SIMPLICITY VERSUS COMPLEXITY:

NAVIGATING SOCIAL DIVERSITY WITH SELF-VIEWS AND WORLDVIEWS

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Simplicity versus Complexity:

Navigating Social Diversity with Self-views and Worldviews

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CERTIFICATE OF ORIGINALITY

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_____ (Signed)

_____Ng Ka Yan_____ (Name of student)

Dedicated to

To those who love me and those I love

Abstract

People differ in the ways to define themselves and understand the world, which influence their social and cognitive functioning, thereby providing them with different experiences to deal with social diversity. Yet, research examining adjustment by incorporating both self-views and worldviews is limited. As self-views and worldviews are two important parts in human belief system, they may function complementarily to influence people's functioning. A dual-path moderated mediation model, drawn upon schema theory, experiential learning theory and multi-tasking literature, outlines the processes and conditions in which complex beliefs help people cope with social diversity. Specifically, complex beliefs function as schema to foster adjustment through facilitating the learning of social skills and the practices of flexible thinking, and that these beneficial outcomes depend largely on people's motivation to tolerate ambiguity when processing social information. Adopting a multi-method approach, the cross-sectional, experimental, and longitudinal findings from this research generalized across various personal and interpersonal domains of adjustment, and across different groups of individuals, to support this dual-path moderated mediation model. Additional analyses showed that the predictive effects of self-complexity and social complexity on adjustment did not differ, indicating that self-views and worldviews are equally important to people's psychological functioning. Overall, the present research not only provided empirical evidence to support the beneficial roles of self-complexity and social complexity in well-being, but also laid important groundwork to understand the process to navigate successfully in this emerging social and cultural diversity.

Keywords: self-complexity, social complexity, socio-cognitive abilities, need for cognitive closure, adjustment

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Chapter 1: Introduction

In the face of stressful life changes, people do not react passively to the environment. Instead, people are actively trying to understand the situations in which they are in, and respond based on their interpretative thoughts (Baldwin & Poulton, 1902; Chiu & Chen, 2004; Kihlstrom, 2002). People develop their understanding as scientists who generate, test, and validate different hypotheses in their daily lives (Heider, 1958; Kruglanski, 1989). These understandings and assumptions are often expressed as beliefs. Many beliefs are self-views in nature that specifically focus on the internal self, answering the question – who I am. Self-views, such as self-esteem (e.g., Rosenberg, 1965), self-efficacy (e.g., Bandura, 1982), self-ambivalence (e.g., Brown, 2013), and self-discrepancies (e.g., Higgins, 1987), have attracted long-standing and continuous research attention in explaining and predicting how people adjust to life changes. A few beliefs constructs, such as just world belief (e.g., Lerner, 1980) and locus of control (e.g., Rotter, 1966), are worldviews that target the external world, answering the question – how the world functions. The importance of belief systems in people's psychological health has been demonstrated widely in the literature, although most of them were on self-views (e.g., Brown, 2013; Higgins, 1987, 1997; Holahan, Holahan, & Belk, 1984; Markus & Nurius, 1986; Schweitzer, Seth-Smith, & Callan, 1992; Suh, Diener, & Updegraff, 2008), and much less was on worldviews (e.g., Asberg & Renk, 2014; Park, Edmondson, Fenster, & Blank, 2008). Yet, research incorporating self-views and worldviews to understand the impact of beliefs on psychological health and functioning is limited (see Chen, Ng, Buchtel, Guan, Deng, & Bond, 2017; Chen, Wu, & Bond, 2009, for few exceptions). Hence, the present research aims to fill this research gap to examine how self-views and worldviews can both contribute to people's adjustment.

