Interactions with Older Adults and Younger Generations' Trust at Societal and Individual Level: Long-Term Orientation and Kinship Support as the Mediators

by

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Statement of Originality

I, MA, Jialing hereby declare that I am the sole author of the thesis and the material presented in this thesis is my original work except those indicated in the acknowledgement. I further declare that I have followed the University's policies and regulations on Academic Honesty, Copyright and Plagiarism in writing the thesis and no material in this thesis has been submitted for a degree in this or other universities.

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August 2017

Abstract

Promoting intergenerational interactions can contribute to the welfare of the old and the young in the trend of population aging and family structure changing. However, studies regarding intergenerational interactions and younger generation's social capitals were overwhelmingly practical-oriented and the definitions of major variables were vague. The current thesis strived to build a theoretical foundation for intergenerational interaction and its impact on younger generations' trust, a pivotal social capital that enables expectations of other's benevolent motives in situations with interest conflicts. Older adults' possession of advanced emotional regulation ability and maintained cognitive capability in specific domains (e.g., semantic memory) implied their functions in social capital accumulation. Considering human beings' slow life history strategy and postreproductive longevity, it is expected that interactions with older adults are instrumental to younger generations' trust building at both societal and individual level. Moreover, long-term orientation and kinship support are proposed to mediate the association between interactions with older adults and trust of younger generations. On the one hand, interactions with older adults could help to build younger adults' awareness of planning for the future as well as valuing the past experience and therefore, contribute to younger generations' trust. On the other hand, given the rule of kinship selection and the development of social patterns from the interactions within kin groups, older adults may contribute to younger generations' trust through facilitating kinship support. Accordingly, Study 1 examined the role of long-term orientation in mediating the association of intergenerational interactions and younger generations' generalized trust at societal level with the aggregated data from World Value Survey, World Bank and Hofstede's culture index. With the survey of 314 young adults, Study 2 examined the role of both kinship support and long-term orientation in the association of interactions with grandparents and younger adults' particularized trust to extended family, as well as

generalized trust. Results revealed that long-term orientation mainly mediated the association of intergenerational interactions and younger adults' *generalized trust* at societal and individual level; kinship support mediated the association of interactions with grandparents and younger adults' *particularized trust* to relatives. Moreover, kinship support mediated the association of interactions with grandparents and younger adults' *generalized trust*, implying interactions among kin was an underpinning mechanism of trusting people in general, so contributing to the largely unexplored kinship studies in social psychology. These results highlighted older adults' prominent role in enhancing kinship support in extended family and promoting young people's holistic time perspective in communities as social capitals. Besides, the quality rather than quantity of interaction with grandparents matters more for young adults, as intimacy was the most effective index of interactions with grandparents. Yet, potential influences of intergenerational interactions on other forms of social capital call for future research, such as older adults' roles in culture transmission and fictive kinship construction in and beyond family. Finally, based on the evolutionary meaningfulness of slow life history strategy, kinship support and long-term orientation are suggested as specialized strategies developed for social capital accumulation under the influence of intergenerational interactions.

Keywords: intergenerational interaction, trust, long-term orientation, kinship support, life history strategy

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List of Abbreviations

UN	United Nations
WVS	World Value Survey
CVS	Chinese Value Survey
LTO	Long-Term Orientation
IV	Independent Variable
DV	Dependent Variable
SD-IE	Strategic Differentiation-Integration Effort

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Chapter 1: Introduction

The world population aging has become an increasing concern—the population aged 60 years old and above is expected to triple from 600 million in 2000 to approximately 2 billion in 2050 (United Nations, 2002). At that time, the elder population will account for 21% of the world's population, which is equivalent to the expected population of young people aged 15 years and below (Harper, 2014). This demographic change was expected to jeopardize human capital resources (Brooks, 2003) as well as challenge the social welfare system for pensions and healthcare (Harper, 2014; Serrano, Latorre, & Gatz, 2014). The aging population seems to be a burden for younger generations, but this conclusion requires further discussion.

Looking back into the history, interest conflicts between generations have always existed, and a closely related issue is the myth of postreproductive longevity of human females in the realm of evolutionary biology. Grandmother hypothesis, which proposes that postreproductive longevity was of the benefit of grandchildren (Hawkes, 2004), was a prevailing explanation. However, increasing evidence, e.g., from genealogy and energy consumption (Madrigal & Meléndez-Obando, 2008; Strassmann & Garrard, 2011) challenged this hypothesis. Besides, biologists appeared indifferent to older male adults although older male adults are also significantly declined in fertility or could not compete with that of young men (Hassan & Killick, 2003; Strassmann & Garrard, 2011). Therefore, with regard to the number of offspring, the adaptiveness of postreproductive longevity remains a myth, even from a broader perspective for the interest of an entire kinship group.

However, human beings as a social and intelligent animal, as slow life history strategy was adopted, the investment of time and resources for the quality of offspring matters more than quantity (Del Giudice, Gangestad, & Kaplan, 2015; Figueredo et al., 2005). Furthermore, given that previous studies were overwhelmingly conducted by biologists, but human beings are social animals intertwined with family, kin, and friends throughout age stages and the studies of interlinking lives constitute the most central principles in the realm of life course theory (Elder, 1994, 1998), the perspective from intergenerational social interactions would be potential means to facilitate the understanding and reflecting on human postreproductive longevity. Particularly, the inconsistent maintenance of or increase in emotional regulation ability (Carstensen & Löckenhoff, 2003; Mather, 2016; Scheibe & Carstensen, 2010), despite general decline in physical and cognitive performance, suggests that postreproductive longevity adapts within social networks. Therefore, promoting productive aging through intergenerational interactions is a wise strategy for transforming the concern of population aging to an opportunity. The current project looked into the issue from the perspective of social benefits that younger generations experienced from interactions with older adults.

Previous studies, although not many and still emerging, identified several advantages of intergenerational interactions. Since their proposal during the Madrid World Assembly on Aging (United Nations, 2002), intergenerational programs that aimed to strengthen intergenerational relationships, typically among the old and the young, have been gaining popularity (Newman, 2003). And growing empirical evidence has illuminated that intergenerational interactions benefit the dyads in various aspects (Boström, 2004; De Clercq & Belausteguigoitia, 2015; De Souza & Grundy, 2007; M.

Kaplan, Sanchez, & Hoffman, 2017; Mansson, 2013; Newman, 2003; Newman & Hatton-Yeo, 2008), especially in social capital outcomes (Newman & Hatton-Yeo, 2008). Among all the social capitals, trust is the fundamental element (Coleman, 1988; Portes, 1998) that facilitates cooperation (Misztal, 2013). Hence, the current project focused on the relationship between intergenerational interactions and interpersonal trust, the belief of the partner's benevolent intentions when conflicting interests are involved (Balliet & Van Lange, 2013). Moreover, as trust could be categorized as generalized trust and particularized trust, bearing different mechanisms (Kappmeier, 2016; McAllister, 1995; Schaubroeck, Lam, & Peng, 2011; Ybarra et al., 2010), both trust people in general (or generalized trust) and trust people in close relationships like family members (or particularized trust), were taken into account in the current project.

In addition, previous literature had employed generalized trust as a predictor at societal level as social outcomes like economic growth (Knack & Keefer, 1997) and health (Chan, Hamamura, Li, & Zhang, 2017). Also it could be a predictor of health at individual level (Barefoot et al., 1998; Feng, Vlachantoni, Liu, & Jones, 2016). However, these effects are different whether in concepts or operations. Similarly, societal level generalized trust and individual level generalized trust may be impacted by cultures or social contexts at societal level (Gheorghiu, Vignoles, & Smith, 2009; Huff & Kelley, 2003; Misztal, 2013; Yamagishi, Cook, & Watabe, 1998; Yamagishi & Yamagishi, 1994) and by situations or personal values at individual level (Chi, 2013; Dohmen, Falk, Huffman, & Sunde, 2012; Rotenberg, 1995; Xin, Liu, Yang, & Zhang, 2016). Scholars also appealed that the research results of societal level between-culture difference could not be reduced to within-culture individual level difference (Bond, 2002; Leung &

Cohen, 2011; Na et al., 2010; Zhang et al., 2016). Therefore, the current project studied generalized trust at both levels to have a whole picture of intergenerational interactions and social capital in societies and in extended families.

Considering the shortcomings of practical orientation in previous studies, the current project made a step further to explore the mechanism of intergenerational interactions on both trust at societal and individual level. With regard to cognition underpinning, given that trust could be derived from both prior experiences and expectations of the future (Poppo, Zhou, & Ryu, 2008), time perspective would be essential in building trust. For example, as human longevity adds vulnerable years in life, making better intertemporal decisions for the future rather than those of immediate interest can be inferred as crucial. If preparing for the future and respecting the experiences of the past are common sense, then long-term orientation (LTO), the virtues oriented toward the future as well as respecting the traditions (Bearden, Money, & Nevins, 2006; Hofstede, Hofstede, & Minkov, 2010), should be valued because LTO contributes to moral treatment, generalized reciprocity, and social responsibility and thus fortifies trust in a society (Ganesan, 1994; D. Y. Lee & Dawes, 2005; Wang, Siu, & Barnes, 2008; Yilmaz, Sezen, & Ozdemir, 2005). Therefore, the current project examined LTO as the potential mechanism of intergenerational interactions positively affecting generalized trust.

For particularized trust, LTO may play the same role, as reputation and reciprocity for the future and the experience of the past may also affect interactions within a kinship group. However, because affection rather than cognitive reasoning drives people to trust in close relationships (McAllister, 1995; Schaubroeck et al., 2011),

interactions with relatives, which by far remains a conceptual hole (Daly, Salmon, & Wilson, 1997; Kenrick & Simpson, 1997), could be a different story from generalized trust. Human beings as a species need extensive parental investment and kin cooperation (Kramer, 2005, 2010; R. D. Taylor, Casten, & Flickinger, 1993), kinship support is crucial to the survival of a whole group. As the shared ancestors for many young people in a kin group, older adults may facilitate reciprocity and cooperation among kinship community, contributing to trust building and forming a virtuous circle between trust and kinship support. In this regard, kinship support rather than LTO is more likely involved in intergenerational interactions and young adults' trust in relatives.

Moreover, kinship support may also mediate the effect of intergenerational interactions on young adults' generalized trust. Given that attitudes and behavior patterns in daily interactions with strangers were derived from interactions with kin (Derex & Boyd, 2015; Neyer & Lang, 2003; Nowak, 2006; Opie, Shultz, Atkinson, Currie, & Mace, 2014; Park & Schaller, 2005; Podgórski, Lusseau, Scandura, Sönnichsen, & Jędrzejewska, 2014), the origin of generalized trust could also be derived from the experiences of interactions with relatives. That is, the mechanism of trust toward kinship may lead to the theoretical building of generalized trust, as trust in relatives forms the pivotal base of trusting another person. Therefore, the possible effect of kinship support on the relationship between intergenerational interactions and trust people at general should also be examined to capture the comprehensive perspective of trust.

In summary, the current project examined the relationship between intergenerational interactions and trust among younger generations and explored the mechanisms. Specifically, the time perspective of LTO is expected to mainly mediate the

effect of intergenerational interactions on younger generation's generalized trust at both societal and individual level, whereas kinship support is expected to mainly mediate the effect of intergenerational interactions on younger generation's particularized trust in relatives at individual level. Additionally, kinship support is expected to explain the impact of intergenerational interactions on younger generation's generalized trust at individual level as well. The current project provides theoretical foundations of intergenerational interaction and offers a direction to promote productive aging.

Chapter 2: Literature Review

This chapter first reviews the literature regarding intergenerational interactions and its influences on both older and young generations, especially the social outcomes. The shortcomings of existing studies are then pointed out. To make up the practical orientation of the studies regarding intergenerational interactions, theoretical foundations were then reviewed. The mixed results of postreproductive longevity could be addressed by slow life history strategies. Therefore, new perspective aligning to slow life history strategies proposes time perspective of LTO and human instinct of kinship support as mediators for the association of intergenerational interactions and generalized trust and particularized trust to relatives. Based on the theoretical foundations in the current literature review, the mechanisms of the advantages of intergenerational interactions were then explored by data at societal and individual level.

Intergenerational Interactions

Human beings are social animals intertwined with family, kin, and friends throughout age stages. Therefore, the life course perspective, which is grounded on the climate of age stratification, culture and intergenerational models, and developmental lifespan psychology (Elder, 1994, 1998), was advantageous to understand the social consequences of aging (Elder, Johnson, & Crosnoe, 2003). As studies on interlinking lives constituted the most central principles of life course theory (Elder, 1994, 1998; Roy, 2014), the theoretical orientation of intergenerational interactions could form the foundation of productive aging.

Grandparenting. Early studies on intergenerational interactions were overwhelmingly focused on relationships with grandparents: on the one hand, ties with

grandparents are naturally common in almost every culture; on the other hand, the increasing custodial grandparents and grandparenting was common in some cultures (Beise, 2004; Bengtson, 2001; F. Chen, Liu, & Mair, 2011; Hayslip, Shore, Henderson, & Lambert, 1998; Lussier, Deater-Deckard, Dunn, & Davies, 2002). Results from surveys and interviews showed that maintaining good relationships with grandparents was positively related to grandchildren's social development, such as lower levels of stress, depression, and loneliness (Mansson, 2013; Ruiz & Silverstein, 2007); stronger adjustment abilities (Attar-Schwartz, Tan, Buchanan, Flouri, & Griggs, 2009; Lussier et al., 2002); and more prosocial behaviors (Griggs, Tan, Buchanan, Attar-Schwartz, & Flouri, 2010). Grandparenting also reduced parenting stress for adult children (F. Chen et al., 2011; J. Lee & Bauer, 2013). Moderate workload of grandparenting also benefitted older adults' well-being (Arpino & Bordone, 2014; Burn & Szoeke, 2015).

However, the aging trend in recent decades has been accompanied by tremendous structural changes in families (e.g., increasing nuclear families, working mothers, divorce rates, and distance between extended families), making intergenerational exchanges hard to reach (Newman & Hatton-Yeo, 2008). As a result, both the young and the old are increasingly left at vulnerable situations. Fortunately, the calling for intergenerational exchange beyond grandparenting has emerged to complement grandparenting. The coexistence of these two types of intergenerational interactions is expected to release more potential of the senior in the trend of family structure changing.

Beyond grandparenting. Intergenerational programs aimed at strengthening the relationship between old and young generations started to flourish since the Madrid World Assembly on Aging in 2002. Newman and Hatton-Yeo (2008) proposed that one

of the essential goals of these programs was to incubate social capital for both generations across different regions of the world. To be specific, three aspects for both younger and older generations were expected: benefits (positive effects gained from the program), reciprocity (two-way knowledge, values, and skills exchange across generations), and empowerment (mutual respect, caring, sharing, and participation in the community) (Newman & Hatton-Yeo, 2008).

Intergenerational interaction and social capital. Previous studies recognized that intergenerational interactions benefit younger generations' social capital. For example, in Stockholm, where most teachers were female, older men participated in primary schools as assistants to help with students' learning and recreational and social activities (Boström, 2004). Both the older and the younger generations gained from the program. The pupils experienced trust through cooperation and communication with one another, the teachers and parents appreciated the cohesive network and demonstrated trust, and the older men reported vitality and enjoyment in their responsibilities (Boström, 2004).

In a study in Brazil, during the four-month intervention, older adults shared their life experience, such as courtship, marriage, migration, and working with the adolescents, and the adolescents wrote down each story that was told and drew illustrations. Results of the intervention study indicated that intergenerational interactions benefitted some aspects of social capital for both adolescents and older adults. For example, the adolescents in the intervention group were twice as likely to regard family members to be trustworthy (De Souza & Grundy, 2007).

However, most of these studies mainly served practical purposes, and their theoretical foundation was weak, making their quality questionable. One problem was lacking strict controls over the confounding factors or control groups. For instance, the control group in the study by De Souza and Grundy (Chi, 2013; Dohmen et al., 2012; Rotenberg, 1995) exhibited considerable churn rate for participants. Moreover, the enumerated advantageous social outcomes had vague definitions, which casts doubt to their validity. For example, in the study by Boström (2004), children's report of self-esteem and enjoyment of school activities were measured as indicators of trust. This practice may be suitable choices in the area of primary school education but less common in the field of psychology with regard to the definition.

Summary. The literature review of intergenerational interactions identified primary evidence of its instructive role for both generations in some social capital outcomes. However, these studies had their own limitations and no sufficient theoretical foundation was formed, neither did the mechanism of these effects attracted research interests. Many consequential questions remain. What are the unique effects of interacting with older adults that cannot be found in interacting with other age groups like the middle-aged, infants, youngsters? What can be good indices of high quality intergenerational interactions from the perspective of the young and the old? Can interactions with grandparents be constructive to the functioning of the whole extended family? Does the mechanism of social outcomes benefitted from the elderly the same for children, young adults and middle aged adults? Lacking theoretical foundation would weaken its explanatory utility of the findings and impede future development of this area.

From a broader perspective, proposed by life history theory (Figueredo et al., 2005; Wilson, 2000), as human beings are obviously the *K*-selected species or slow strategists with heavy parental investment, longevity, less but high quality offspring, the grandmother hypothesis and the longevity of grandparents negatively related with the number of grandchildren could both accommodated within the slow strategies. In addition to the cross species variations in life history strategies, individual human being also developed variations in behaviors and personalities in the spectrum of fast-slow life history strategies (Del Giudice, 2014) to allocate their time and resource according to their environment and experience. Therefore, the underpinning reason of longevity is a promising first step for the understanding of the past and the future of the function of intergenerational interactions.

Postreproductive Longevity

In the realm of biology, the reason behind postreproductive longevity of human females has long been under debate. For example, although evidence showed that grandmothers benefit their daughters' fertility (Bereczkei, 1998; Lahdenperä, Lummaa, Helle, Tremblay, & Russell, 2004) or otherwise (Madrigal & Meléndez-Obando, 2008), these data might be biased due to the different socioeconomic statuses and cultures of these families. Therefore, different reproductive strategies were adopted. For pronatalists who invest less in every child, the effect of grandmother longevity on the number of grandchildren would be different than for those with a low birth rate but intensively cares for every child. Indeed, the dominant grandmother hypothesis and mother hypothesis do not oppose each other because the interests of grandmothers and mothers overlap to some extent. For example, the motivations for older adults to look after their grandchildren can

be a sense of responsibility as parents, concerning for adult children's well-being (Arpino & Bordone, 2014; J. Lee & Bauer, 2013).

Alternatively, some researchers argued that as humans are intelligent species, postreproductive longevity was only a byproduct of a reproduction strategy to support extended period of juvenile dependence (H. Kaplan, Hill, Lancaster, & Hurtado, 2000). However, the results of a meta-analysis of 17 studies regarding the relationship between patrilineal grandparents and grand-offspring survival rate revealed that among the five hypotheses, namely confidence of paternity, grandmother hypothesis, kin proximity, grandparental senescence, and local resource competition, the last hypothesis is the most in line with the data rather than grandmother hypothesis (Strassmann & Garrard, 2011). The authors argued that from the perspective of local resource competition, the maternal grandparents' survival benefitting grandchildren's survival was a dual-effect strategy, as overproduced, co-resident paternal grandchildren would compete for resources with grandparents (Strassmann & Garrard, 2011). From the perspective of evolutionary meaningfulness, as the paternal grandparents are postmenopausal, the more offspring, the higher the possibility of the gene preservation. Hence, no wonder the offspring rather than grandparents should be the winners of kin competition in evolution.

