerational communication, especially in face of heritage language loss across generations (Hinton, 2001).

Findings from this study has shed light on the role of language in influencing gameplay experiences. Previously, it was unclear whether a common language was a necessary prerequisite for positive multiplayer experiences. Existing research shows that it played a role in stimulating game enjoyment (Leppänen & Piirainen-Marsh, 2009; Voids et al., 2010) and establishing a shared awareness during the game, but there is other evidence that players may bond even when they do not speak a common first language (Chik, 2011). This study has provided empirical evidence that it is possible for players who do not share a common language to experience game enjoyment and develop better perceptions of their game partners.

Lastly, while it is established that presence of a common goal can foster positive intergroup contact (Pettigrew et al., 2011), the sparse existing research examining the impact of actual success or failure of the goal has been inconclusive, either finding that goal attainment did not matter (Hunger & Stern, 1976) or that goal failure could worsen outgroup perspectives (Worchel et al., 1978). Results of this study showed that positive attitudinal changes can still occur despite failing goals, indicating that the impact of goal attainment may be highly dependent on context.

CHAPTER SEVEN IMPLICATIONS FOR PRACTICE

As the world population rapidly ages, intergenerational programs have sprung up in various parts of the world. Such programs aim to promote healthy intergenerational relations and unity among the young and old. Studies in Europe and Singapore have found that youths engaged in intergenerational initiatives show more interest in their own elderly family members, which ultimately contributes to social cohesion and national solidarity (Hatton-Yeo, 2002). Intergenerational initiatives are increasing in importance as the world becomes more globalized. The inevitable intersection of different cultures and blurring of geographical boundaries have seen language shifts across generations, creating new challenges for intergenerational bonding efforts.

In terms of practical implications, the findings of this study reveals that language barriers among the young and old can indeed affect intergenerational communication outcomes. This provides some empirical evidence that national language policies to phase out dialect have certainly affected intergenerational relations, through the formation of language barriers between generations. Policy makers should therefore be aware of such potential underlying long-term effects when altering national language policies. At the same time, this study also demonstrates the usefulness of digital games as a way to circumvent these unintended effects. In this sense, the results will provide some guidance to community service sectors on the type and format of activities that are suitable for intergenerational programs. For example, digital games can be implemented as a regular activity at elderly activity centers. Furthermore, introducing simple obtainable goals during the activities can increase the success of these programs in terms of increasing participant bonding and enjoyment, as well as improving intergenerational perceptions.

These findings are not only applicable to Singapore, but also other countries that are noting language barriers between generations as well, like the United States, Australia, New Zealand, Canada, and Taiwan (S. Ng & He, 2004; Park & Sarkar, 2007; Sandel et al., 2006; Schofield et al., 2012; Tannenbaum, 2005).

CHAPTER EIGHT LIMITATIONS

The findings from this study should be interpreted with some limitations in mind.

Firstly, the sample in this study is limited to Chinese only. As stated previously, several variations of the same language exist in other ethnic groups as well, such as Tamil and Hindi among the Indians. The impact of language on intergenerational communication may differ across ethnicities which is outside the scope of this study, so findings from this study may differ slightly when applied to other contexts.

Next, while three interaction sessions were sufficient to identify main effects of independent variables in this longitudinal study, other more complex interaction effects may require the experiment to be held over a longer duration. The previous discussion on the generalization of attitudes to the general outgroup through cross-group friendships has suggested that such processes develop gradually over time. Future studies should look at extending the total duration of interaction to further examine the processes of attitudinal generalization.

Lastly, there may be an inherent selection bias in participants, in the sense that the elderly who visit the senior activity centers regularly may differ in systematic ways from those who do not frequent such places. Furthermore, the recruitment process for youths was done through schools, which require students to be properly informed on the nature of the activity i.e. interacting with the elderly over three weeks. Therefore, those who are willing to participate may already be inclined towards intergenerational interactions. But the significant differences found between groups show that effects of the independent variables were still strong enough to overcome this potential positive skew.

CHAPTER NINE CONCLUSIONS

The emerging language barriers between generations in many parts of the world (Dong & Dong, 2013; S. Ng & He, 2004; Park & Sarkar, 2007; Sandel et al., 2006; Schofield et al., 2012; Tannenbaum, 2005) remind us that even within the same ethnic group, language can still hinder intergenerational communication, which is also a form of intergroup communication (Giles & Coupland, 1991). As Fishman (1991) has pointed out, loss of heritage languages across generations is not a new phenomenon. Jews who cannot speak Hebrew and Irishmen who cannot speak Irish have existed for hundreds of years (Fishman, 1991). But it gains even greater significance for intergenerational communication as the proportion of elderly in the world continue to increase (United Nations, 2013).