Self-Views

Self-views, the understanding of the self, are the reflections and the answers to the question – who I am. They can be the abstract traits that are important to the sense of self (Gross, McIlveen, Pennington, Gillen, & Hill, 2016; Maki & McCaul,1985; Markus & Kitayama, 1991). These traits can be good or bad (Rosenberg, 1965), capable or incapable (Schwarzer & Jerusalem, 1995), independent or interdependent (Markus & Kitayama, 1991), loveable or unlovable (Raes, Pommier, Neff, & Van Gucht, 2011). Whereas this perspective implies a single representation of the self, the self can also denote a collection of multiple aspects at different time points, including "past selves", "current selves" or "future selves" (Markus & Nurius, 1986), or representing different obligations and aspirations, such as "ought self", "ideal self" or "actual self" (Higgins, 1987, 1997), or carrying different social functions and experiences, namely, social roles, social groups, and social activities.

Self-views, in addition to these content differences, can also differ in how people organize the self-concept. The overall complexity of one's self-concept structure – self-complexity – involves the number of one's multiple, context-dependent selves (termed self-aspects) and the degree of independence of each self-aspect (Linville, 1985, 1987) – is distinct from other self-related constructs[1]. The degree of independence of self-aspects varies along a continuum of relatedness. With low levels of self-complexity, people have fewer self-aspects (e.g., father and tennis player) that share many associative pathways (McConnell, Strain, Brown, & Rydell, 2009). In this way, people often describe their different self-aspects with redundant attributes (e.g., use "hardworking" to describe both self-as-father and -tennis

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[1] For example, another related construct is self-concept clarity (Campbell, 1990) – the extent that the self-beliefs are clearly and confidently defined, internally consistent, and temporally stable. Hence, these two constructs account for different structural features of the self-concept – the degree of pluralism (distinctiveness and quantity) versus stability (internal adsistency and temporal stability). Moreover, Campbell, Assand and Di Paula (2000) showed that self-complexity was statistically uncorrelated with self-concept clarity. Self-complexity was chosen because the main theme of this research is to study how overall complexity of self-views (rather than stability), together with worldview, can influence people's adjustment.

player). At the opposite end, people can identify with a variety of self-aspects (e.g., a father, a boss, a son, a tennis player, an American, and an expatriate living in China) and each of them is associated with unique attributes and meanings (e.g., use "dominant and inspiring" to describe self-as-boss and "filial" to describe self-as-son). In other words, the number of identities is not the only source of complexity. Instead, self-complexity is also derived from how people organize their self-concept. Hence, self-complexity is a self-knowledge construct that emphasizes not only the content but also the structure of the self-concept.

Self-Complexity and Adjustment

The complexity of self-concept has important consequences on human functioning. When people are high in self-complexity, personal experiences in a given domain have little affective impact on the overall self-concept. This is supported by the cognitive buffering hypothesis (Linville, 1985, 1987; Shih, 2004; Thoits, 1986). The basic rationale for this hypothesis is that greater self-complexity can provide buffers against the harmful consequences of negative events. Having a greater number of distinct and non-overlapping self-aspects protects a person from negative affective reactions by localizing the negative thoughts and feelings to only the most related self-aspects, and therefore other unrelated self-aspects can remain intact, resulting in a reduced dramatic mood swing across contexts (Linville, 1985, 1987). For example, when a young man breaks up with his girlfriend, if this man can differentiate himself as someone's friend, brother, son, tennis player, and/or a member of the society, as independent of being someone's boyfriend, the negative event of breaking up would only have partial impact on the self-as-boyfriend, decreasing the opportunities to feel uniformly bad across all the self-aspects at once. Hence, high self-complexity is beneficial to recovery from a negative event.

What if a positive event happens? Having fewer and overlapping self-concepts allows one to enjoy greater psychological and health benefits stemming from the spreading of

influences (McConnell et al., 2009). The positive thoughts and feelings about one self-aspect is unconfined to colorize other self-aspects that are not closely related to the event but being structurally related to the affected self-aspect. Meanwhile, each self-aspect contributes a stronger impact because each of them occupies a larger proportion towards the overall self-concept than a high self-complex person (Linville, 1985, 1987). As a result, people with low self-complexity are more likely to feel uniformly good when positive events happen.