New perspective from human social instinct. Drawing back attention to the origin of life course theory, it was based on developmental lifespan psychology and its related trends (Chi, 2013; Dohmen et al., 2012; Rotenberg, 1995). Therefore, interplaying lives of human beings throughout age stages implied that as the foundation of intergenerational interaction, the older generation *per se*, requires further understanding and consideration in studies of intergenerational programs. For instance, the primary goal

of older adults dealing with interpersonal conflict was to maintain harmony of the relationship, especially within important social ties (Sorkin & Rook, 2006). Whether these characteristics of older adults are beneficial or detrimental to both generations were largely unexplored.

Fortunately, several evidence could be identified showing that adaptive changes take place in human older adulthood. Take Schwarz et al. (2016)'s study for example, vivisection evidence showed that compared to chimpanzees, a close relative of human beings who do not live long after they cannot reproduce, humans possess special allelic genes (CD33) that prevent Alzheimer's disease. Schwarz et al. (2016) suggested that natural selection, although weak, still has an effect on older people. Even though the memory declines in Alzheimer patients whose recent memories degenerated significantly, not until the last course of the disease, remote memories like the experiences and knowledge learnt in young adulthood were well preserved (Graham & Hodges, 1997). It implied older adults' (even those not good in health) functions in assisting younger generations in social aspects. Similarly, studies also suggested that the chronotype variations between old (usually "larks") and young (usually "owls") generations have evolutionary significance as to keep at least an adult awake to safeguard the whole kin group from predation and other dangers during sleep (Samson, Crittenden, Mabulla, Mabulla, & Nunn, 2017). In addition, semantic memory does not decline but is even enhanced among older adults, compared to episodic memory (Balota, Dolan, & Duchek, 2000; Levine, Svoboda, Hay, Winocur, & Moscovitch, 2002; Salthouse, 2004), implying that older adults may play the role of knowledge or experience transmission among kin groups (Carstensen & Löckenhoff, 2003).

Further supporting evidence comes from studies regarding older adults' emotional regulation ability. As human beings possess an extremely large brain that enables them to interact socially with a large number of group members (Dunbar, 1992) and emotion plays an essential role in maintaining cohesion in a group (Massey, 2002), emotional regulation has been a critical skill in the history of human evolution. Research showed that emotional regulation ability develops across the lifespan (Blanchard-Fields, 2007; John & Gross, 2004), and older adults were proficient at antecedent-focused emotional regulation (Carstensen, Fung, & Charles, 2003; Charles, Mather, & Carstensen, 2003), implying that older adults may have an evolutionary adaptiveness for their kin group's cohesion, like resolving everyday interpersonal conflict (Carstensen & Löckenhoff, 2003) and coordinating with people of different social statuses to fulfill their respective obligations (R. B. Lee, 2012).

Summary. As resources in an area are limited, and older adults were the consumers rather than the producers of life subsistence (H. Kaplan et al., 2000), the dominant grandmother hypothesis or mother hypothesis is inadequate to explain human longevity. Given the social attributes of human beings (Dunbar, 1992; Harari, 2014; H. Kaplan et al., 2000; Kramer, 2010), addressing human longevity merely from views of productivity success is insufficient. The evidence from social aspect could be drawn from the maintenance of or increase in emotional regulation ability (Carstensen & Löckenhoff, 2003; Mather, 2016; Scheibe & Carstensen, 2010) and maintenance of some aspects of cognitive ability in old age (Schwarz et al., 2016) despite a general decline in physical performance. Together, these evidence suggest that, from the perspective of evolutionary

meaningfulness, older adults should have a beneficial effect to increase the whole group's fitness, if not providing material capital, it should be social capital.

Social Capital

Social capital was defined by relations embodied within a group (Coleman, 1988) which facilitate reciprocity, trust, and cooperation that makes people in the group act together for common good (Portes, 1998). Usually, several elements inhere social capital: obligations, expectations, trustworthiness of the group, information sharing, norms and effective sanctions within the group (Coleman, 1988). Both social capitals in and beyond family are vital for young people's achievement (Coleman, 1988; Dufur, Hoffmann, Braudt, Parcel, & Spence, 2015; Dufur, Parcel, & Troutman, 2013). Furthermore, trust is inferred as a fundamental element integrating other elements of social capital since trust has three functions in a social network: makes life predictable, fosters a sense of community, and enables people to cooperate (Misztal, 2013). For instance, trusting shared fictions that did not substantially exist, such as hunting skills, human rights, and tribal spirits during the cognitive revolution that happened around 70,000 years ago, enabled humans to cooperate with a large number of strangers and speed up social behavior innovation, such as interpersonal relationships and social structures (Harari, 2014). Similarly, Knack and Keefer (1997) found that every unit increase of standard deviation in country-level trust predicted more than 1.5 standard deviations of increase in economic growth. At individual level, people with higher level of generalized trust were healthier and lived longer (Barefoot et al., 1998; Feng et al., 2016). Given the important role of trust, the current project chosen it as a representative social capital and investigate whether older adults benefit younger generation's trust.

Concept of trust. Trust can be viewed in different ways, from its early definition as the willingness to bear out-of-control vulnerability (Ross & LaCroix, 1996) to the later one as "expectations of other's benevolent motives in situations that involve a conflict between self and collective interests" (Balliet & Van Lange, 2013, p. 1094). Balliet and Van Lange (2013) emphasized "situation", arguing that situations differ in terms of degree of interest conflict and the concerns for trustee, which refines the oversimplification of trust in previous studies. Furthermore, trust is considered the shadows of the past (i.e., prior history), the future (i.e., expectation of continuity), and the interaction of the past and the future (Poppo et al., 2008). Older adults may play an important role in building trust as they make people aware of what happened in the past (i.e., prior history) and what young people are going to be in the future (i.e., expectation of continuity).

Categories of trust. Trust can be categorized as generalized and particularized trust (Weber & Gerth, 1953). On the one hand, particularized trust is trust toward specific groups like family members, kin, neighbors, and friends, or a remote relationship with, for example, people of another nationality and people with different religious beliefs. On the other hand, generalized trust is trust toward all people in general.

The existence of generalized trust could be revealed through the trust game among anonymous strangers, which was first introduced by Berg, Dickhaut, and McCabe (1995). Trust game tests the trust level and is one of the most common paradigms for testing trust in experimental conditions. In the game, the two players cannot see each other, and each receives 10 dollars at the beginning. The "proposer" is asked to give some of the experiment payment to the "responder," where the sent money *X* will triple

(3*X*). The responder then decides to give some money *Y* (*Y* ranges from 0 to 3*X*) back to the proposer. *X* is the indicator of the proposer's trust. The trust level in the game was correlated with the behaviors out of the laboratory (Karlan, 2005). According to the hypothesis of "economic man," the responder would not return money, and accordingly, the proposer would not send the money. However, most of the experiments found that the proposers give 40% to 60% of their money (Camerer, 2003), implying the existence of generalized trust among people.

While generalized trust gains increasing popularity in sociological and psychological studies, particularized trust, especially trust among kin, attracts less attention. Existing studies on particularized trust mostly focused on romantic relationships (Murray, Gomillion, Holmes, Harris, & Lamarche, 2013; Rempel, Holmes, & Zanna, 1985). This trend could mainly be due to two reasons, the convenient sample of college students who were not relatives to each other, and the principle to control over irrelevant variables like mixed social relationships in psychology (Daly et al., 1997). The indifference to kinship study in social interactions was criticized by evolutionary psychologists (Daly et al., 1997; Kenrick & Simpson, 1997), as kinship was a fundamental connection among human beings that forms the underlying mechanisms of other social relations across age stages and across cultures (Neyer & Lang, 2003). Moreover, kinship was distinguished from other social relations by its essentially "communal" rather than "reciprocal" traits, as argued by social psychologists (Clark, 1984; Testa, 2013) and biologists (Hamilton, 1964; Trivers, 1971). Yet the uniqueness of kinship was the mechanism of why many other solid social relationships evolved in human history (Kirkpatrick, 1999; Opie et al., 2014). Therefore, given the conceptual

hole in psychology, the current project considered particularized trust among kin in extended family as a result of intergenerational interactions with grandparents.

Moreover, studies revealed that the mechanisms of trust vary among different groups (Kappmeier, 2016; McAllister, 1995; Schaubroeck et al., 2011; Ybarra et al., 2010). For example, trust was always based on affect in close relationships, whereas trust toward strangers heavily relied on cognitive reasoning (McAllister, 1995; Schaubroeck et al., 2011). Thus, particularized trust in relatives is more likely affect-based, and generalized trust in strangers is more likely cognition-based. This difference highlights the importance of studying various mechanisms of trust (Mayer, Davis, & Schoorman, 1995). Given the two categories of trust, both the mechanisms of the effects of interacting with grandparents on young adults' trust toward relatives of an extended family or toward people in general need to be studied.

Intergenerational Interactions and Trust Transmission

Previous studies identified an age-specific cohort effect (Robinson & Jackson, 2001) that older adults had higher-level trust (including generalized trust and particularized trust) than other age groups (Castle et al., 2012; Li & Fung, 2012; Robinson & Jackson, 2001). Given the transmissibility of trust from one generation to another (Chi, 2013; Dohmen et al., 2012; Rotenberg, 1995) and possible effect of a third party on trust (i.e., from particularized trust to generalized trust) (Ferrin, Dirks, & Shah, 2006), older people's higher level of trust may help to build a trustworthy social network for younger generations in and beyond family context. In particular, considering the maintenance of semantic memory among older adults (Balota et al., 2000; Levine et al., 2002; Salthouse, 2004) and their prolific life experiences, intergeneration interactions

facilitate spreading of shared values and solidifying corresponding regulations (like punishing those corrupt the public morals) in a group. Additionally, from the standpoint of younger generations, interactions with older adults may foster them a sense of continuity of the past (what happened in the past that made today) and the future (what would the actions result in the future). The common values and knowledge in a group are important for developing trust as prior knowledge reduces the uncertainty of how others would behave in a situation.

Therefore, it is proposed that older adults could benefit younger generations' trust by conveying and solidifying social values, thus offering a sense of continuity. However, further evidence is required to determine the mechanism of why interactions with older adults and trust among younger generations. Drawing from the transmission of trust and attitude from generation to generation (Chi, 2013; Dohmen et al., 2012; Rotenberg, 1995), kinship functioning as a kind of social instinct in extended families is promising to uncover the mechanism related to particularized trust and then the derived generalized trust to strangers. Drawing from the origin of trust, human cognition of time perspective is promising to uncover the mechanism related to generalized trust.

LTO as a Mediator

Considering the association between the life history strategy of postreproductive longevity of human beings and the social capital of trust, time perspective is crucial in the process of intergenerational interactions and trust building. Scholars suspected the awareness of planning for the future (i.e., spending time and energy growing and storing sustainable food rather than hunting and gathering for immediate food) leaded to the transition of hunter-gatherer communities to agriculture societies (Hibbs & Olsson,

2004). Studies also revealed the association of viewing time in the long term as an aspect of a slower life history strategy at the level of genes (Minkov & Bond, 2015). The following sections introduce the concept of LTO and the detailed reasoning lines of the mechanisms.

Concept of LTO. LTO was first proposed as a culture index because some items in Chinese Value Survey (CVS) could not reminiscent existing cultural dimensions but these items successfully predicted the rapid economic growth of some Asian countries and correlated with students' mathematical performance across countries, and then Hofstede considered these items as a fifth culture dimension (Hofstede, Hofstede, & Minkov, 1991). Hence, the old concept of LTO was conceived based on Michael Bond's CVS (Chinese Culture Connection, 1987), a concept more related to Confucian teachings. The "positive pole" was characterized as "perseverance, ordering relationships by status and observing this order, thrift, having a sense of shame," and the "negative pole" was characterized as "personal steadiness and stability, protecting face, respect for tradition, reciprocation of favors." Hofstede et al. (1991) believed the "positive pole" was regarding dynamic and future-oriented (e.g., pragmatism), whereas the "negative pole" was regarding static, present or past-oriented so named it "long-term orientation" as a culture dimension, which was positively correlated with the "positive pole." However, the initial concept of LTO was criticized for devaluing tradition (Bearden et al., 2006; Fang, 2003), and the measurement of individual-level LTO (Bearden et al., 2006) then emerged. Related concepts, such as the future orientation dimension in the GLOBE study (House, Hanges, Javidan, Dorfman, & Gupta, 2004) and monumentalism–flexhumility continuum (Minkov, 2007) were also proposed by succeeding researchers.

Considering the old concept of LTO was originated from the CVS, which focused more on self-reliance than the outside world (e.g., self-enhancing behaviors), Hofstede and colleagues (Hofstede et al., 2010; Minkov & Hofstede, 2012) then conducted a factor analysis, refined the concept based on self-enhancement theory (Heine & Lehman, 1997) and perseverance, and generated a new, country-level LTO index from the answers to World Value Survey (WVS) questions. The new LTO index integrated the international comparative data so eliminated the Chinese favor as originated from CVS, but their essence remained unchanged—the orientation for the future onward. For example, in WVS, choosing "Thrift" as one of the most desirable traits for children is one of the items indicating LTO, which also belongs to the "positive pole" in CVS. The new concept of LTO was validated by its significant correlations with mathematic achievements and economic indices across countries. As things sometimes have an indirect relationship, the final scores of LTO were positively related to the opinion of importance of tradition across countries from other database (Minkov & Hofstede, 2012). Therefore, the new, country-based LTO no longer devalues tradition and could mirror the concept of individual LTO as proposed by Bearden and colleagues (2006).

With all things considered, the current project regards LTO as valuing time holistically on a larger scale: those individuals (societies) high in LTO value planning for the future and also respect past experiences like tradition (Bearden et al., 2006).

Intergenerational interactions and LTO. By nature, an "economic man" prefers present-oriented because the future is full of unpredictability; the benefits in the future would be discounted for a proportion (Berns, Laibson, & Loewenstein, 2007), whether small or large. However, as human longevity adds vulnerable years in life, making better

intertemporal decisions by shrinking the discount rate for the future becomes crucial. Intergenerational interactions could give younger people a vivid future self-image, making them more willing to plan for the future (Ellen, Wiener, & Fitzgerald, 2012). Additionally, the literature on grandparenting suggested that older adults function as a symbol of continuity (past history and immortality through clan) for grandchildren (Bengtson & Robertson, 1985; Kivnick, 1982; Kornhaber, 1995), and therefore, increase the LTO of the younger generation. If preparing for the future is common sense, then it could be inferred that a society or an extended family would develop a culture that values LTO.

Another perspective from classical management studies stated that family firms survived longer and were more successful in business competition (Breton-Miller & Miller, 2006; Sirmon & Hitt, 2003) because they were more long-term oriented than non-family firms (Breton-Miller & Miller, 2006; Brigham, Lumpkin, Payne, & Zachary, 2014; Lumpkin & Brigham, 2011). Family firms usually not only strived for economic gain but also emphasized non-economic "capital" goals (Chrisman, Chua, Pearson, & Barnett, 2012), such as family firm culture (Zahra, Hayton, & Salvato, 2004), stewardship philosophy (Eddleston & Kellermanns, 2007), family reputation (Miller & Le Breton-Miller, 2005), and transgenerational value creation (Zellweger, Nason, & Nordqvist, 2012). This phenomenon reinforces the fact that social capital usually benefits not only the immediate gain but more importantly the long-term advantages (Fukuyama, 2001; Woolcock, 1998). These non-economic capitals need to be practiced by every generation to pass the values from generation to generation (Zahra et al., 2004) to form a virtuous circle of LTO and social capital in the long run.

LTO and trust. With the same relationship between LTO and longevity of firms, an individual who has a perspective of LTO may value his or her reputation concerning future cooperative opportunities with other people, in which reputation was a vital role that enables generalized trust in a society (Yamagishi & Yamagishi, 1994). Therefore, long-term oriented people are less likely to take advantage of others and behave reciprocally after receiving benefits from others, which are essential to form a trustworthy society. However, as particularized trust is based more on affection (Kappmeier, 2016; McAllister, 1995; Schaubroeck et al., 2011; Ybarra et al., 2010), the effect of LTO on particularized trust is expected to be weaker than on generalized trust.

For the origin of generalized trust toward most people, scholars suspect that it was derived from a moralistic consensus (Carroll, 1991; Misztal, 2013). Forming a society with generalized trust was beneficial as people needed to preserve their reputation for reciprocal benefits within the group (Yamagishi & Yamagishi, 1994). Time perspective would be very important in this process, as people who are worried about tomorrow's food are not likely considering their reputation. Those who do not value reputation are more likely to take advantage of other people and avoid social responsibility as they care less about retributions in the future, which harms trust in a kinship group or society in general. On the contrary, those who are long-term oriented would trust people as a social norm of reciprocity. Trusting others could also enhance the probability of reciprocation from the person in the future (Berg, Dickhaut, & McCabe, 1995; Cook, 2005). Therefore, LTO contributes to moral treatment, generalized reciprocity, and social responsibility, and thus fortifies trust (Ganesan, 1994; D. Y. Lee & Dawes, 2005; Wang et al., 2008; Yilmaz et al., 2005). In other words, the dyad willing to build and maintain a system that

benefits each other in the future should trust each other more (Ganesan, 1994; D. Y. Lee & Dawes, 2005; Wang et al., 2008; Yilmaz et al., 2005). More specifically, the relationship should be a virtuous circle: trust builds LTO in the relationship (Ganesan, 1994) and in return, LTO builds a network that facilitates trust toward one another (Ganesan, 1994; Wang et al., 2008).

To sum up, drawing from the success and longevity of long-term oriented family firms in business, interactions with older adults may enhance the sense of continuity that links the past and the future, as well as some moral beliefs in young people, making them long-term oriented, and LTO further positively affects trust in the relationship in a group. Therefore, one of the hypotheses for the current project is that interactions with older adults benefits trust among younger generations by forming a perspective of LTO. However, as the relations were studied mostly based on social norms, LTO's effect on particularized trust in relatives may not be so obvious.

Summary. The literature review revealed that interactions with the older generation benefitting the trust level in younger generations might be a result of older adults passing down experiences, sharing values, and solidifying them in a community (Boström, 2004; De Souza & Grundy, 2007; Newman & Hatton-Yeo, 2008), which links the two originalities of trust, the shadow from the past and future, and fosters a sense of continuity among younger generations. A sense of continuity increases the possibility of future interactions with others and can make people long-term oriented. LTO, the value orientation to plan for the future as well as respect the tradition, could explain why intergenerational interaction benefits both trust in kin and strangers.

Kinship Support as another Mediator

Human beings are social animal (Dunbar, 1992; Harari, 2014; H. Kaplan et al., 2000; Kramer, 2010). Scholars proposed that kinship such as kin cooperative breeding (Kramer, 2010) resulting in the larger group size common among human beings. Also, kinship with extended families is different from a reciprocal relationship with strangers. Studies showed that for kinship, genetic relatedness matters more than social support in predicting feelings of closeness (Neyer & Lang, 2003). So by nature, blood relationship is not merely reciprocal of social support as other social relationships. Studies also showed that linking the audience with kin terms made the patriotic speech more persuasive (Johnson, 1987). Therefore, kinship works in a different way than a relationship with non-kin like friends and colleagues and is inferred to be a fundamental life history strategy. That is, "blood is thicker than water."