Since language and speech styles can invoke stereotyped perceptions and expectations which can affect social interaction outcomes with members of other age groups (Keaton & Giles, 2015), the impact of language differences on intergenerational communication is therefore an important question that should be addressed. It is hoped that this research has demonstrated the significance of this issue by examining the impact of different languages on intergenerational encounters within the same cultural group.

Digital console games such as the Wii may prove to be an effective method for intergenerational bonding among the young and old who speak different languages, especially when they successfully achieve in-game goals together. This may seem counter-intuitive initially as the digital divide seems to make it difficult for the elderly to find commonalities with the young who are digital natives (Siyahhan et al., 2010). However, it has been suggested by scholars that the digital divide can be used as a

resource in intergenerational communication (Aarsand, 2007; Kooiman & Sheehan, 2014). The older generation's lack of experience with technology can create more opportunities for meaningful interaction when they consult the young. This is beneficial to both parties because this process reaffirms the value of the younger generation while the older generation's knowledge of technology is increased (Aarsand, 2007). Digital games can therefore function as a fertile site of knowledge and information exchange for different generations, resulting in increased involvement with one another (Gee, 2005; Van Dyke et al., 2009) and ultimately more harmonious relationships.

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APPENDIX A: SURVEY ITEMS

Intergroup Anxiety - DV (Pre-test and Post-test)

Imagine yourself in a room filled with *(the elderly/young people) and you are the only person in your age group. How do you think you would feel? (*Reverse coded items in italics*)

	Very slightly or not at all						Extremely
1. Awkward	1	2	3	4	5	6	7
2. <i>Happy</i>	1	2	3	4	5	6	7
3. Self-Conscious	1	2	3	4	5	6	7
4. <i>Confident</i>	1	2	3	4	5	6	7
5. <i>Relaxed</i>	1	2	3	4	5	6	7

Outgroup attitudes – DV (Pre-test and Post-test)

Please indicate how much you think the following adjectives describe *(the elderly/young people) *in general*.

1. Unfriendly	1	2	3	4	5	6	7	Friendly
2. Bad	1	2	3	4	5	6	7	Good
3. Foolish	1	2	3	4	5	6	7	Wise
4. Terrible	1	2	3	4	5	6	7	Wonderful
5. Unpleasant	1	2	3	4	5	6	7	Pleasant

Partner attraction - DV (Pre-test and Post-test) (*Reverse coded items in italics*)

1. I think he/she could be a friend of mine.
2. I would like to have a friendly chat with her/him.
3. *It would be difficult to meet and talk with her/him.*
4. *We could never establish a personal friendship with each other.*
5. *He/She just wouldn't fit into my circle of friends.*
6. He/She would be pleasant to be with.

7. He/She is sociable with me.
8. *I would not like to spend time socializing with this person.*
9. I could become close friends with her/him.
10. He/She is easy to get along with.
11. *He/She is unpleasant to be around.*
12. *This person is not very friendly.*

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Game enjoyment - DV (Post-test only) (*Reverse coded items in italics*)

1. I enjoyed playing the game very much.
2. I found playing the game an entertaining experience.
3. This game was fun to play.
4. I thought this game was quite enjoyable.
5. I would describe this game as somewhat interesting.
6. While I was playing this game, I was thinking about how much I enjoyed it.
7. *I thought the game was boring.*
8. This game did not hold my attention at all.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Manipulation check (Post-test only):

1. Did you have any difficulties in communicating with your game partner due to language differences? Yes/No
2. Overall, did you and your game partner manage to achieve the goal? Yes/No

Demographics (Pre-test only)

1. Please indicate your gender.
 - a. Male
 - b. Female
2. Please indicate your age _____
3. What languages can you speak? (Indicate all that apply)

English/Mandarin/Hokkien/Teochew/Cantonese/Other Chinese dialects: _____

APPENDIX B - LIST OF GAMES PLAYED

Cooking Mama: World Kitchen

As the title suggests, this casual game involves using the Wii Remote as a universal cooking utensil to prepare food for various kids. The players will team up to chop, grate, stir and slice in a variety of comedic kitchen mini games. The detailed and realistic artwork captures attention of both the young and old, and the kitchen setting is also highly relatable for those elderly who cook.

Wii Sports

This game has been advertised by Nintendo as providing "fun for everyone". Players use their Wii Remote to mimic actions involved in 5 different types of sports. The controls are intuitive and the games are easy to understand, allowing any one to just pick up and play. The game is suitable for players of all skill levels and as such is suitable for both the elderly and the young.

Wii Play

Wii Play offers many family-friendly games that, can be enjoyed by everyone regardless of age. The mini games use simple controls and are easy to learn, including memory matching games, fishing, and racing.