Since Hamilton's (1964) kin selection theory argued that natural selection favored the strategy of altruism to kin for reproductive success so the shared genes could survive, most related studies in biology started to explore inclusive fitness among kin group. Hamilton's (1964) rule is: $rB > C$, where r is genetic relatedness (for example, 1/2 for a parent and a child; 1/4 for a grandparent and a grandchild); B is the benefit of the recipient; C is the cost of the kin of the recipient. The altruistic action should be performed if the cost is less than the product of genetic relatedness and the kin's benefit (most likely the reproductive opportunity). The rule of kinship selection could also explain why a grandparent is important in an extended family—grandparents increases kinship support.

Intergenerational interaction and kinship support. Human longevity increases the chances of younger people interacting with grandparents, and thus is conducive for

the relationship among kinship network. Getting together in grandparents' homes to celebrate holidays or events is common in most cultures, as well as a great opportunity for extended family members like aunts and uncles to be seen as close family members. Moreover, adult children, grandchildren, and other remote relatives like their siblings' adult children and grandchildren because older adults are shared ancestors. From the gene relatedness, the relationship is clearer to understand. For a young adult, a maternal cousin has only 1/8 gene similarity, but for their maternal grandparent, the similarity is 1/4. It could be inferred that a grandparent has the strongest motivation to team up with his/her grandchildren. To illustrate, conflicts between cousins can be fairly and efficiently solved by the shared ancestors without self-interest rather than their opponent's unreliable parents. In addition, the older generation can recommend their kin's offspring (remote relatives) to their own offspring when faced with problems that require more human resources.

Kinship support and particularized trust. Human beings as species need extensive parental investment and kin cooperative breeding (Kramer, 2005, 2010; R. D. Taylor et al., 1993), trust toward kin is crucial to a group's survival. For example, studies showed that the survival of orphans heavily relies on the support from uncles, aunts, and grandparents (Foster, 2000). Another example is when single parents and children benefit from kinship support through its functions on parenting practices (R. D. Taylor et al., 1993). Kinship support is crucial to people especially in a disadvantaged situation when kin trust is a function of altruistic behaviors. More commonly, daily or frequent contact, reciprocal behaviors, and emotional communications among kin groups bond them together, reduce the likelihood of betrayal, and strengthen the trust among kin. In fact,

particularized trust in kin is prevalent in collectivism culture, in which nepotism group members support each other, typically among Chinese people (Feng et al., 2016). Studies illustrated that obligation and trust are keys to unauthorized activities such as a job search by *guanxi* in an individual's social network, especially for closer ties (Bian, 1997). Therefore, kinship support enhances the trust level in an extended family and among kin network, which should improve the efficiency of helping each other when needed and results to forming a virtuous cycle.

Bridging particularized and generalized trust. The whole story of intergenerational interaction and trust has not been completed with the unique mediating role of LTO and kinship support on generalized and particularized trust, respectively. The question remains: what are the relations between particularized and generalized trust? This question raised because of the vague grounded generalized trust given the fast-changing society. Although daily interactions with non-kin are common in modern society as a result of the increased human group size after the cognitive revolution (Dunbar, 1993; Dunbar & Shultz, 2007), the existence of generalized trust still seems ill-grounded because it is risky to trust a complete stranger in this ever-changing world; people are not sure if they will still see the person tomorrow unlike in the past when they see one another every day in the community. Either can be explained by the time perspective of long-term. Given the social attribute of human beings (Dunbar, 1992; Harari, 2014; H. Kaplan et al., 2000; Kramer, 2010), for example, kin cooperative breeding (Kramer, 2010) resulted in larger group sizes among human beings, addressing generalized trust merely from social norms like reciprocity or reputation was insufficient.

Fortunately, studies revealed that values, attitudes, and behavior patterns in daily interactions with strangers were derived from interactions with kin (Derex & Boyd, 2015; Neyer & Lang, 2003; Nowak, 2006; Opie et al., 2014; Park & Schaller, 2005; Podgórski et al., 2014), which gave a hand to the foundation of generalized trust. For instance, the results of computer game invitations of virtual artifacts revealed that experiences accumulated within and between groups facilitated behavioral novelty (Derex & Boyd, 2015). In this vein, the origin of generalized trust could also be derived from the experiences of interacting with relatives. In other words, the mechanism of trust toward kinship may provide a base to the theoretical building of generalized trust, not only as trust a relative form the pivotal base of trusting other people but also as a mechanism of instinct in the long evolutionary history of interacting with kin. For instance, studies illustrated that some cues in social interactions (e.g., attitudes, a heuristic and implicit process) could activate the process of kin recognition (Park & Schaller, 2005; Park, Schaller, & Van Vugt, 2008). Therefore, the possibility of kinship support affecting the relationship of intergenerational interactions and trusting people in general would also be examined to capture the overall perspective of trust.

Summary. The trust level among group members can be enhanced through kinship support with the presence of older adults and therefore benefit the fitness of the whole kin group. Moreover, given the origin of many attitudes and social patterns derived from interactions among kin, kinship support's role in the relationship between intergenerational interactions and young people's generalized trust is also plausible. Therefore, it is supposed that kinship support mediates the effect of contact with grandparents on young adults' trust toward relatives and toward people in general.

Current Study

To construct a theoretical foundation for the relationship between intergenerational interactions and younger generations' trust (both generalized and particularized trust in relatives), the current project tested several hypotheses. The first was to replicate the results of previous intervention studies that intergenerational interactions benefitted younger generations' trust (with clearer definitions and control variables considered), including generalized trust at societal level (Hypothesis 1) and particularized trust in extended family members at individual level (Hypothesis 2). Drawing on the origin of generalized trust and transmission of cultures and attitudes from generation to generation (Chi, 2013; Dohmen et al., 2012; Rotenberg, 1995), time perspective is promising to uncover the mechanism of intergenerational interactions and trust, so LTO was proposed as a mediator at societal level (Hypothesis 3). Although weaker, the possibility of LTO mediating the association of contact with grandparents on the younger generation's particularized trust in extended family members at individual level was also tested (Hypothesis 4). Drawing on the rule of kinship selection (Hamilton, 1964) and the important roles grandparents play in an extended family, kinship support in extended family is promising to uncover the mechanism of intergenerational interactions and younger adults' particularized trust (Hypothesis 5). Furthermore, in light of the attitudes and behavior patterns derived from the interactions with kin (Derex & Boyd, 2015; Neyer & Lang, 2003; Nowak, 2006; Opie et al., 2014; Park & Schaller, 2005; Podgórski et al., 2014), generalized trust could also be influenced by interactions with relatives like kinship support, which could be influenced by interactions with grandparents (Hypothesis 6). Figure 1 illustrates an overview of the theoretical

framework. Based on the literature review, the current projects summarized and proposed the following hypotheses:

1. Interactions with older adults benefit younger generations' generalized trust level at societal level.

2. Interactions with grandparents benefit younger generations' particularized trust level in an extended family at individual level.

3. At societal (or individual) level, LTO mediates the effect of interactions with older adults on younger generations' generalized trust toward most people.

4. At individual level, LTO mediates the effect of interactions with grandparents on younger generations' particularized trust toward extended family members.

5. At individual level, kinship support meditates the effect of interactions with grandparents on younger generations' particularized trust toward relatives in an extended family.

6. At individual level, kinship support meditates the effect of interactions with grandparents on younger generations' generalized trust toward most people in a society.

Based on the hypotheses, the current project conducted two studies. Study 1 examined Hypotheses 1 and 3 at societal level, and Study 2 examined Hypotheses 2, 3, 4, 5, and 6 in an extended family at individual level.

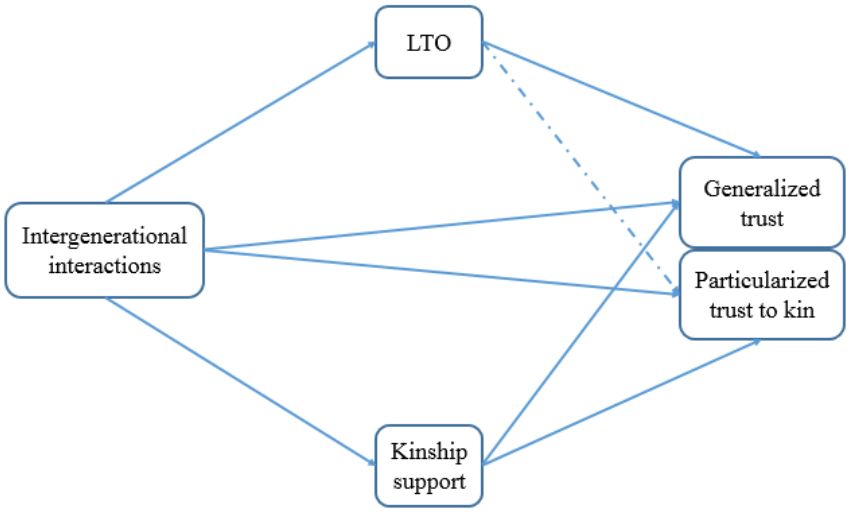

Figure 1. The theoretical framework. The dotted lines represent relatively weaker effects of the hypothesis.

Chapter 3: Study 1

Study 1 aimed to test whether interactions with older adults would affect younger generations' generalized trust and whether the perspective of LTO could mediate the effect at the societal level. In this study, the independent variable (IV) is interaction with older adults as indicated by the percentage of old people in a country. The generalized trust level of younger people would be the dependent variable (DV). All data were retrieved from existing online datasets.

Measures

Percentage of older adults. It is common to use the ratio of a population as an index of the activities of that population. For example, health care workers per 1000 population could be an index of medical level of a country (Crisp & Chen, 2014; Hsiao, 1995). Especially for developing areas, the availability of health care service was largely depended on the percentage of workers. Whether other factors like positive or negative attitude toward aged people in a society, which are more likely being affected by social economic systems or culture so are objective, only if more older adults in a society, younger people more often interact with older adults. Since there is no direct information for international comparative data of quantity of intergenerational interaction currently, the percentage of older adults as the foundation of intergenerational interactions, could be the most objective index to our knowledge for current study. The percentage of older adults (aged 60 or older) in every country was downloaded from the website of United Nations (http://www.un.org/en/development/desa/population/publications/ageing/WorldPopulationAgeingReport2013) (April 20, 2016). The data published in 2013 were chosen because

the data collection time matched with that of the DV—generalized trust (see following paragraph). We believe that the percentage of older adults would be a better indicator of interaction with older adults at societal level than life expectancy because life expectancy in many developing countries is largely affected by the death rate of children under 5 years old, and some countries are also suffering from high death rate because of wars.

Generalized trust of younger generations. Trust-related data were retrieved from Wave 6 of WVS, which was conducted during 2010–2014. Question 24 ("Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?") is widely applied as an indicator of generalized trust, and the answer is based on two options: "Most people can be trusted" and "Need to be very careful." In the current study, the percentage of people that answered "1" to Question 24 was aggregated by region as the DV. Previous study showed that older adults were more likely to trust (Castle et al., 2012; Li & Fung, 2012), and the current study aimed to determine whether older adults influence younger people (people aged 60+ would be excluded from the analysis).

Furthermore, as the effects of interacting with older adults may differ on young and middle-aged people, young people were analyzed separately. For example, middle-aged people's LTO may be largely affected by their socialization, and their parents may not have much effect on them compared with that when they were young. Therefore, two outcome variables were calculated. One reflected generalized trust level for all people younger than 60 years old; the other reflected generalized trust level for young adults (younger than 35 years) only.

Culture index of LTO. The index for mediator LTO was retrieved from the book written by Hofstede and colleagues (2010, pp. 255–258), which contains data from 93 regions. They estimated LTO for every region by compounding answers to the relevant questions in the WVS and European Value Survey. As LTO consisted of two dimensions: persistence (positively correlated) and monumentalism (negatively correlated), the related questions also have two parts: e.g., "Thrift as a desirable trait for children" (as positively related to perseverance) and "National pride" (as positively related with monumentalism, a feeling of self-enhancement) (Hofstede et al., 2010). Data from 93 regions were then ranked from the highest to the lowest score by allocating each region with a score from 0 to 100. To illustrate, South Korea obtained a full mark of 100, followed by East Asian regions like Taiwan, Japan, and Mainland China, and then followed by Ukraine, which scored 87. Puerto Rico scored 0, which was the lowest. Hofstede indicated that culture changes slowly. Therefore, the data obtained from the book could be regarded as the most updated.

To ensure reliable results, several control variables that potentially influence trust were identified and considered in the data analysis.

Demographic index. As Knack and Keefer (1997) found GDP and Gini indices were positively related to trust and people in developed countries with good medical resources are more likely to live longer, these two variables should be controlled. In this vein, education level (Helliwell & Putnam, 1999) should also be controlled. The GDP per capita and Gini index of every country were obtained from the website of World Bank (http://data.worldbank.org/indicator/NY.GDP.PCAP.CD) (July 20, 2016). Because no official data of Gini index were found for 2013, and given inequality of income did not

influence trust level immediately but gradually, the average Gini index from 2008 to 2013 is employed in the current study. The average education level of every region was retrieved from Question V248 of WVS, which asked the participants' educational level ranging from 1 (*no formal education*) to 9 (*university-level education with degree*).

Individualism. Studies showed that individualism was related to higher level trust (Gheorghiu et al., 2009; Huff & Kelley, 2003; Misztal, 2013; Yamagishi et al., 1998; Yamagishi & Yamagishi, 1994). Individualism culture is mostly exhibited by Western countries, which have a relatively longer lifespan in the current data, so individualism should also be controlled. The individualism index came from Hofstede's culture index (Hofstede et al., 2010, pp. 95–97). The scores for the 76 regions were obtained from the IBM studies in which employees from different regions rated the importance of different individualized goals (e.g., personal time, freedom) at work (Hofstede et al., 2010, pp. 92). Similar to the LTO index, different regions were ranked based on the rating and assigned an individualism score from 0 to 100. A higher score indicated a higher level of individualism culture in the region. To illustrate, United States scored 91 and ranked the first, followed by English-speaking countries like Australia and Great Britain; Guatemala scored 6 and ranked the last among the 76 regions.

Data Analysis

For the data from WVS, the indices, such as generalized trust and education level, were obtained by aggregating all the answers of the participants in a region. Following the regulation of using the data from WVS, Hong Kong and Mainland China were considered as two regions, but East and West Germany were merged as the indicator of Germany (Hofstede et al., 2010). There were 60 regions in Wave 6 of WVS, but as there

were no data of percentage for older adults aged 60+ in the UN report, Taiwan was excluded in the analysis. Hence, the current sample included 59 regions.

SPSS 24.0 was used to analyze the data, and results with $p < .05$ denoted significance. Correlation would be used to test the relationship between the percentage of older adults and generalized trust. Regression further tested the effects when control variables were included in the model. With generalized trust as DV, percentages of older adults as IV, and LTO as mediator, and control variables entered into the model, multiple regression would be used to further test the mediation effect with the macro PROCESS (Hayes, 2013) and Bootstrapping procedure with 1000 samples (Preacher & Hayes, 2008) would be performed to test the indirect effect.

Results of Study 1

Table 1 presents the percentage of participants in various age stages believing most people can be trusted and other descriptive statistics. With young people (18-35 years old) and middle-aged people (36-59 years old) combined as a group (younger generations), correlation results showed that percentage of older people in a region was significantly related to younger generations' generalized trust; if only young people were considered, the result was similar (see Table 2). As each control variable had missing values, controlling for all the variables at one time would reduce the sample size to less than 30. Moreover, as developed countries usually have complete data for all variables, adding all control variables makes the results represent only the situations in developed countries. As a result, the current study added the control variables into the regression model one by one.

Table 1

Descriptive Data of Study 1

	Regions	Young (N = 59)	Middle (N = 59)	Young and middle (N = 59)	Percentage of old (N = 59)	LTO (N = 47)	GDP per capita (dollar) (N = 58)	Gini (N = 46)	Individualism index (N = 34)	Educational level (N = 59)
1.	Algeria	19.60	16.94	18.50	7.3	26	5491.61			4.60
2.	Azerbaijan	13.96	16.96	15.57	8.4	61	7811.62	33.0		7.17
3.	Argentina	23.26	22.83	23.06	14.9	20	14667.53	43.6	46	5.63
4.	Australia	49.80	57.58	55.65	19.5	21	67652.68	34.0	90	6.68
5.	Bahrain	35.16	34.55	34.84	3.6		24378.94			5.55
6.	Armenia	6.43	11.38	9.20	14.2	61	3716.83	30.3		6.68
7.	Brazil	9.40	3.50	6.20	11.0	44	12071.78	52.7	38	4.99
8.	Belarus	35.12	33.80	34.43	19.3	81	7722.12	26.5		7.06
9.	Chile	13.45	12.21	12.76	14.0	31	15764.76	50.8	23	5.48
10.	China	62.79	62.95	62.88	13.8	87	6991.85	37.0	20	5.34
11.	Colombia	3.75	5.01	4.36	9.3	13	8030.69	53.5	13	5.69
12.	Cyprus	11.74	8.12	10.15	17.0		27909.11			6.24
13.	Ecuador	7.69	6.37	7.10	9.3		6051.61	46.6	8	5.25
14.	Estonia	46.14	39.86	42.51	23.9	82	19155.42	32.7	60	6.62
15.	Georgia	7.77	8.38	8.10	19.5	38	4274.38	41.4		7.13
16.	Germany	47.00	43.50	44.50	26.8	83	45600.77	30.6	67	5.24
17.	Palestine	16.74	18.93	17.68	4.4			34.5		6.15
18.	Ghana	4.67	5.25	4.80	5.2	4	1827.10	42.8		4.33
19.	Hong Kong	56.14	47.88	51.21	19.9	61	38364.19		25	5.88
20.	India	22.49	21.28	21.90	8.2	51	1456.20	33.6	48	4.05
21.	Iraq	31.62	32.04	31.80	4.9	25	6816.63	29.5		4.91
22.	Japan	34.09	42.02	39.36	32.0	88	38549.68	32.1	46	6.68
23.	Kazakhstan	39.59	37.28	38.47	10.1	66	14310.03	28.6		6.69
24.	Jordan	12.95	12.48	12.72	5.2	16	4656.22	33.7		5.21
25.	South Korea	30.64	28.57	29.47	16.9	100	25997.88		18	7.56
26.	Kuwait	32.10	26.81	30.30	3.8		48463.15			6.82
27.	Kyrgyzstan	35.95	39.97	37.97	6.3		1282.44	33.4		6.79
28.	Lebanon	9.87	11.95	10.86	11.9		8388.97			6.20
29.	Libya	9.93	11.37	10.66	7.0		10453.97			5.68
30.	Malaysia	7.39	8.90	8.24	8.3	41	10973.66	46.2	26	5.05
31.	Mexico	12.86	12.05	12.52	9.3	24	10197.44	48.1	30	5.25
32.	Morocco	12.40	12.03	12.25	7.7	14	3153.77	40.9	46	2.67
33.	Netherlands	65.23	62.90	63.55	23.1	67	51425.08	28.9	80	5.83
34.	New Zealand	49.71	59.73	56.85	19.0	33	42928.10		79	7.41
35.	Nigeria	16.30	11.40	15.18	4.4	13	2979.84	43.0		5.19
36.	Pakistan	25.44	21.41	23.90	6.3	50	1275.71	29.6	14	4.01

37.	Peru	7.45	8.73	8.02	9.2	25	6609.71	45.3	16	5.63
38.	Philippines	2.97	2.85	2.90	6.3	27	2786.95	43.0	32	5.60
39.	Poland	25.99	21.45	23.30	20.9	38	13776.45	32.8	60	5.59
40.	Qatar	20.54	20.82	20.63	1.9		96077.00			6.69
41.	Romania	9.83	5.80	7.41	20.8	52	9585.27	27.3	30	6.28
42.	Russia	31.71	28.40	29.85	18.8	81	15543.70	39.7	39	6.48
43.	Rwanda	16.41	17.82	16.84	3.9	18	679.00	50.8		4.73
44.	Singapore	42.82	34.94	38.59	15.6	72	55617.61		20	6.02
45.	Slovenia	18.39	22.61	21.17	23.6	49	23144.12	24.9	27	5.67
46.	South Africa	22.70	25.44	23.80	8.4	34	6881.79	65.0	65	6.04
47.	Zimbabwe	5.89	9.80	7.01	5.5	15	905.50			5.12
48.	Spain	25.79	17.07	21.03	22.9	48	29370.66	35.8	51	4.70
49.	Sweden	54.38	73.21	64.28	25.2	53	60283.25	26.1	71	7.06
50.	Thailand	32.32	31.62	31.73	14.3	32	6225.05	39.4	20	4.75
51.	Trinidad and Tobago	2.33	4.20	3.32	13.4	13	20217.03		16	4.56
52.	Tunisia	15.71	14.04	15.03	10.7		4248.89	35.8		4.12
53.	Turkey	13.75	10.16	12.13	10.7	46	10800.36	40.0	37	5.41
54.	Ukraine	25.38	25.00	25.18	21.1	86	3986.28	24.8		6.74
55.	Egypt	16.74	21.49	19.06	8.5	7	3264.45	30.8		4.19
56.	United States	31.60	36.00	34.41	19.5	26	52660.30	41.1	91	7.77
57.	Uruguay	18.05	12.57	15.29	18.4	26	16881.38	41.3	36	4.64
58.	Uzbekistan	12.77	14.42	13.56	6.4		1877.96	35.2		5.86
59.	Yemen	37.61	42.53	39.29	4.5		1408.15	35.9		3.48
	M	23.90	23.88	23.95	12.82	43.60	17993.49	37.67	40.82	5.68
	SD	15.94	16.88	16.35	7.17	25.74	20255.77	8.69	23.38	1.07

Note. The blanks are missing in original data.

With regression model controlling for GDP per capita, Gini index, education level, and individualism one by one, the percentage of old could still predict the young and middle adults' (aged 60 and below) trust level, βs = .29 to .42, *t*s = 2.44 to 3.02, *p*s = .004 to .018 (for details, see Table 3). With regression model controlling for GDP per capita, Gini index, education level, and individualism one by one, the percentage of old could still predict young adults' (aged 35 and younger) trust level, βs = .29 to .45, *t*s = 2.48 to 3.15, *p*s = .003 to .016 (for details, see Table 4). Regression results showed that percentage of old adults in an area could predict the younger generations' trust level, and

it remained significant after controlling for GDP per capita, Gini index, education level, and individualism.

Regression was used to examine the hypothesis that LTO mediates the effect of contact with older adults on younger generations' trust (i.e., young and middle adults' generalized trust). Results indicated that the percentage of older adults was a significant predictor of LTO, $b = 2.17$, $SE = .43$, $t = 4.99$, $p < .001$, but LTO was not a significant predictor of the trust, $b = .19$, $SE = .10$, $t = 1.85$, $p = .071$. These results did not support a mediational hypothesis.

Table 2

Means, Standard Deviations and Correlation Matrix for Major Variables for Study 1

		1	2	3	4	5	6	7
1.	Percentage of old people	—						
2.	GDP per capita	.39**	—					
3.	Gini	-.40**	-.24	—				
4.	Individualism	.48**	.62***	-.26	—			
5.	Education	.39**	.45***	-.21	.40*	—		
6.	Young and middle adults' generalized trust	.45***	.54***	-.45**	.56**	.32*	—	
7.	Young adults' generalized trust	.45***	.52***	-.45**	.51**	.28*	.99***	—
	N	59	58	46	34	59	59	59
	M	12.82	17993.49	37.67	40.82	5.68	23.95	23.90
	SD	7.17	20255.77	8.69	23.38	1.07	16.35	15.94

Note. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Table 3

Regression Results of Percentage of Old and Young and Middle Adults' Trust with Different Control Variables

Control Variables	*β*	*t*	*p*
GDP per capita	.29	2.44	.018
Gini index	.35	2.54	.015
Education level	.39	3.02	.004
Individualism	.42	2.79	.009

Table 4

Regression Results of Percentage of Old and Young Adults' Trust with Different Control Variables

Control Variables	*β*	*t*	*p*
GDP per capita	.29	2.48	.016
Gini index	.36	2.62	.012
Education level	.41	3.15	.003
Individualism	.45	2.85	.008

Regression was used to examine the hypothesis that LTO mediates the effect of contact with older adults on young adults' trust. The results indicated that the percentage of older adults was a significant predictor of LTO, $b = 2.17$, $SE = .43$, $t = 4.99$, $p < .001$, and that LTO was a significant predictor of young people's trust, $b = .23$, $SE = .10$, $t = 2.38$, $p = .022$. The percentage of older adults was a significant predictor of young adults' generalized trust, $b = 1.31$, $SE = .30$, $t = 4.43$, $p < .001$. These results supported the mediational hypothesis. The percentage of older adults remained a significant predictor of young people's trust after controlling for the mediator, $b = .81$, $SE = .35$, $t = 2.32$, $p = .025$, so consistent with partial mediation. Approximately 38% of the variance in young adults' generalized trust was accounted by the predictors ($R^2 = .38$). The indirect effect was tested by a Bootstrap estimation approach with 1000 samples (Shrout & Bolger,

2002). The results indicated that the indirect coefficient was significant, b = .50, SE = .25, 95% CI = [.0348, 1.0517]. Figure 2 summarizes the results.

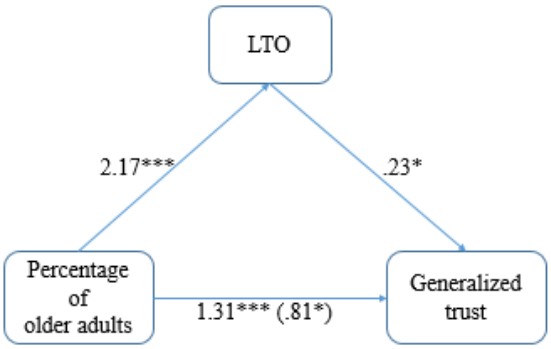

Figure 2. Mediation results for the effect of percentage of older adults in a society on young adults' generalized trust through LTO. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Summary

The results confirmed Hypothesis 1, that is, interactions with older adults benefit young people's generalized trust, and supported Hypothesis 3, that is, LTO mediates the effect of interactions with older adults on young people's generalized trust. In particular, the mediating effect of LTO was more prominent for young adults' generalized trust than that for middle-aged adult.

However, aside from the small sample size as a result of missing values in the indices for major variables, Study 1 has limitations (e.g., using percentage of older adults as the index of quantity of intergenerational interactions), so the quality or the details of intergenerational interactions remain unexplored. Since there is no international comparative data of detailed interactions with older adults, the interactions in daily life with grandparents can largely make up this limitation. In addition, according to the intraclass correlation coefficient result (which is .026), most of the variance in people's generalized trust could be explained by individual level rather than societal level

difference. The individual level data could be essential in the statement of the relationship of interactions with older adults and social capital accumulation. Therefore, Study 2 employed interactions with grandparents as IV and tried to replicate the results in an extended family from the perspective of every younger adult.

Chapter 4: Study 2

Study 1 revealed that at the societal level, more older adults were related to younger generations' higher level of generalized trust. Moreover, for young adults, societal level LTO mediated the relationship between percentage of older adults and young adults' average generalized trust. To enrich the simplified intergenerational interactions with details in the context of daily life within extended family and to see whether the effects work both in between-cultural and within-culture contexts, there is necessity to further explore the relationship between interaction with older adults and younger generations' trust at individual level. Therefore, Study 2 tested how the contact quality and quantity with grandparents were correlated with young people's trust and the mechanism underlying the relationships. Grandparents were chosen because for young people, the most frequent interactions with older adults are with their four grandparents.

Moreover, the uniqueness of interactions with grandparents is that the intimacy with grandparents in childhood remains to adulthood (Hodgson, 1998; Mills, Wakeman, & Fea, 2001; A. C. Taylor, Robila, & Lee, 2005; Wiscott & Kopera-Frye, 2000), so the emotional closeness could be important and be measured for all grandparents. To investigate the effect in detail, the current study took *quality* and *quantity* of interactions; and the effect of *current* (with alive grandparents) and accumulated *previous* (with passed away grandparents) interactions into consideration. Therefore, three indicators were included as IVs, representing different aspects of contact with grandparents, namely, contact frequency with all living grandparents (quantity, current), intimacy with all grandparents (quality, current and previous), and daily interactions with the most intimate living grandparent (quality and quantity, current). The three IVs had different focuses.

The contact frequency was the most objective indicator of interactions with living grandparents, but it only shows the quantity, too simple to depict the detail of how to interact with grandparents. On the contrary, intimacy with grandparents would be the most subjective and a good indicator for the actual quality of interactions, especially for participants largely influenced by the closest grandparent who already passed away. Day-to-day interactions with the closest grandparent gives a detailed picture of the daily activities with a grandparent, especially for those who are living with a grandparent.

For particularized trust, the degree of trusting "in-group members" (Feng et al., 2016), usually extended family members, was employed as one of the DVs. Same as in Study 1, generalized trust was examined as another DV. Furthermore, the current study tested whether LTO and kinship support could separately and jointly mediate the effect of contact with grandparents on both kinds of trust.

The current study also took several control variables into consideration. For example, given the transmissibility of trust from one generation to another (Chi, 2013; Dohmen et al., 2012; Rotenberg, 1995), good relationship with parents may benefit children's trust (Erikson, 1993). For a closer examination of whether the interactions with grandparents are beyond the influence of parents (Ruiz & Silverstein, 2007), the current study took the relationship with parents as a control variable. In addition, previous literature identified that household income affects people's interpersonal trust (Butler, Giuliano, & Guiso, 2016; Feng et al., 2016). Therefore, household income and relationship with parents were control variables.

Sample and Procedures

People aged 18 to 35 who can read Chinese and had at least one living grandparent are eligible for the study. This age range was chosen according to the convention in China (Deng, 2017). For example, in *Middle- and Long-Term Youth Development Plan (2016-2025)* (The Central Committee of the Communist Party of China & The State Council, 2017), China's authorities used the cut-off age of 35 as young people. In current study participants were recruited from Hong Kong and Mainland China to complete an online questionnaire. In total, there were 317 participants, but three of them were excluded from data analysis because they chose the same answer on every questionnaire item. The mean age of the 289 (25 of them did not report age) participants was 22.28 (SD = 3.16, ranged from 18 to 34). Table 5 lists other demographic information.

The ethical approval was obtained from the Human Research Ethics Committee of the Education University of Hong Kong (see Appendix A). As online survey was applied, posters and the link of the online survey were emailed to the students of the Education University of Hong Kong, posted on campus, and promoted in social media like WeChat and Facebook (see Appendix B). Finishing the survey took 15 to 20 minutes. Participants finished the questionnaires were entered into a lucky draw and half of them were paid a coupon of 50 HK dollars or RMB 40 yuan, depending on their locations and preference.

Materials

The materials included in the current study (see Appendix D) were Questionnaire of Grandparenting Pattern with questions asking contact frequency, intimacy and daily activities with grandparents, survey-based trust game scenario (which then adapted into

scenarios for particularized trust), General Trust Scale and its adaption for particularized trust, the Long-term Orientation Scale, Kinship Social Support Measure, Parental Responsiveness Questionnaire, and demographic information, such as age, gender, education level, and household income level in 5-point Likert scale from "*Much worse than average"* to "*Much better than average"*.

Table 5

Demographic Information (N=314)

Variable	*n*	%
Gender		
Male	123	39.2
Female	191	60.8
Education level (including current students)		
Primary	0	0
Secondary	10	3.2
Tertiary	261	83.1
Post-tertiary	43	13.7
Household Income level		
Much worse than average	26	8.3
A little worse than average	74	23.6
About average	135	43.0
A little better than average	77	24.5
Much better than average	2	0.6
Paternal Grandfather		
Living	120	38.2
Passed away	194	61.8
Paternal Grandmother		
Living	197	62.7
Passed away	117	37.3
Maternal Grandfather		
Living	131	41.7
Passed away	183	58.3
Maternal Grandmother		
Living	226	72.0
Passed away	88	28.0

All the original questionnaires were in English and translated to Chinese following the back-translation procedures by English and Chinese bilinguals. The

translated Chinese version was presented to participants. Three scenarios were adapted based on the Chinese version of the classical trust game for the current study.

Contact frequency with grandparents. As the most objective indicator of interactions with grandparents, each question about face-to-face contact with the four grandparents (e.g., How often have you seen maternal grandmother face to face? No need to answer if she had passed away.) was included. They were measured on 6-point bias, scaling from "*Not at all*" to "*Daily*" (Mueller, Wilhelm, & Elder, 2002).

Intimacy with grandparents. It is a three-item 4-point subscale assessing the relationship with grandparents, drawing from a full scale of closeness with grandparents (Mueller et al., 2002). The items were asked four times for the four grandparents regardless of their living status. The Cronbach's α of the scale for the four grandparents ranged from .75 to .90.

Detailed interactions with the closest grandparent. The variable was measured using Questionnaire of Grandparenting Pattern (Mueller et al., 2002), which assesses a variety of interactions between the gapped generations. Originally, it was a 16-question 3-point scale measuring grandparent's report of grandparenting pattern with five dimensions. In the current study, the adapted questions reported by grandchildren under the same five dimensions are: authority and discipline (e.g., How often does (target) play the role of authority and discipline), instrumental assistance (e.g., How often does (target) help you financially), interpersonal support (How often is (target) the voice of experience or wisdom), intimacy (How often is (target) your advisor or confidant), and shared activities (Did (target) attended activities in which you were involved, such as a play,

sports competition, or a musical event). The Cronbach's α for the scale was .92 in the current study.

Scenarios for particularized trust. The trust game was included in the current study in the form of survey, which has been applied in other studies (Xin et al., 2016); see the first scenario below. In the classical trust game, there is no promise from the partner that a sent token could be returned. However, it lacks ecological validity as most situations in everyday life have interactions and feedbacks between trustors and trustees. This is especially true for the currents study as it measures the trust between relatives, with more interactions and feedbacks than from anonymous strangers. Fortunately, some succeeding researchers (Glaeser, Laibson, Scheinkman, & Soutter, 2000) had paid attention to the issue and slightly adapted the trust game by changing the trustor's sent money (X) returnable. Although the amount the trustee could finally get ($3X$) is the same, and her/his promise that sent money would be returned to the trustor actually guarantees nothing, the adapted games were more like a lend-money scenario in daily life so it could enhance ecological validity.

The current study tried to develop scenarios of different risk levels, from playing games to lending stuff, to lending money, to have a wider range of trust for simulating situations in everyday life interacting with relatives. Coupled with the classical trust game, two adapted trust game scenarios were designed to test trust in different situations.

> You and A participated in a game experiment. The experimenter gave you and A 10 tokens (every token could be transformed into a certain amount of cash at the end of the experiment). You could decide how many tokens to send to A. The experimenter would triple the tokens you sent (for example, 3 tokens will become 9 tokens) and give them to

A. Finally, A could decide whether to share the tokens he/she got from the experimenter and how much to share with you.

Imagine you were a farmer. This spring, you finished sowing and there were 10 kilos of high-quality hollandaise potatoes left. You wanted to keep them for your food. Then, A came to you and said that he/she did not have enough potatoes for his/her farm and wanted to borrow some from you. The person said that he/she would harvest three times the original potatoes three months later. By that time, he/she would return the borrowed potatoes to you. In addition, he/she would give you some of the potatoes to you for your favor.

During the Spring Festival, you received 10 packets of lucky money containing the same amount. One person said that she/he lacked money to make an investment and asked you to lend her/him money. The person said that the investment would be tripled in the next Spring Festival, and by that time she/he would return the borrowed money to you. In addition, she/he would give you some of the raised money as lucky money for your favor.

The introduction is: "Please image the following situations in interactions with your relatives like uncles and aunts." Questions were asked following every scenario: "How many packets of your lucky money (kilos of potatoes or tokens) will you lend to the person?" Participants gave an answer to each question by giving a number, integers and decimals were both allowed. The larger the number (0–10), the higher the level of trust toward relatives. Furthermore, "How many packets of lucky money (kilos of potatoes or tokens) will the person get as the investment increased twice (three months after he/she harvested/get from the experimenter)?" was added to test whether participants fully understood the scenarios. In the current study, the Cronbach's α for the three scenarios was .86.

General Trust Scale. As one of the DV, generalized trust was measured by the General Trust Scale (Yamagishi & Yamagishi, 1994), a six-item 5-point Likert scale measuring the generalized trust. The sample item was "Most people are basically good and kind." The Cronbach's α for the scale was .86 in current study.

Long-Term Orientation Scale. Individual-level LTO was assessed by the LTO scale (Bearden et al., 2006). It is an eight-item 7-point Likert scale and has two dimensions, namely, tradition (e.g., "Respect for tradition is important to me") and plan (e.g., "I plan for the long term"). It has good reliability across different countries. The Cronbach's α for the scale was .79 in current study.

Kinship Social Support Measure. As for one of the mediators, Kinship Support Measure (Taylor et al., 1993) was applied as an indicator of kinship relationship. It measures the relationship with adult relatives, like aunts and uncles (e.g., "We often get together with our relatives for reunions or holiday celebrations"). It is a 13-item 4-point Likert scale consisting of three dimensions, namely, socialization and entertainment (e.g., "We often get together with our relatives for reunions or holiday celebrations"), advice and counseling (e.g., "When we have to make important family decisions, we ask our relatives for advice"), and problem solving (e.g., "We can count on our relatives to help when we have problems"). Items 8 ("Family gatherings, like reunions and holiday celebrations, are not much fun") and Item 11 ("If I had a problem, I would talk to a friend before I would tell a relative") should be verse coded. The Cronbach's α for the scale was .89 in current study.

Parental Responsiveness Questionnaire. As for control variable, Parental Responsiveness Questionnaire (Booth, Johnson, Granger, Crouter, & McHale, 2003) was

used in the current study. It measures intimacy with parents, which possibly affects the interaction quality with grandparents and other relatives. It is an eight-item 5-point Likert scale that rated from "*Not at all*" to "*Very much.*" A sample question is "How much do you share your inner feelings or secrets with him/her?" The Cronbach's α for the scale was .88 in current study.

Analytical Procedures

The participants who incorrectly answered to "How many packets of lucky money (kilos of potatoes, or tokens) will the person get as the investment increased two times (three months after he/she harvested)?" were excluded from the relevant data analysis because they did not understand the scenario. Participants who had wrong answers to all three scenarios were also excluded. In the current study, 11 participants had at least one wrong answer, and five of them had all wrong answers to the three scenarios and answered all the questions less than 5 minutes as indicated by the survey website, so were excluded. Five out of the 314 participants were excluded, and there were 309 participants with regard to the DV of particularized trust.

The average lending amount to relatives in the three scenarios were the DV of particularized trust in relatives. Generalized trust was indicated by the scale. There were three major IVs in the current study, the objective contact frequency with all living grandparents, the subjective intimacy with all four grandparents, and the content of day-to-day interactions with the closest living grandparent as indicated by the Scale of Grandparenting Pattern.

SPSS 24.0 was employed to analyze the data, and results with $p < .05$ denoted significance. Correlation was used to test the relationship among contact frequency, intimacy with grandparent, grandparenting pattern, and trust toward kin. Regression further tested the effects when control variables, the relationship with parents and household income, were included.

After controlling for the two CVs, with the indices of contacting with grandparents as IVs, trust toward relatives and generalized trust as DV, LTO or (and) kinship support as mediator(s), multiple regressions were used to test the mediation effect with the macro PROCESS (Hayes, 2013) and Bootstrapping procedure with 1000 samples (Preacher & Hayes, 2008) were performed to test the indirect effect. First, LTO and kinship support were separately added to the mediation models for different IVs and DVs. If both of the mediators were significant with same IV and DV, then the two mediators would together be added into the model to test the unique effect when both of them had effects on interactions with grandparents and trust.

Results

Descriptive analyses. As shown in Table 6, the three scenarios and the average scores are significantly correlated. Other descriptive data, Cronbach's α, and the correlations between major variables are shown in Table 7, which gives an overview of interactions with grandparents and the trust level among extended family members.

Table 8 shows *Mean*s and *SD*s for major IVs and DVs, and Independent Sample *t*-test results for gender difference. According to the results, gender differences were not observed in IVs or DVs, but in a mediator and a control variable in the current study.

Female participants reported higher levels of kinship support (t = -2.02, p = .045) and parental responsiveness (t = -2.75, p = .006).

Regressions. As shown in Table 7, all three IVs are related to young people's particularized trust in their relatives. To closely examine the relations, control variables were included. Controlling for income and parental responsiveness, the frequency of contact with grandparents was still related with the amount lent to relatives, β = .17, t = 2.95, and p = .003; and intimacy with grandparents was still related with the amount lent to relatives, β = .19, t = 3.32, p = .001. However, day-to-day interactions with the closest grandparent was unrelated with the amount lent to relatives, β = .10, t = 1.66, and p = .098. In general, Hypothesis 2 was supported, that is, interactions with older adults benefit younger adults' particularized trust in extended family members at individual level. For another DV, as shown in Table 5, only intimacy with grandparents was related to young people's generalized trust. When control variables were considered, regression results showed that intimacy with grandparents was still related with young adults' generalized trust, β = .12, t = 2.19, and p = .029. To summarize, intimacy with all grandparents had the strongest explanatory power because it indicated the importance of quality rather than quantity of interacting with grandparents, that is, the cumulative quality interacting with grandparents since younger age could best predict the effects of intergenerational interactions in the current study.

Mediations. The macro PROCESS (Hayes, 2013) was employed to perform multiple regression in examining the mediation hypotheses. The indirect effect was tested using a bootstrap estimation approach with 1000 samples (Shrout & Bolger, 2002). All reported results below were based on the output of the PROCESS but not on the direct

regression results of the two variables. *The italic heading* of each paragraph showsdetailed variables of the regression model. Control variables, such as household income and parental responsiveness, were added to *all* models.

Contact with grandparents→kinship support→particularized trust toward kin. Multiple regression results supplemented the hypothesis that kinship support mediates the effect of contacting grandparents on young people's trust toward relatives. The contact frequency with grandparents significantly predicted kinship support, $b = .02$, $SE = .01$, $t = 2.32$, and $p = .021$; and kinship support significantly predicted trusting relatives, $b = 1.53$, $SE = .31$, $t = 4.94$, and $p < .001$; and the contact frequency with grandparents significantly predicted trusting relatives, $b = .12$, $SE = .04$, $t = 2.95$, and $p = .004$. The contact frequency with grandparents still significantly predicted trusting relatives after kinship support was controlled, $b = .09$, $SE = .04$, $t = 2.38$, and $p = .018$, which supported a partial mediation. The results indicated that the indirect coefficient was significant, $b = .03$, $SE = .01$, and 95% CI = [.0053, .0512]. Figure 3 illustrates the model summary.

Table 6

Correlation Matrix for DVs of Trusting Relatives

	1	2	3	4
1. Token Lend to Relatives	—			
2. Potato Lend to Relatives	.68***	—		
3. Money Lend to Relatives	.64***	.66***	—	
4. Trust Relatives by Scenarios	.88***	.89***	.88***	—
N	290	305	293	309
M	6.26	6.44	5.39	6.05
SD	2.95	2.96	3.24	2.68

Note. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Table 7

Correlation Matrix for Demographic, IVs, Mediators and DVs & Mean, Standard Deviation and Cronbach's α for Major Variables for Study 2

		1	2	3	4	5	6	7	8	9	10
1.	Age	—									
2.	Household Income	.03	—								
3.	Grandparents Contact	-.05	.13*	—							
4.	All Grandparent Intimacy	.06	.09	.33***	—						
5.	Grandparenting Pattern	-.13*	.09	.40***	.46***	—					
6.	LTO	.09	-.04	.11	.30***	.20***	—				
7.	Kinship Social Support	.01	.08	.14*	.33***	.32***	.30***	—			
8.	General Trust Scale	-.01	-.01	.06	.18**	.05	.30***	.25***	—		
9.	Parental Responsiveness	-.01	.16**	.03	.22***	.17**	.33***	.33***	.31***	—	
10.	Trust Relatives by Scenarios	-.06	-.01	.16**	.22***	.12*	.17***	.33***	.32***	.18**	—
	M	22.8	2.86	6.42	0.04	1.69	5.35	2.66	3.53	3.44	6.05
	SD	3.16	.91	3.70	4.88	.45	.77	.49	.67	.75	2.68
	Cronbach's α					.92	.79	.89	.86	.88	

Note. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Table 8

Means and Standard Deviations for Major Variables by Gender

	Male		Female			
	Mean	*SD*	*Mean*	*SD*	*t*	*p*
True Relatives by Scenarios	5.85	2.73	5.54	2.06	1.08	.280
General Trust Scale	3.44	0.60	3.59	0.70	-1.91	.058
Grandparents Contact	6.35	3.92	6.47	3.57	-0.27	.786
All Grandparent Intimacy	-0.14	4.74	0.15	4.98	-0.52	.602
Grandparenting Pattern	1.64	0.42	1.72	0.46	-1.43	.142

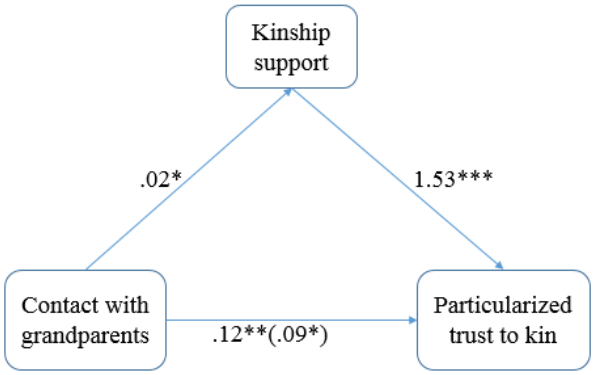

Figure 3. Mediation results for the effect of contacting grandparents on young adults' trust to relatives through kinship support. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Intimacy with grandparents→kinship support→particularized trust toward kin.

Multiple regression results supplemented the hypothesis that kinship support mediates the effect of intimacy with all four grandparents on young people's trust toward relatives. The results indicated that intimacy with grandparents significantly predicted kinship support, $b = .03$, $SE = .01$, $t = 4.97$, and $p < .001$; and kinship support significantly predicted trusting relatives, $b = 1.44$, $SE = .32$, $t = 4.52$, and $p < .001$; and intimacy with

grandparents significantly predicted trusting relatives, b = .10, SE = .03, t = 3.32, and p = .001. The intimacy with grandparents still significantly predicted trust toward relatives after the mediator was controlled, b = .06, SE = .03, t = 2.05, and p = .041, which supported a partial mediation. The results indicated the indirect coefficient was significant, b = .04, SE = .01, and 95% CI = [.0192, .0623]. See Figure 4 for the model summary.

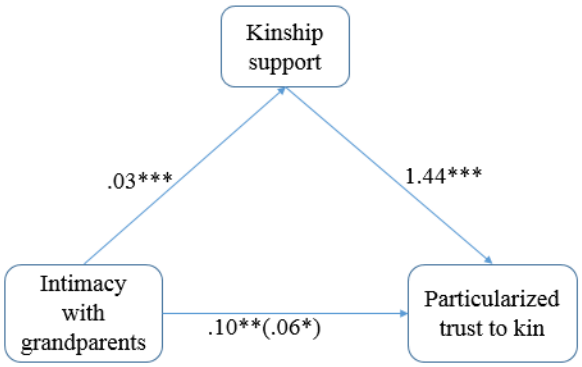

Figure 4. Mediation results for the effect of contacting grandparents on young adults' trust to relatives through kinship support. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

As regression results showed that daily interaction with the favorite grandparent was not significantly related with trusting relatives considering the control variables, which indicated that the mediation analysis with this IV is unnecessary.

Contact with grandparents→LTO→particularized trust toward kin. The regression results did not support the hypothesis that long-term orientation mediates the effect of contact with grandparents on younger people's trust toward relatives. The contact frequency with grandparents significantly predicted LTO, b = .02, SE = .01, t = 2.17, and p = .030; but LTO was insignificant in predicting trusting relatives, only a trend

level, b = .36, SE = .21, t = 1.73, p = .084. These results did not support the mediational hypothesis.

Intimacy with grandparents→LTO→particularized trust toward kin. Regression results did not support the hypothesis that LTO mediates the effect of intimacy with all four grandparents on younger people's trust toward relatives, mainly because LTO was insignificant in predicting trusting relatives, b = .27, SE = .21, t = 1.29, and p = .197.

Contact with grandparents→kinship support & LTO→particularized trust toward kin. Although LTO could not mediate the effect of contacting with grandparents on young people's trust in relatives (in a trend level), the model with the two mediators was still estimated to examine whether kinship support was still a significant mediator when controlling for the influence of LTO. In the regression model, particularized trust was DV, parental responsiveness and household income were controlled, then IV (contact with grandparents), and the two mediators (kinship support and LTO) were simultaneously entered into the model. The results showed that contact frequency with grandparents significantly predicted kinship support and LTO, b = .02, SE = .01, t = 2.32, p = .021 and b = .02, SE = .01, t = 2.17, p = .03, respectively. Kinship support significantly predicted trust toward kin, b = 1.47, SE = .32, t = 4.67, and p < .001; but LTO was insignificant in predicting trust toward kin, b = .16, SE = .20, t = .79, and p =.432. The total effect of contact frequency with grandparents on trust toward kin was significant, b = .12, SE = .04, t = 2.95, and p = .004. The contact frequency with grandparents still significantly predicted trust relatives after controlling for the mediators, b = .09, SE = .04, t = 2.29, and p = .023, so consistent with the partial mediation. The results indicated that kinship support's indirect effect was significant, b = .02, SE = .01,

and 95% CI = [.0031, .0501]; but LTO was insignificant, with $b < .01$, $SE = .01$, and 95% CI = [-.0047, .0218]. Figure 5 depicts the model summary.

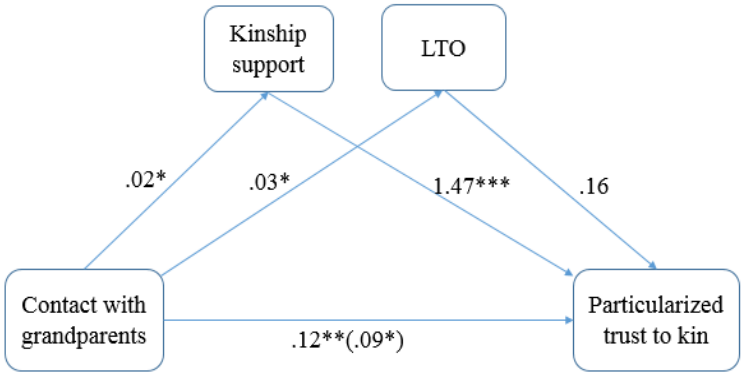

Figure 5. Mediation results for the effect of contacting grandparents on young adults' trust to relatives through kinship support and LTO. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Intimacy with grandparents→kinship support & LTO→particularized trust toward kin. For the similar reason, multiple regressions were used to test kinship support and LTO's mediation effect of intimacy with grandparents on young adults' trust in kin. The results showed that intimacy with grandparents significantly predicted kinship support and LTO, $b = .03$, $SE = .01$, $t = 4.97$, and $p < .001$ and $b = .04$, $SE = .01$, $t = 4.55$, and $p < .001$, respectively. Kinship support significantly predicted trust toward kin, $b = 1.41$, $SE = .32$, $t = 4.36$, $p < .001$; but LTO was insignificant in predicting trust toward kin, $b = .13$, $SE = .21$, $t = .61$, and $p = .544$. The total effect of intimacy with grandparents on trust toward kin was significant, $b = .10$, $SE = .03$, $t = 3.32$, and $p = .001$. The intimacy with grandparents was insignificant in predicting trusting relatives after controlling for the mediators, $b = .06$, $SE = .03$, $t = 1.88$, and $p = .061$, so consistent with the partial mediation. The results indicated that kinship support's indirect effect was

significant, *b* = .04, *SE* = .01, and 95% CI = [.0171, .0636]; but LTO was insignificant, *b* <.01, *SE* = .01, and 95% CI = [-.0120, .0233]. Figure 6 presents the model summary.

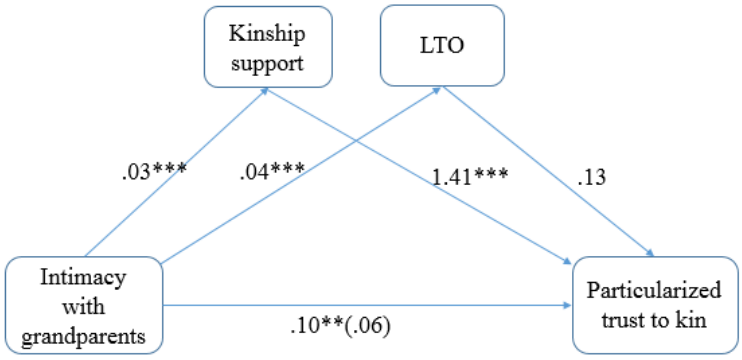

Figure 6. Mediation results for the effect of intimacy with grandparents on young adults' particularized trust to relatives through kinship support and LTO. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Intimacy with grandparents→LTO→generalized trust. Multiple regression was used to test the hypothesis that LTO mediates the effect of intimacy with grandparents on young people's generalized trust. The results indicated that intimacy with grandparents significantly predicted LTO, *b* = .04, *SE* = .01, *t* = 4.55, and *p* < .001; and LTO significantly predicted generalized trust, *b* = .16, *SE* = .05, *t* = 3.20, and *p* = .002; and intimacy with grandparents significantly predicted generalized trust, *b* = .02, *SE* = .01, *t* = 2.19, and *p* = .029. The intimacy with grandparents was insignificant in predicting generalized trust after controlling for the mediator, *b* = .01, *SE* = .01, *t* = 1.35, and *p* = .177, which supported a full mediation. The results showed that LTO's indirect effect was significant, *b* = .01, SE < .01, 95% CI = [.0022, .0116]. Figure 7 illustrates the model summary.

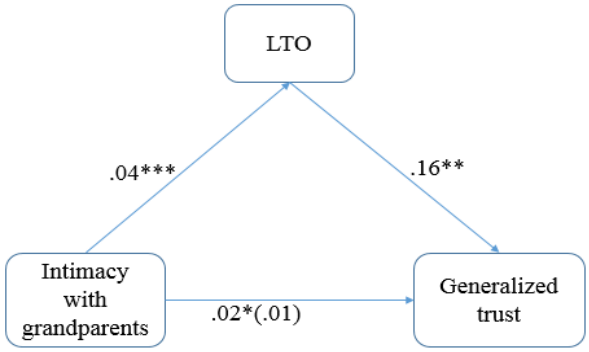

Figure 7. Mediation results for the effect of intimacy with grandparents on young adults' generalized trust through LTO. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Intimacy with grandparents→kinship support→generalized trust. Multiple regressions were used to test the hypothesis that kinship support mediates the effect of intimacy with grandparents on young people's generalized trust. The results indicated that intimacy with grandparents significantly predicted kinship support, $b = .03$, $SE = .01$, $t = 4.98$, and $p < .001$; and kinship support significantly predicted generalized trust, $b = .19$, $SE = .08$, $t = 2.40$, and $p = .017$; and intimacy with grandparents significantly predicted generalized trust, $b = .02$, $SE = .01$, $t = 2.19$, and $p = .029$. The intimacy with grandparents was insignificant in predicting generalized trust after controlling for the mediator, $b = .01$, $SE = .01$, $t = 1.47$, $p = .141$, which supported a full mediation. The results indicated that the indirect coefficient was significant, $b = .01$, SE < .01, 95% CI = [.0014, .0107]. Figure 8 shows the model summary.

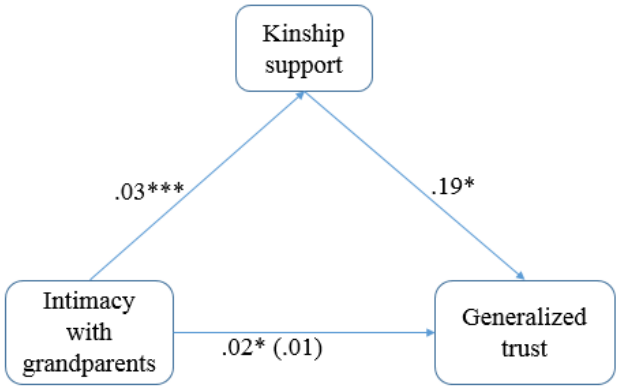

Figure 8. Mediation results for the effect of intimacy with grandparents on young adults' generalized trust through kinship support. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Intimacy with grandparents→LTO & kinship support→generalized trust.

Multiple regressions were used to examine the hypothesis that kinship support and LTO mediate the effect of intimacy with grandparents on young people's generalized trust. In the regression model, generalized trust was DV, parental responsiveness and household income were controlled, then IV (intimacy with grandparents), and the two mediators (kinship support and LTO) were simultaneously entered into the model. The results indicated that intimacy with grandparents significantly predicted LTO, $b = .04$, $SE = .01$, $t = 4.55$, and $p < .001$, and also significantly predicted kinship support, $b = .03$, $SE = .01$, $t = 4.98$, and $p < .001$. LTO significantly predicted generalized trust, $b = .15$, $SE = .05$, $t = 2.87$, and $p = .004$, but kinship support was a marginally significant predictor of generalized trust, $b = .15$, $SE = .08$, $t = 1.94$, and $p = .053$. Intimacy with grandparents significantly predicted generalized trust, $b = .02$, $SE = .01$, $t = 2.19$, and $p = .029$. The intimacy with grandparents no longer predicted generalized trust after controlling for the mediators, $b = .01$, $SE = .01$, $t = .87$, and $p = .383$, supporting a full mediation. The results indicated that the indirect coefficient was significant for LTO, $b = .01$, SE < .01, and 95%

CI = [.0018, .0109]; and the indirect coefficient was significant for kinship support, *b* < .01, SE < .01, 95% CI = [.0002, .0094]. However, as kinship support was only marginally related to generalized trust, kinship support could not mediate the effect of intimacy with grandparents on generalized trust strictly. Figure 9 depicts the model summary.

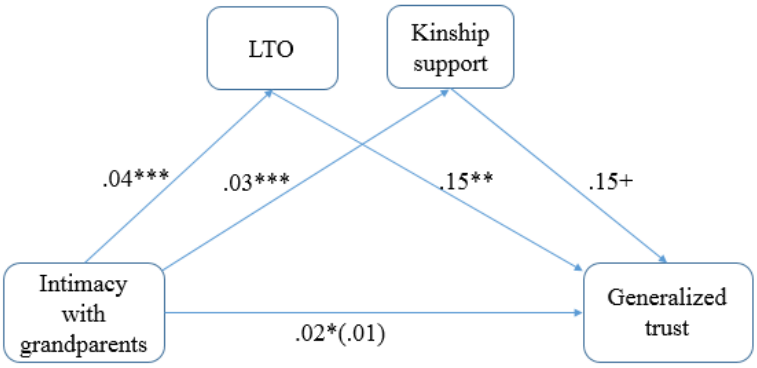

Figure 9. Mediation results for the effect of intimacy with grandparents on young adults' generalized trust through LTO and kinship support. +p = .053, *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Summary. As the complement of Study 1, Study 2 employed quality and quantity indices of daily interactions with grandparents (i.e., intergenerational interactions at family level) to supplement percentage of older adults as the indicator of intergenerational interactions; Study 2 tested individual's both particularized trust within an extended family and generalized trust in people at general to supplement generalized trust at societal level as social capitals; Study 2 also explored whether intergenerational interactions at family level (i.e., interactions with grandparents) have an further effect on individual's social outcomes beyond family level (i.e., generalized trust). In addition, Study 2 employed three indices for interactions with grandparents. Therefore, Study 2

took more perspectives to explore the association of intergenerational interactions and young people's trust and the mechanisms so as to build a solider theoretical foundation.

The results confirmed Hypothesis 2, that is, interactions with grandparents benefit young people's particularized trust toward kin. Likewise, Hypothesis 1 was again confirmed: interactions with older adults (indicated by interactions with grandparents in Study 2) benefit young people's generalized trust. Hypothesis 4 (LTO mediates the effect of interactions with older adults on young people' particularized trust in extended family at individual level) was not supported. Hypothesis 5 was supported, that is, kinship support mediates the effect of interactions with older adults on young people's particularized trust in extended family at individual level. Moreover, kinship support was the dominant mediator when consider both of the mediators' effects between interactions with grandparents and young people's particularized trust toward kin. Hypotheses 3 and 6 were generally supported. LTO mediates the effect of interactions with grandparents on young people's generalized trust, and kinship support mediates the effect of interactions with grandparents on young people's generalized trust. Moreover, LTO was the dominant mediator when both the mediators' effects between interactions with grandparents and young people's generalized trust were considered. In other words, LTO could not explain interactions with grandparents and young adults' particularized trust to kin while kinship is in presence; kinship support could not explain interactions with grandparents and young adults' generalized trust while LTO is in presence. In general, the results of Study 2 supported the important role of interactions with grandparents for young adults' trust building, in which kinship and LTO were the main mediator in and beyond family level respectively.

Chapter 5: Discussion and Conclusion

Considering the mixed conclusions of human postreproductive longevity and the emerging but practical-oriented studies regarding intergenerational interactions and social capital incubation (Boström, 2004; De Souza & Grundy, 2007; M. Kaplan et al., 2017; Newman, 2003; Newman & Hatton-Yeo, 2008), the current project proposed older adults' role for social capital accumulation and explored the association between intergenerational interaction and young generations' social capital as well as the mechanisms. Particularly, given the higher trust level of older adults *per se* (Castle et al., 2012; Li & Fung, 2012; Robinson & Jackson, 2001) and the transmission of trust (Dohmen et al., 2012; Ferrin et al., 2006; Rotenberg, 1995), the current project focused on trust, which is a fundamental social capital (Misztal, 2013) for the well-off of societies (Harari, 2014; Knack & Keefer, 1997) and individuals (Barefoot et al., 1998; Feng et al., 2016). This project is one of the first to investigate the mechanism of intergenerational interaction and younger generations' trust with systematical controls over confounding variables, such as GDP, household income, individualism, and the relationship with the middle generation (parents), among others. The current project contributed to the theoretical foundations of human postreproductive longevity and provided directions of intergenerational interactions for productive aging.

As trust could be categorized as particularized trust and generalized trust (Weber & Gerth, 1953), bearing different mechanisms (Kappmeier, 2016; McAllister, 1995; Schaubroeck et al., 2011; Ybarra et al., 2010), and between-culture societal difference could not be reduced to the within-culture individual difference (Bond, 2002; Leung & Cohen, 2011; Na et al., 2010; Zhang et al., 2016), the current project investigated

intergenerational interactions and generalized trust at societal and individual levels. Drawing from the origin of trust (Poppo et al., 2008) and success of family companies (Breton-Miller & Miller, 2006; Brigham et al., 2014; Lumpkin & Brigham, 2011), time perspective of planning for the future and valuing the past experience was tested as the dominant mediator of intergenerational interaction and generalized trust at societal level. Drawing from the human nature of cooperative breeding (Kramer, 2005, 2010) as a result of kin selection (Hamilton, 1964), kinship support was tested as the dominant mediator of intergenerational interaction and particularized trust at family level in the two studies of the current project.

Study Summary

With the data of percentage of older adults aged 60+ in every region from WHO as IV, corresponding generalized trust of young and middle-aged adults in the regions from WVS as DV, and Hofstede's culture index of LTO as the mediator, Study 1 explored the relationship between intergenerational interaction' and generalized trust level of younger generations at societal level. After controlling for the confounding variables like individualism, GDP per capita, Gini index, education level, the results supported that intergenerational interactions benefit both young and middle-aged adults' generalized trust level (Hypothesis 2). Previous studies usually focused on interactions with older adults and children or adolescents' social capital in small scales, such as in families, classes, or in communities (e.g., Boström, 2004; F. Chen et al., 2011; De Souza & Grundy, 2007; Newman & Hatton-Yeo, 2008). Study 1 extended the results to a macro and societal level as well the target group to middle-aged people. The results also supported the effects of LTO, a culture dimension of viewing time on a large scale and

holistically—valuing the past traditions and planning for the future—mediates the relationship between intergenerational interactions and young adults' generalized trust.

Based on the results of Study 1, Study 2 further explored the relationship with grandparents in daily life and young adults' generalized trust and particularized trust, after controlling for the relationship with parents and household income. To have a further detailed perspective in interactions with grandparents, three indices were chosen as IVs, namely, contact frequency with all alive grandparents, intimacy with all grandparents, and daily interactions with the most intimate alive grandparent. The results showed that the frequency of contact with grandparents and intimacy with grandparents were related with particularized trust in relatives. For generalized trust, only intimacy with grandparents was a significant predictor. For the mediation results, as expected, only kinship support could mediate the association between contacts (intimacy) with grandparents and particularized trust in kin. On the contrary, both LTO and kinship support could mediate the association between intimacy with grandparents and generalized trust, but when adding the two mediators in a model, LTO overwrote kinship support's role. These results supported the hypotheses that the dichotomous roles of kinship support and LTO's in intergenerational interactions on young adults' trust building at individual and societal levels. In addition, the mediator kinship support for the association between interactions with grandparents and generalized trust illuminated the role of kinship relationships in developing social capital, such as generalized trust.

The results in the two studies together drew the picture of intergenerational interaction and trust building at societal and family levels as well as proposed the transmission of trust from family to societal level. In addition to sociologists' perspective

of general social outcomes from intergenerational interactions, the current project explored the essential domain—trust, and provided psychological explanatory theory in the scale of extended family and the whole society and thus contributes to the theoretical foundation of productive aging for future studies in the trend of global population aging. Besides the main findings, several other implications as suggested by the results are discussed as follows.

Implications

New perspective for postreproductive longevity.. In biology, the reason of post-reproductive longevity of human females has long been debated. None of the dominant hypothesis, including but not limited to grandmother hypothesis (Lahdenperä et al., 2004), mother hypothesis (Madrigal & Meléndez-Obando, 2008), or patriarch hypothesis (Marlowe, 2000) could convince each other. Aligning with human beings as social animals intertwined with each other (Elder, 1994, 1998) and the slow life history strategies adopted, the results of current project supported that interactions with older adults was positively associated with younger generations' pivotal social capital—trust. The conclusion helps to understand the myth of human postreproductive longevity for the theoretical foundation of evolutionary psychology from the perspective of culture-gene co-evolution (Alexander, 1974; Chiao & Blizinsky, 2009; Kitayama & Uskul, 2011). From this new perspective, several questions emerge for future research. For example, could it be that time-honored kinship support formed the necessary social norms that contributes to social capital in an extended family, so the groups with more senior members had extra kinship support and more means to solidify the social norms and accumulated more social capital that outcompete other groups?

Intimacy with grandparents as a good index for intergenerational interactions. The results of Study 2 showed that intimacy with all grandparents was the most robust index of the quality of interactions with grandparents. For instance, only intimacy with grandparents was related with young people's generalized trust. Similarly, previous studies revealed that emotional closeness strongly predicted the involvement of grandparent (Tan, Buchanan, Flouri, Attar-Schwartz, & Griggs, 2010). This result echoed previous findings that emotional closeness with grandparents remains and can extend to adulthood, despite of declines in contact frequency that started from adolescent years (Hodgson, 1998; Mills et al., 2001; A. C. Taylor et al., 2005; Wiscott & Kopera-Frye, 2000). This suggested that quality matters more than quantity when interacting with grandparents. Similarly, subjective closeness rather than other social cues, such as social support, is the prominent predictor for kinship (Neyer & Lang, 2003). Likewise, from adolescent years on, this tendency may be noticeable as a decline in actual contact with grandparents; therefore, intimacy with grandparents is considered as a better index for adults (not sure for children) for intergenerational research. The index of intimacy could also be an alternative for those studies did not detect direct grandparents' effects on children's achievements after controlling for the middle generation's effects (Bol & Kalmijn, 2016; Jaeger, 2012), as quality is more important than the quantity of interactions with grandparents.

The result that intimacy is the most robust predictor of younger adults' trust also implied older adults' unique role in culture and knowledge transmission. At information age, people are concerned whether the Internet can assume the main role in culture and knowledge transmission. Question-and-answer sites, such as Quora and Zhihu, provide

professional answers to various questions. However, no evidence shows that these forums can increase the intimacy between users; therefore, some aspects of in-depth intergenerational interactions are irreplaceable.

Third-party effect on trust building. Regarding the factors influencing trust, the characters of trustors and trustees and their relationship were extensively studied, and fruitful theories emerged. However, the indirect effect of third party on interpersonal trust was underdeveloped, and the social nature and contexts surrounding the dyad needed more attention (Burt & Knez, 1996; Ferrin et al., 2006; Gheorghiu et al., 2009). The current project provided a new possibility to increase the trust level of younger generations using a third party (i.e., older adults). Policy makers could consider policies that can enhance the interactions between older and younger generations, such as older adults' volunteer project. For example, nowadays, the conflicts and distrust among refugees and local citizens have caused sever social problems. Muslim older adults can help young people of the host country understand their history and traditions, and build their trust in the religion.

Promote LTO and generalized trust. Nowadays, the defraud is increasingly rampant and generalized trust is decreasing (Robinson & Jackson, 2001). This can be due to the fast pace modern society that makes people reluctant to trade-off the immediate benefits for the gains in the future. In light of the results of this current study, promoting LTO, value planning for future reward (Bearden et al., 2006; Hofstede et al., 2010), but not the immediate gains in a society can effectively solve the issue. Likewise, drawing on the successful family firms, LTO could be formed by transgenerational value and culture creation (Zahra et al., 2004; Zellweger et al., 2012). A long-term oriented society obeys

the social norms or consensus, such as protect reputation for the future cooperation opportunities, and generalized trust could be incubated in this environment.

Kinship as key to understand interpersonal relationships. The novel findings of the current project revealed that kinship support could be the mechanism of interactions with grandparents benefiting young adults' generalized trust. Theoretically, however, kinship support and grandparents contact should correlated more with particularized trust and previous studies usually argued that the two kinds of trust could not directly mirror each other, especially in the collectivism culture, "in-group" and "out-group" members are essentially different (Feng et al., 2016). Hence, the reasonable interpretation could be that kinship, as argued by previous studies, underpins social relationships, values, patterns (Derex & Boyd, 2015; Neyer & Lang, 2003; Nowak, 2006; Opie et al., 2014; Park & Schaller, 2005; Podgórski et al., 2014), may transmit the interaction patterns with relatives to strangers or as a shadows of the past experience (Poppo et al., 2008), which benefit trusting people at general. The current finding extended previous literature that the transmission of trust from parents to children (Chi, 2013; Dohmen et al., 2012; Rotenberg, 1995) to the experiences interactions with extend family members indirectly influences young adults' generalized trust. This finding illuminated a new perspective to the understanding of the origin of generalized trust not only on a social consensus (Carroll, 1991; Misztal, 2013), such as LTO, but also kept by kinship selection, an evolutionary mechanism to protect inclusive fitness (Hamilton, 1964) in a mutually connected group.

Furthermore, the results when both mediators are considered in the mediation models for intergenerational interactions and young people's generalized and

particularized trust in relatives, respectively, only LTO was significant mediator in the model regarding generalized trust, whereas only kinship support was significant mediator in the model regarding particularized trust implying the different mechanisms of the two kinds of trust. This result replicated the findings of previous studies that generalized trust was largely cognition-based, whereas particularized trust toward closer ties was largely affect-based (McAllister, 1995; Schaubroeck et al., 2011). For example, weighting the future loss of the money and harm the kinship connection when a relative of disrepute is borrowing money, more people will finally lend the money out of kinship support, which is obviously different from the situation of a disrepute acquaintance. As an important relationship in human's daily life (Hamilton, 1964; Neyer & Lang, 2003; Testa, 2013) and the key to understand many social relationships (Kirkpatrick, 1999; Opie et al., 2014), the conceptual hole of kinship research (Daly et al., 1997; Kenrick & Simpson, 1997) requires further studies.

Interactions with older adults beyond grandparenting. The results of Studies 1 and 2 supported that intergenerational interactions may enhance younger generations' trust level in a society. On the one hand, appealing for the traditional ties of extended families in the context of increasing nuclear families is necessary. On the other hand, traditional ties are advantageous in building "fictive kinship" of certain groups of people, such as immigrants (Chatters, Taylor, & Jayakody, 1994; Ebaugh & Curry, 2000; Kim, 2009) or in organizations with senior, middle, and new members to improve trust and social capital accumulation. Moreover, the "intergenerational" pattern can benefit all members' LTO for the future success in the ever fast-changing world, especially true for

the weightings of present and future benefits for historical and culture heritage protection programs.

Strengths

Combining societal and individual levels data. As argued by scholars, the research results of societal level between-culture difference could not mirror within-culture individual level difference (Bond, 2002; Leung & Cohen, 2011; Na et al., 2010; Zhang et al., 2016), depending on factors such as the socialization of the citizens, the operational definition of the concepts at different levels, the current project used data from both levels. The results supported the hypotheses at both levels, so the conclusions are more robust. In other words, across the world, interactions with older adults are related with younger people's generalized trust by the role of time perspective of LTO; and in Chinese culture, interactions with grandparents are related with younger people's generalized trust through LTO; furthermore, kinship support could mediate the relationships of interactions with grandparents and trust to relatives and to people at general. Kinship as a human instinct may be universal. However, China has long history, the tradition of respect the elderly and collectivism culture, the conclusion of LTO works at both within and between-culture suggests older adults' role of shaping a holistic time perspective could also be universal. Also, future studies could test the conclusion for individuals in other cultures for the role of LTO to compare the effect size.

Intergenerational interaction in natural context. Previous studies regarding intergenerational interactions focused more on retired people as grandchildren caregivers (Arber & Timonen, 2012; Di Gessa, Glaser, & Tinker, 2016; Emick & Hayslip Jr, 1999) or through designed intervention studies (Boström, 2004; De Souza & Grundy, 2007;

Newman & Hatton-Yeo, 2008), but the current project revealed how younger people can benefit psychologically from interacting with older adults, which is common in daily life but often neglected. Furthermore, three IVs were tested to have a detailed picture of interactions with grandparents, namely, contact frequency with all alive grandparents, intimacy with all grandparents, and daily interactions with the most intimate alive grandparent. In the current study, intimacy with all grandparents is the strongest predictor of young adults' trust, and clearly, interactions with the most intimate alive grandparents is the weakest predictor. These results implied that the accumulated emotional closeness with grandparents from younger age can better indicate the quality of interactions with grandparents, or intergenerational interaction as well.

Additional scenarios. In Study 2, the scenarios were employed to measure the trust between relatives, with more interactions and feedbacks than anonymous strangers, but the classical trust game does not have interactions and feedbacks. To make up the shortcomings of low ecological validity, the current study added two additional scenarios and slightly adapted the trust game by making the trustor's sent money (X) returnable (Glaeser et al., 2000). Therefore, particularized trust toward relatives was indicated by the classical trust game and two additional scenarios resembling trust games. Although the amount the trustee finally could get ($3X$) was the same, and her/his promise that the money being sent would be returned to the trustor guarantees nothing, the adapted games were akin to a lend-money scenario in daily life and so could enhance ecological validity.

Limitations

Causality. Since the current project employed cross-sectional data, it is hard to tell the causality in the mediation models. For example, it could be possible that more

social capitals (including trust) in families or communities enable older adults to receive more support through intergenerational interactions and live longer, even after controlling for the relationship of the two younger generations and economical indices such as GDP, Gini. Given the intervention studies of intergenerational interactions and younger people's social capital increase (Boström, 2004; De Souza & Grundy, 2007; Newman & Hatton-Yeo, 2008) and the proposition of the evolutionary significance of older adults for social capital accumulation in literature review, the current conclusions could be on the right direction. However, it is plausible that intergenerational interactions and younger generations' trust interplay with each other and are reciprocal causations.

Samples. The sample size of Study 1 is small, given that only 60 countries are obtained in WVS Wave 6, and among them, the covered countries in Hofstede's LTO cultural index and control variables are lesser, although they are aggregated data from nationally representative participants. With more countries available in future data, replicate studies could be conducted to reconfirm these results. In Study 2, 83.1% of the participants have a tertiary educational level, which is higher than China's average level. People who have higher education are more likely to have larger influence from their education to value the past and plan for the future than interactions with their grandparents. Therefore, sampling participants with more heterogeneous education levels may make the role of LTO more salient.

In Study 2, as many Mainland students studying in Hong Kong participated the survey with IP addresses of Hong Kong and some exchange students have oversea IP addresses, it is hard to separate Mainland and Hong Kong participants clearly. Although studies comparing Mainland and Hong Kong showed that the two regions are long rooted

in Confucian culture (Dai, Williams, & McGregor, 2016; Lau, 1992), studies also showed that culture differences exist between the two groups such as Hong Kong people perceived more controls in parenting practice than Mainland people (Berndt, Cheung, Lau, Hau, & Lew, 1993; Fung et al., 2017). Thus, it is advantageous if separate and compare the two groups to see any culture difference in interactions grandparents in Study 2. However, limited to time and resources for enough sample size for separated mediation analysis, the questions are left for future researchers.

Similarly, the current study did not asked the family structures in detail, the situations in step families may be different from core family as people have more kin in step families, but the relationships may be not that close, so the questions are also left for future researchers

Measurements of particularized trust. Given the limited resources and energy, trust games were adapted paper-based and those with wrong answer to the questions of "How many tokens (kilos of potatoes, packets of lucky money) would A get?" were considered unable to understand the scenarios; thus, their answers were excluded from analysis. In a better practice, participants were invited into a lab with an experimenter to read the introductions and give real tokens or money (Berg et al., 1995). To enhance the ecological validity, the trust game could be repeated (Anderhub, Engelmann, & Güth, 2002) to further imitate real-life situations.

Future Directions

Other social capital. The current two studies focused on trust, which is the fundamental social capital enables some advanced social capital, such as reciprocity and

cooperation (Misztal, 2013). Given trust's pivotal role, future studies can examine the relationship between interactions with older adults and other social capital in family and societal levels. For example, the more advanced behaviors like cooperation, public investment, which were based on the mutual trust of the group members. Besides, the measurable achievements of these abstract social capitals, such as public security, sense of security, economic indices, education levels, or subjective well-being, must also be explored as outcomes of intergenerational interactions.

Kinship and trust. The results of the current project only reached at the interpretation that kinship support can be the mechanism of interactions with grandparents on generalized trust. However, the underlying psychological processes need further studies. Oxytocin, a hormone that can enhance trust (Baumgartner, Heinrichs, Vonlanthen, Fischbacher, & Fehr, 2008; Kosfeld, Heinrichs, Zak, Fischbacher, & Fehr, 2005), can be taken as example. Will kinship support increase oxytocin when interacting with kin and simultaneously increase trust toward kin? Can the processes also be actived in interactions with strangers? Especially, in situations when there is attitude similarity (a cue of kinship (Park & Schaller, 2005) between trustor and trustees, would the activation of the processes stronger?

Interactions with older adults and middle-aged people. The results in Study 1 revealed a positive effect for interactions with older adults on middle-aged people's trust, but not by the mediating role of LTO. Given the culture index of LTO, maybe the phenomenon is because the middle-aged people already have solid values and attitudes. Thus, the question would be: should there be a time window (like critical period for children to acquire language) for the valid effect of intergenerational interaction for

cultures and values transmission? The null effect of LTO is also possibly due to middle-aged people's experienced knowledge to judge strangers before making decisions as situations vary. The mechanism is open for future research. Studying people with related occupations with older adults and have extensive interactions with the elderly are helpful in answering these questions.

General Conclusions

The myth of human postreproductive longevity, as an obvious slow life history strategy, could be drawn on the theoretical framework of life history strategy (Figueredo et al., 2005) for resolution. Recently, life history strategy has been becoming a promising theoretical framework in explaining individual difference of human evolutionary behavior (Del Giudice, 2014), such as romantic relationship satisfaction (Olderbak & Figueredo, 2010), food choice (Laran & Salerno, 2013), risk taking preference (Griskevicius, Tybur, Delton, & Robertson, 2011), manipulating others (Sherman, Figueredo, & Funder, 2013). Also, there are some studies related with time perspective like procrastination (B. Chen & Chang, 2016) and delayed rewards (Griskevicius et al., 2011). The current project branched out the theoretical framework of life history into the association between intergenerational interactions and a pivotal social capital—trust.

To particularize, just as time perspective has been critical in human life stages, mortality information such as the percentage of postreproductive individuals in the environment was the predominant predictor of choosing fast or slow strategy (Figueredo et al., 2005; Griskevicius et al., 2011; Wilson, 2000). Therefore, interactions with older adults are reasonable and will be an incentive for younger people to choose a slower strategy. Slower strategists were regarded to be more socially and cognitively specialized

to fit the stable environment to enable long-term and sustainable resources allocation; on the other side of the spectrum, fast strategists were regarded to be more socially and cognitively generalized to fit the unpredictable environment to enable switching among resources (Figueredo, Woodley, Brown, & Ross, 2013). The differentiated efforts among specialized slower strategists could also facilitate social capital accumulation, which was referred to as Strategic Differentiation-Integration Effort (SD-IE) (Figueredo et al., 2013).

The strategy specialization could be the general theoretical foundation for the emergence of intergenerational interaction and young adults' trust. In light of the life history strategies, especially SD-IE theories mentioned above, kinship support and LTO are the two strategies developed in intergenerational interactions to accumulate a pivotal social capital—trust. To specify, as a result of kinship selection (Hamilton, 1964), interactions with grandparents are expected to improve the trust of younger adults through a relatively affect-based strategy—kinship support in an extended family. And then the strategy of more interactions with kin could solidify social norms and facilitate trusting strangers. Furthermore, in the processes of interactions with strangers, LTO, a relatively cognitive-based strategy, could be developed as a social norm under the influences of intergenerational interactions to benefit generalized trust at societal level. Therefore, the results from genealogy and energy consumption studies that grandmother's longevity was negatively related with the number of her grandchildren (Madrigal & Meléndez-Obando, 2008; Strassmann & Garrard, 2011) could be attributed to their choices of slower strategy and the development of specialized social and cognitive knowledge in a society to allow long-term and sustainable resources allocation.

Using the aggregated data from national sampled survey (Study 1) as well as individual report of interactions with grandparents (Study 2), the results jointly supported the hypothesis that intergenerational interactions benefit younger generations' trust level. In particular, the social value regarding time perspective of LTO mediates the effect of intergenerational interactions on younger generations' generalized trust at societal level. At individual level, the individual value of LTO mainly mediates the effect of interactions with grandparents on young adults' generalized trust. In addition, human instinct of kinship support mainly mediates the relationship of interactions with grandparents and young adults' particularized trust in kin. From individual to societal level, kinship support in an extended family mainly mediates the effect of interactions with grandparents on young people's generalized trust. All these findings help further our understanding regarding the development of human life history strategies and aging processes in life course (Elder, 1994, 1998) background intertwined with younger generations. Moreover, theoretical foundations could provide perspectives for developing a new avenue for intergenerational interactions.

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Appendix A: The Ethical Approval

香港教育大學
The Education University of Hong Kong

10 March 2017

Ms MA Jialing
Research Postgraduate Programmes
Graduate School

Dear Ms Ma,

Application for Ethical Review <Ref. no. 2016-2017-0235>

I am pleased to inform you that approval has been given by the Human Research Ethics Committee (HREC) for your research project:

Project title: Interactions with Older Adults and Trust in Younger Generations

Ethical approval is granted for the project period from 10 March 2017 to 31 August 2017. If a project extension is applied for lasting more than 3 months, HREC should be contacted with information regarding the nature of and the reason for the extension. If any substantial changes have been made to the project, a new HREC application will be required.

Please note that you are responsible for informing the HREC in advance of any proposed substantive changes to the research proposal or procedures which may affect the validity of this ethical approval. You will receive separate notification should a fresh approval be required.

Thank you for your kind attention and we wish you well with your research.

Yours sincerely,

Patsy Chung (Ms)
Secretary
Human Research Ethics Committee

c.c. Professor WANG Wen Chung, Chairperson, Human Research Ethics Committee

(revised May 2016)

For Official Use
Reference No.

The Education University of Hong Kong

Application Form for Ethical Review (for STUDENT Research Projects)

1. ***Please read carefully the Operational Guidelines and Procedures of the Human Research Ethics Committee available at http://www.eduhk.hk/rdo/human.html before completing this form.***
2. ***An application for ethical review should include the following documents:***
   - ***a completed application form for ethical review***
   - ***a sample of the bilingual consent form and information sheet to be distributed to potential research participants***
   - ***a copy of the research proposal including any questionnaire and/ or interview script***

PART I TYPE OF PROJECT *(Please click or "✓" the box as appropriate)*

☑ Research Postgraduate (RPg) Student Research Project (MPhil/ Phd)

☐ Doctor of Education (EdD) Student Research Project

☐ Taught Postgraduate (TPg) Student Research Project (MA/ MEd/ PGDE)

☐ Undergraduate (UG) Student Research Project

PART II SUMMARY OF THE APPLICATION

1. Student Investigator(s) (Please list all group members in case of group project)

	Name/Student Number	Programme Title/ Year of Study	Department	Telephone Number
Applicant 1:	Ma Jialing	A2M053/Second year	Psychology	
Applicant 2:				
Applicant 3:				
Applicant 4:				
Applicant 5:				
Applicant 6:				

2. Principal Supervisor
   (a) Name: Dr. Li Tianyuan
   (b) Post: Assistant Professor (c) Telephone Number:
   (d) Faculty/ Department: Faculty of Education and Human Development/ Department of Psychology

3. Co- Investigator(s) including External Collaborator(s) (if any):

Name	Position	Department/ Institution	Telephone Number

4. Project Title: Interactions with Older Adults and Trust in Younger Generations

5. Project Duration: From Feb 2017 To Aug 2017

**Please delete as appropriate*

7. Purpose of the Research: [2-3 sentences explaining the main goal of the research]

The current project investigate whether the quantity and quality of interactions with older adults have an effect on younger people's trust at individual level (Study 1) and at society level (Study 2). To be specific, young people's relations with grandparents and trust to extended family members will be examined in Study 1; while the percentage of older adults and generalized trust of the younger generation at the society level will be examined in in Study 2. Long-term orientation will also be explored as the mediator in both studies.

8. Summary of the Research: (The summary should be limited to 1/2 page or 200 words, comprehensive to a non-specialist. The summary should indicate clearly what human participants are involved, be informative and indicative of the nature of research to be conducted.)

The current study fills the gap of oversimplification of the previous studies' conclusion that intergenerational interactions benefit young people's trust in terms of the types of trust and interactions.

In Study 1, as the most common intergenerational interactions in daily life is between grandparents and grandchildren, and every young people has grandparents but not every older adults has grandchildren, the current study mainly uses young people's self-report of grandparenting patterns as the IVs indicating the quality and quantity of interactions with grandparents. So college students will be the main participants.

Trust is the DV, which will be measured by questions of generalized trust and a scenario regarding lending money. The willingness of lending money to relatives in the scenario indicates the trust level toward relatives and is the main DV of interest in the current study. Around 300 college students aged 18+ will be recruited by advertisement, they will take around 15 minutes filling questionnaires and answering hypothetical questions related to lending money.

In Study 2, the region-aggregated results of Question 24 from World Value Survey (the 7th Wave) will be the DV indicating young people's generalized trust. The interactions with old adults will be the IV, indicated by the percentage of people aged 60+ in a region from the website of UN. Similarly, other control variables like GDP per capital, Gini, culture index will be download from the corresponding official websites.

9. Methodology of research:

Please provide a concise description of what is required of participants. i.e. the kind of tests, measures, instruments, observations, or procedures that they are expected to undergo. Provide details on the time commitments expected of participants and the data-collection settings (such as when and where will the research take place). If standardised tests, surveys, or interviews are to be used, describe them and attach a copy of the questions.

In Study 1, it will take participants around 15 minutes filling the questionnaires and answer questions to a scenario regarding lending money (see the attached). The questionnaires include Grandparenting Pattern Scale, generalized trust questions, Scales of Philosophy of Human Nature, Long-Term Orientation Measure, Kinship Social Support Measure. In Study 2, after obtaining the permission from the copyright owners, datasets will be downloaded from the Internet.

10. Does your research involve **human participants** directly? *(Please click or "✓" the relevant box)*

☐ No

☑ Yes

11. Does your research involve **other human data**, e.g. secondary data, archival data, etc.? *(Please click or "✓" the relevant box)*

☐ No

(If 10. and 11. are both "NO", please go to PART III)

☑ Yes Source of human data:

☐ From a public domain source (please specify): _____

☑ Secondary use of previously collected data

- Data is:
  ☑ Anonymous/ ☐ Pseudonym/ ☐ Others
- If not anonymous, consent for new use of data is:
  ☐ obtained/ ☐ not yet obtained

☐ Other (please specify): _____

12. Details about the direct participants of the proposed research project

12.1 Please fill in the below information about the participants (in groups) involved in your research project including number of participants, backgrounds of the groups and age range, etc.

For study 1, around 300 college students aged 18 years or above, who has at least one living grandparent, will be recruited.

12.2 Are there any reimbursements or other incentives to participants? (Place"✓" in box)

☐ No

☑ Yes. (Please mention the cost and the form of reimbursements or incentives offered and clarify why they are reasonable.)

For Study 1, each participant will join a lottery for a supermarket coupon of 50HKD. The chance to win the lottery is 50%.

12.3 Please explain your way(s) of recruiting your participants and inviting them to join in step-by-step detail.

I will allocate poster on the campus as well as on my Facebook and WeChat. Also, I will ask the participants to spread the news to their classmates and friends if they are willing to.

12.4 If applicable, explain how you will obtain the participants' contact information in detail.

12.5 Does your research project involve organizations? (Place"✓" in box)

☑ No

☐ Yes. Please identify the data collection site(s), and describe how you will obtain consent/ permission from the data collection site(s). If no written consent will be obtained, please state the reasons below:

12.6 Are there any relationships between people involved in the recruitment and the participants (such as teacher and students, principal and teachers, nurse and patients)? (Place x in box)

☑ No

☐ No

☑ Yes, state the nature of the relationship, and mention the special precautions which will preserve their rights to decline to join or withdraw from participation once the research has started.

As there are friends and relatives on my WeChat and Facebook, some of my friends and relatives may help me to fill the questionnaires or send the message to their friends and relatives. I will carefully state on the poster that "You can participate if you are convenient and interested in. Please feel free if you are not available or would like to withdraw at any time."

PART III ETHICAL REVIEW CHECKLIST *(Please click or "✓" the boxes as appropriate and provide elaboration in "s." if you have checked "yes" to any of the below questions)*

		Yes	No	NA
a.	Will the study involve research participants who are not able to give informed consent? [e.g. minors (aged below 18), mentally handicapped people, unconscious patients] (If so, please elaborate on the number of participants and ages. See paragraph 29 of the HREC Operational Guidelines and Note (2) for information on required consent procedures.)	☐	☑	
b.	Will there be any coercion on the part of the investigator?	☐	☑	
c.	Will the data collected have any personally identifiable information of living people, such as name, address, ID numbers, etc? (If so, see HREC Operational Guidelines – Part V regarding Confidentiality and Storage of Data)	☐	☑	
d.	Will the study draw data on personal/medical data from public/government databases such as medical information from Clinical Management System of Hospital Authority? If so, please state what information will be drawn from which database and by whom.	☐	☑	
e.	Will the study collect information regarding sensitive aspects of the research participants' behavior such as drug and alcohol use, illegal conduct, or sexual behavior?	☐	☑	
f.	In case the information on the research participants is disclosed, will it reasonably place the research participants at risk of civil or criminal liability or damage the research participants' financial standing, employability or reputation?	☐	☑	
g.	Will financial or other inducements (other than reasonable expenses and compensation for time) be offered to research participants?	☐	☑	
h.	Will deception of research participants be necessary during the study? (If so, explain why deception is necessary. Also, please include information on debriefing procedures)	☐	☑	
i.	Will the study involve prolonged and repetitive testing?	☐	☑	
j.	Will the study cause psychological stress or anxiety?	☐	☑	
k.	Will pain or more than mild discomfort is likely to result from the study?	☐	☑	
l.	Are drugs or placebo to be administered to the research participants?	☐	☑	
m.	Will the study involve any intervention?	☐	☑	
n.	Will blood or tissue samples be obtained from research participants?	☐	☑	
o.	Will the research involve any DNA work or human embryo or stem cell research?	☐	☑	
p.	Will the research participant's identity be disclosed if archived tissue samples or personal / medical / social records are used?			☑
q.	Will you use irradiation or hazardous substances on research participants?	☐	☑	
r.	Will the study impinge on the research participants' right to privacy or their personal life?	☐	☑	

s. If you have checked "Yes" to any of the above questions, please provide elaboration below:

Note (1): If you have checked 'Yes' in box (a), please specify the number and age of participants.
Note (2): The following guidelines for obtaining consent should be adopted if the research participants are minors:

- *For children aged below 9, only the signature of their parents/guardians is required; completion of the task, after verbal explanation of its nature by the researcher, provides implied consent by the child;**
- *For children aged 9 to 15, signature of both the children and their parents/guardians is required; **
- *For adolescents aged 16 to 17, signature of the adolescents is required and consent from their parents/guardians is optional for studies involving minimal risk.*

* For minimal risk research, you may ask for passive consent, that is, parents/guardians return the consent forms only if they DO NOT wish their child to participate. For all other research, active consent, whereby parents/guardians indicate their child may participate, MUST be obtained.

Definition of Minimal Risk:

No undergraduate research on children should be more than minimal risk. In other words, the ethics proposal must not have any of the following elements [adopted from CUHK Survey Ethics Guidelines (expedited review section) http://tinyurl.com/brfrkjn]:

a) No excessive inducements to participate
If student-teacher relationship exists, teachers should take special care to emphasize to their own students that they are free to decline to participate, with no adverse consequences.

b) No deception should be used
The purpose of study should be fully disclosed at beginning of the study.

c) No "undue psychological stress" or "discomfort higher than a reasonable level" should be caused to be participants
Questions should be asked in a way that will avoid discomfort for participants.
Participants should not be grouped in any way that might cause distress.

d) No questions should be asked about "sensitive aspects of the participant's own behaviour such as illegal conduct, drug or alcohol use, and sexual conduct"

e) To avoid problems if data were disclosed, fully anonymous surveys are advisable whenever possible; or at least use "identifiable by codes known only to the researcher" (as stated in HREC's model consent form).

(Please append additional pages as needed.)

t. If the study is a medical/clinical research, does the protocol state compliance to declaration of Helsinki (http://www.wma.net/en/30publications/10policies/b3/)?*	NA	Yes	No
	☑	☐	☐

* *If your study is not a medical/clinical research, please "✓" NA.*

u. In case you are not using a consent form and information sheet, please state the reasons below:

PART IV DETAILS OF THE APPLICATION

1. State Potential Risks, if any, and Measures to Minimize Risks:

[*State the potential risks to research participants involved in the project, for example, financial, physical, psychological, social etc., and the measures for minimizing these potential risks. Remember that this information, if applicable, should also be described in the Information Sheet(s). If there are no risks, please state explicitly that the study involves no potential risk both here and in the Information Sheet.*]

It hardly has any risk. The participant can withdraw at any time of the study.

2. Methods for Ensuring Confidentiality of Research Data:

(*Outline procedures to be taken to ensure anonymity or confidentiality of identifiable data related to research participants involved in the project. For example, security issues related to data management and storage must be considered, e.g. where will data be stored? Who can access the data? How long will the data be kept for? Please refer to Operational Guidelines – Part V for reference.*)

[*Some typical sentences follow. If applicable, these should also be stated in your Information Sheet. These sentences are not required but are placed here as potential models.*

- *"Identifying information will be removed from the data file and stored separately, with the link between identifying information and data made through codes only."*
- *"Entered data will be stored on a password-protected computer, while original, anonymized hard copies of the questionnaires will be stored in a locked office until 5 years past publication."*
- *"Permission will be obtained in advance from participants to videotape the interviews ... and videos [data] will be destroyed [at XX time] / ... and to use the videos for public dissemination."*]

Identifying information will be removed from the data file and stored separately, with the link between identifying information and data made through codes only. Entered data will be stored on a password-protected computer, while original, anonymized hard copies of the questionnaires will be stored in a locked office until 5 years past publication.

3. Feedback and debriefing procedures

[*It is important that appropriate feedback (and debriefing where necessary) be provided to participants and participating institutions.*]

a. You will publish this research in the form of …

- [x] Thesis
- [x] Journal article / book / Chapter
- [x] Conference presentation
- [ ] Report to organization
- [ ] On-line web based report
- [ ] Oral presentation
- [ ] Other: _____

b. You will provide information about results of the project to participants in the form of a/an…

- [ ] Copy of journal article / book / chapter
- [ ] Summary
- [ ] Report to organization
- [ ] On-line web based
- [ ] Oral presentation
- [ ] Other: _____
- [ ] Results will not be given to participants

c. Will the results be given to any other persons or organization other than the participants?

- [ ] Yes
- [x] No

If yes, please indicate to what organization(s), why the information is provided and how the confidentiality of participant information will be protected.

PART V ATTACHMENTS *(Please click or "✓" the box(es) as appropriate)*

- ☑ Research proposal [see Note (i)]
- ☑ Consent Form and Information Sheet for participants and/or parent [see Note (ii)]

  The consent form and information sheet will be presented to participants/ parents in:

  ☐ *English* ☑ *Chinese [see Note (iii)]*
- ☐ Draft informed consent form/ invitation letter/ approval Letter for data collection sites (if applicable), (e.g. school) [see Note (i)] ☑
- ☐ Interview script (if applicable) [see Note (iv)]
- ☑ Data collection form, including questionnaire (if applicable) [see Note (iv)]
- ☐ Others, please specify: _____

Notes:

(i) Mandatory

(ii) Mandatory unless reasons are provided in Part II (u) for consideration by the approval authority *(Please refer to paragraph 29 of the HREC Operational Guidelines and Procedures for the principles to obtain consent if research participants are minors.)*

(iii) If the consent form and information sheet are to be presented to participants/ parents in Chinese, please also provide a Chinese version to HREC for review, and ensure that there is consistency between the English or Chinese version.

(iv) Mandatory. If a full final questionnaire/ interview script is not yet available, please provide examples of questions that will be asked.

PART VI DECLARATION

The information provided above is, to the best of my knowledge and belief, accurate. I shall take all reasonable care to ensure that the project is conducted in accordance with the EdUHK's *Guidelines on Ethics in Research* and *the guidelines stipulated by relevant research domains, e.g. IASP (International Association for Study of Pain)*.

	Signature of Applicant	Name	Date
Applicant 1		Ma Jialing	23/01/2017
Applicant 2			
Applicant 3			
Applicant 4			
Applicant 5			
Applicant 6			

PART VII ENDORSEMENT BY PRINCIPAL SUPERVISOR

Date: 24/01/2017 Signature: _____

Principal Supervisor

PART VIII ENDORSEMENT BY HEAD OF DEPARTMENT/ DELEGATE *(for TPg only)*

Date: _____ Signature: _____
Head of Department/ Delegate

Name: _____

PART IX DECISION ON THE APPLICATION

☐ Approved

☐ Not Approved

Comments:

_____

_____

_____

Date: _____ Signature: _____
*Head of Department or Delegate *(for UG)*/
FHREC Chairperson or Delegate #*(for TPg)*/
HREC Chairperson/ Delegate *(for RPg & EdD)*

Name:

* *Please delete as appropriate*

\# *or Chairperson of Faculty Research Committee/ Faculty body responsible for ethical review or delegate*

Appendix B: The Poster

香港教育大學
The Education University of Hong Kong

招募參與者

“與長者互動對青年人信任的影響”

簡介

這項調查是香港教育大學心理系“成人發展及人際關係研究室”研究生的畢業論文研究，目的為瞭解與長者互動對青年人信任的影響。

參加者需要匿名填寫一份網上問卷，內容包括和祖父母、親戚的互動，對其他人的信任及其他相關因素的態度。大約15分鐘可完成。多謝您的支持與幫助！

完成後可以獲得一次抽獎機會，有50%的概率獲得50HKD超市禮券（香港）或40元京東E卡（內地）。如有需要，可以獲得個人研究報告。

參與需滿足條件：A.18-35歲 B.至少有一位（外）祖父母在世
C. 現在於出生所在的城市或周邊城市**工作或學習**
D.可閱讀中文　（如不滿足條件則不能參與抽獎）

參與方式： 掃描QRcode，或登錄其下的網址在網上填寫問卷。

發放禮券時間：收滿300份問卷之後，大約於5月份

更多資訊，請聯繫馬嘉羚（Email : [redacted]）。

https://sojump.com/jq/12949456.aspx

Faculty of Education and Human Development
教育及人類發展學院

Department of PSYCHOLOGY
心理學系

Appendix C: The Consent Form and Information Sheet

THE EDUCATION UNIVERSITY OF HONG KONG
Department of Psychology

CONSENT TO PARTICIPATE IN RESEARCH

Interactions with Older Adults and Trust in Younger Generations

I _____ hereby consent to participate in the captioned research supervised by Dr. Li Tianyuan and conducted by Ma Jialing.

I understand that information obtained from this research may be used in future research and may be published. However, my right to privacy will be retained, i.e., my personal details will not be revealed.

The procedure as set out in the **attached** information sheet has been fully explained. I understand the benefits and risks involved. My participation in the project is voluntary.

I acknowledge that I have the right to question any part of the procedure and can withdraw at any time without negative consequences.

Name of participant _____

Signature of participant _____

Date _____

INFORMATION SHEET

Interactions with Older Adults and Trust in Younger Generations

You are invited to participate in a project supervised by Dr. Li Tianyuan and conducted by Ma Jialing, who is a student of the Department of Psychology in The Education University of Hong Kong.

The current study examines whether interactions with grandparents will have an effect on younger adults' trust. This study includes about 300 college students. During the study you will fill questionnaires and answer several hypothetical questions with regard to lending money. It takes around 15 minutes. After that, you could join a lottery for a 50 HKD supermarket coupon for your participation. The chance to win the lottery is 50%.

There is hardly any risk participating in the study. Your participation in the project is voluntary. You have every right to withdraw from the study at any time without negative consequences. All information related to you will remain confidential, and will be identifiable by codes known only to the researcher.

The results of the study may be published in the form of thesis and/or journal articles.

If you would like to obtain more information about this study, please contact Ma Jialing at telephone number or their supervisor Dr. Li Tianyuan at telephone number

If you have any concerns about the conduct of this research study, please do not hesitate to contact the Human Research Ethics Committee by email at hrec@eduhk.hk or by mail to Research and Development Office, The Education University of Hong Kong.

Thank you for your interest in participating in this study.

Dr. Li Tianyuan
Principal Investigator

香港教育大學

心理學系

參與研究同意書

與長者互動對青年人信任的影響

本人_____同意參加由李田園博士負責監督,馬嘉羚執行的研究項目。

本人理解此研究所獲得的資料可用於未來的研究和學術發表。然而本人有權保護自己的隱私，本人的個人資料將不能洩漏。

研究者已將所附資料的有關步驟向本人作了充分的解釋。本人理解可能會出現的風險。本人是自願參與這項研究。

本人理解我有權在研究過程中提出問題,並在任何時候決定退出研究，更不會因此而對研究工作產生的影響負有任何責任。

參加者姓名: _____

參加者簽名: _____

日期: _____

有關資料

與長者互動對青年人信任的影響

誠邀閣下參加李田園博士負責監督,馬嘉羚負責執行的研究計劃。她/他們是香港教育大學學生/教員。

本研究旨在探究和長者的互動是否會影響青年人的信任水準。大約 300 名高校學生將會參加本研究。您將會填寫問卷，並回答關於假設借錢的幾個問題,全部完成大約需要 15 分鐘。完成之後您將有機會參與抽獎，抽到 50 元超市禮券的可能性是 50%。

參加本研究幾乎不存在風險。閣下的參與純屬自願性質。閣下享有充分的權利在任何時候決定退出這項研究,更不會因此引致任何不良後果。凡有關閣下的資料將會保密,一切資料的編碼只有研究人員得悉。

本研究會以畢業論文的形式進行發表，也可能會在學術期刊上發表。

如閣下想獲得更多有關這項研究的資料,請與馬嘉羚聯絡,電話　　或聯絡她/他們的導師李田園博士,電話

如閣下對這項研究的操守有任何意見,可隨時與香港教育大學人類實驗對象操守委員會聯絡(電郵:hrec@eduhk.hk; 地址:香港教育大學研究與發展事務處)。

謝謝閣下有興趣參與這項研究。

李田園博士
首席研究員

Appendix D: The Measurement of Study 2

您是否需要一份個人研究報告[單選題]
否
是

您的聯繫方式(最好是 email，僅用於發放禮券及個人報告) [填空題]
_____

基本資訊
1. 您的性別? [單選題]
男
女

2. 您的年齡多少歲(填空)? [填空題]
_____
3. 您的學歷? [單選題]
a.小學 b.中學 c.大學 d.研究生及以上

4. 您對您家庭年收入的評價? [單選題]
a. 比平均水準差很多
b. 比平均水準差一點
c. 和平均水準差不多
d. 比平均水準好一點
e. 比平均水準好很多

5. 您的職業是[單選題]
學生

專業人士（如教師，醫生，律師）

服務業人員（餐飲，司機，快遞，售貨員）

公司職員

工人（產業，建築，清潔工）

事業單位/公務員/政府工作人員

自由職業者（作家，藝術家）

農民/牧民/漁夫

商人/雇主/個體戶

家庭主婦

無業/失業

其他

請根據你與(外)祖父母于過去的接觸時間及頻率回答下列問題。如該(外)祖父母已經去世,則不需回答對應的問題。

10.(父系)祖父(爺爺)是否健在? [單選題]
是 (請跳至第 **11** 題)
否 (請跳至第 **13** 題)

11. 不論是在家還是其他地方,你有多常親眼見到(对象)? [單選題]
完全沒有
一次
約每月一次
約每星期一次
每星期幾次
每日

12. 你會如何形容你現在與(对象)的關係? [單選題]
惡劣 一般 好 極好

13. 你與(對象)感到有多親密? [單選題]
完全不或者很不親密 有點親密 相當親密 非常親密

14.(对象)在多大程度上令你感到被欣賞、被愛、或者被呵護? [單選題]
完全不 一點 有些 非常多

20. (父系)祖母(奶奶)是否健在? [單選題]
是 (請跳至第 **16** 題)
否 (請跳至第 **18** 題)

21. 不論是在家還是其他地方,你有多常親眼見到(对象)? [單選題]
完全沒有
一次
約每月一次
約每星期一次
每星期幾次
每日

22. 你會如何形容你現在與(对象)的關係? [單選題]
惡劣　一般　好　極好

23. 你與(對象)感到有多親密? [單選題]
完全不或者很不親密　有點親密　相當親密　非常親密

24.(对象)在多大程度上令你感到被欣賞、被愛、或者被呵護? [單選題]
完全不　一點　有些　非常多

30. (母系)祖父(外公)是否健在? [單選題]
是 (請跳至第 **21** 題)
否 (請跳至第 **23** 題)

31. 不論是在家還是其他地方,你有多常親眼見到(对象)? [單選題]
完全沒有
一次
約每月一次
約每星期一次
每星期幾次
每日

32. 你會如何形容你現在與(对象)的關係? [單選題]
惡劣　一般　好　極好

33. 你與(對象)感到有多親密? [單選題]
完全不或者很不親密　有點親密　相當親密　非常親密

34.(对象)在多大程度上令你感到被欣賞、被愛、或者被呵護? [單選題]
完全不　一點　有些　非常多

40. (母系)祖母(外婆)是否健在? [單選題]
是 (請跳至第 **26** 題)
否 (請跳至第 **28** 題)

41. 不論是在家還是其他地方,你有多常親眼見到(对象)? [單選題]

完全沒有
一次
約每月一次
約每星期一次
每星期幾次
每日

42. 你會如何形容你現在與(对象)的關係? [單選題]
惡劣　一般　好　極好

43. 你與(對象)感到有多親密? [單選題]
完全不或者很不親密　有點親密　相當親密　非常親密

44.(对象)在多大程度上令你感到被欣賞、被愛、或者被呵護? [單選題]
完全不　一點　有些　非常多

請從以上(外)祖父母中選擇出與你最親密的那一位,根據你與他/她於過去十二個月內的關係,回答以下問題。

50. 你所選擇的(外)祖父母是: [單選題]
a.(父系)祖母　b.(父系)祖父　c.(母系)外祖母　d.(母系)外祖父

51. 他/她所住的城市是？[填空題]
_____

52. 於過去十二個月內,

	從不	有時	常常
你有多常與(对象)討論他/她的個人問題?			
你有多常有機會學習(對象的)技能?			
(对象)有多常給予你忠告?			
(对象)有多常協助你達到你的個人目標?			
(对象)有多常和你分享經驗或智慧?			
在過去十二個月內,你有否和(对象)一起於社區內進行活動如參觀博物館、觀看體育比賽、或購物?			
(对象)有多常是你的一個顧問或知己?			
(对象)有多常能夠協助你找工作?			
(对象)有多常擔當一個權威及紀律的角色?			
(对象)有多常在財政上協助你?			
(对象)有多常和你討論你對未來的計畫?			
(对象)有多常是你的一個同伴或朋友?			
在過去十二個月內,你有否和(对象)一起進行一些工作,例如修理对象、安排家庭活動、或者處理其他家裡的事情?			
你有多常從(对象)得知一些家庭的傳統、故事或歷史?			
(对象)有沒有出席過一個你有份的活動,比方說是話劇、體育比賽、或音樂比賽?			

60. 請指出對下面說法同意的程度。

	完全不同意	部分不同意	略微不同意	中立	略微同意	部分同意	完全同意
尊重傳統對我來說是重要的。							
我做長遠的計劃。							
對我來說祖傳之物是重要的。							
我珍重和過往的聯繫。							
我為未來的成功而努力。							
為了將來的成功,我不介意放棄眼前的快樂。							
傳統價值觀對我來說是重要的。							
堅持不懈對我來說是重要的。							

70. 我們想知道你和你的親屬(如姑媽、姨媽、叔伯、舅舅等成人親屬) 的關係。你同意或不同意下列的說法?

	強烈不同意	不同意	同意	強烈同意
我們經常和親戚一起團聚或慶祝節日。				
當我們需要做家族的重要決定時,我們會向親屬諮詢意見。				
我們不和親屬保持聯繫。				
當需要幫助的時候,我們的朋友比親屬更可靠。				
人生中的一大樂事是和親屬一起聊天作樂。				
當我們遇到困難的時候能指望親屬的幫忙。				
當我們的家人擔憂某事的時候能得到親屬的建議。				
像團聚和慶祝節日這樣的家庭聚會不是很有趣。				
我們和親屬出去遊玩。				
我希望我能更經常地見到親屬。				
如果我有困難,在告訴親屬前我會先和朋友述說。				
如果我們家有人遇到麻煩,我們會叫親屬來商討。				
在我家族裡,親屬間經常互相幫助。				

80. 請想像下列場景並回答問題。

81. 假如你和 A 一起參加實驗玩一個遊戲。一開始實驗員會給你們各 10 個代幣(每單位的代幣可以在實驗結束後換取一定數量的現金)。你可以決定把你的一部分或者全部代幣分給 A,實驗員會將你給 A 的代幣數量增加兩倍(例如:3 個代幣會變成 9 個)再轉交 A。A 收到金幣之後可以決定是否跟你分享他/她從實驗員那裡收到的代幣,以及分享的數量。

如果 A 是一個陌生人,

1.你會給她/他幾個代幣?___

2.A 從實驗員那裡收到幾個你送的代幣?___

3.你猜測 A 一共會還你幾個代幣(答案可以為小數)?___

如果 A 是你的熟人,如同學、朋友,

4.你會給她/他幾個代幣?___

5.A 收到你送的代幣後一共有多少代幣?___

6.你猜測 A 一共會還你幾個代幣(答案可以為小數)?___

如果 A 是你的親屬,如姑媽、姨媽、叔伯、舅舅,

7.你會給她/他幾個代幣?___

8.A 收到你送的代幣後一共有多少代幣?___

9.你猜測 A 一共會還你幾個代幣(答案可以為小數)?___

82. 請想像你是農民。今年春天播種完後還剩餘 10 千克高品質的荷蘭土豆。這時候有一個人 A 對你說,他/她的土豆種不滿不夠需要向你借。根據你的經驗,該種土豆種下三個月後可以收穫三倍重量的土豆。A 說收穫後他/她會把向你借的土豆還給你,並把你借出的土豆結出的土豆送一部分給你做為回報。

如果 A 是一個陌生人,

1.你會借出幾千克土豆?___

2.土豆收穫後,A 一共會有幾千克土豆?___

3.你猜測 A 一共會還你幾千克土豆(答案可以為小數)?___

如果 A 是你的熟人,如同學、朋友,

4. 你會借出幾千克土豆?___

5. 土豆收穫後,A 一共會有幾千克土豆?___

6. 你猜測 A 一共會還你幾千克土豆(答案可以為小數)?___

如果 A 是你的親屬,如姑媽、姨媽、叔伯、舅舅,

7. 你會借出幾千克土豆?___

8. 土豆收穫後,A 一共會有幾千克土豆?___

9. 你猜測 A 一共會還你幾千克土豆(答案可以為小數)?___

83. 假如你在過年期間收到 10 個金額相等的紅包。這時候有一個人 A 對你說,他/她要進行一項投資缺錢想向你借錢。據他/她介紹,該項投資一年之後會增值兩倍,到時候他/她會把本錢還你並把部分增值的錢給你作為回報。

如果 A 是一個陌生人,

1.你會借出幾個紅包?___

2.投資增值兩倍後,A 一共會有等值於幾個紅包的錢?___

3.你猜測 A 一共會還你幾個紅包的錢(答案可以為小數)?___

如果 A 是你的熟人,如同學、朋友,

4.你會借出幾個紅包?___

5. 投資增值兩倍後,A 一共會有等值於幾個紅包的錢?___

6. 你猜測 A 一共會還你幾個紅包的錢(答案可以為小數)?___

如果 A 是你的親屬,如姑媽、姨媽、叔伯、舅舅,

7.那麼你會借出幾個紅包?___

8. 投資增值兩倍後,A 一共會有等值於幾個紅包的錢?___

9. 你猜測 A 一共會還你幾個紅包的錢(答案可以為小數)?___

90. 我們想知道你對於大部分人的信任程度。請圈出覺得最合適的數字代表自己的同意程度。

	完全不同意	少許不同意	中立	少許同意	完全同意
大部份人基本上都是誠實的。					
大部份人都是可信賴的。					
大部份人基本上都是好和善良的。					
大部份人都會信任別人。					
我會信任別人。					
當得到別人信任時,大部分人都會用同樣方式回應。					

91. 我們想知道你對於親戚的信任程度。請圈出覺得最合適的數字代表自己的同意程度

	完全不同意	少許不同意	中立	少許同意	完全同意
我的親戚基本上都是誠實的。					
我的親戚都是可信賴的。					
我的親戚基本上都是好和善良的。					
我的親戚都會信任其他親屬。					
我會信任我的親戚。					
當得到其他親屬的信任時,我的親戚都會用同樣方式回應。					

92. 請圈出以下最能形容過去六個月你和你的父/母親相處的數字。

	完全沒有	少許	有些	很多	非常多
我有多經常向我的父/母親諮詢意見或尋求支持？					
我有多想成為和他/她一樣的人？					
不管我做甚麼，他/她都會接納我？					
我的父/母親有多明白真實的我是怎樣的？					
我有多經常向他/她分享我的內在感受和秘密？					
他/她有多經常向我諮詢意見或尋求支持？					
他/她對我來說有多重要？					
我有多滿意我和他/她的關係？					