Whether self-complexity is beneficial or detrimental to psychological functioning is puzzling. As noted above, self-complexity is not inherently positive or negative on affective well-being. Instead, it depends on how a person interprets the valence of an event: high self-complexity is beneficial when recovering from a negative event, whereas low self-complexity is beneficial when enjoying a positive feedback. Moreover, the debate on the fragmentation and the specialization hypothesis of multiple selves has further complicated the puzzle. The selves-as-fragmentation hypothesis questions whether high self-complexity is indicative of a fragmented self-concept, reflecting a lack of psychologically integrated core self to resolve the intrapsychic conflicts (e.g., Block, 1961; Campbell, 1990; Donahue, Robins, Roberts & John, 1993). The selves-as-specialization hypothesis emphasizes that people with high self-complexity can respond flexibly across roles with situation appropriate self-representations (e.g., Gergen, 1971; Goffman, 1959). Hence, the findings on how self-complexity influences well-being are inconclusive. Many of them supported the beneficial role of self-complexity, such as buffering stress (Kalthoff & Neimeyer, 1993; Linville 1985, 1987,), enhancing tolerance (Dixon & Baumeister, 1991), and facilitating adjustment (Morgan & Janoff-Bulman, 1994), but few studies showed its detriments (e.g., McConnell et al., 2009). These findings were further corroborated by a meta-analysis showing that self-complexity can be both stress-buffering and depressogenic (see Rafaeli-Mor & Steinberg, 2002, for details). Therefore, additional work is needed to clarify the effects of self-complexity on adjustment.

Worldviews

While the answer to the question – who I am – is important to human functioning, the reply to – how the world functions – is also important to effective functioning by rendering the social world with potential predictability and controllability (Operario & Fiske, 1999). The synthesized understanding of the general belief about how the world operates has been termed *social axioms* (Leung et al., 2002), and defined as:

> Social axioms are generalized beliefs about people, social groups, social institutions, the physical environment, or the spiritual world as well as about categories of events and phenomena in the social world. These generalized beliefs are encoded in the form of an assertion about the relationship between two entities or concepts. (Leung & Bond, 2008, p. 198)

The term *social* represents the assumption that these axioms are developed through social experiences, either acquired through direct experiences across numerous social contexts, or deduced when processing social information from cultural products, such as books and movies. The term *axioms* reflects that they are assumed to be true without active introspection and circumspection (Leung & Bond, 2004).

Social axioms, the general expectancy of how the world operates, were developed to broaden the conceptual tools to understand cultural differences. The initial factor structure of social axioms was identified through an inductive approach with extensive literature reviews, qualitative interviews and content analyses on cultural products (Leung et al., 2002). Subsequently, the pan-cultural structure of social axioms was then evaluated by a round-the-world study in forty cultural groups (Leung & Bond, 2004). The same factor structure emerged from a multi-level factor analysis, which is a stringent statistical test that accounts for both individual and cultural variances, further confirming the robustness of the factor structure (Cheung, Leung, & Au, 2006). Moving from a general to a specific level, the

construct of social axioms was further modified in a deductive way that includes additional items based on the construct definitions and culturally decentred approach to gather different cultural understandings on the concepts (Leung et al., 2012).

Two dimensions coined as *societal cynicism* and *dynamic externality* have been identified at the cultural level (Bond et al., 2004b). However, social axioms are not only the cultural-level measurement. In fact, there are five dimensions at the individual level – *social complexity*, *social cynicism*, *fate control*, *reward for application*, and *religiosity* – to reflect individual differences in social beliefs (Leung et al., 2002). These five dimensions of social axioms were linked to the basic requirements for human survival and adaptation (Leung & Bond, 2004). Social cynicism reflects a negative view of human nature and social events. Religiosity taps the belief in perceived beneficial functions of religious activities. Fate control refers to the belief that social events are predetermined but predictable and alterable. Reward for application represents the view that the investment of effort will lead to positive results. Social complexity refers to the view that there are multiple ways to achieve the same outcome and the existence of inconsistency in human behaviours is common; both issues reflect the complexity of social causality.

The utility of social axioms was posited by the functionalist approach: (1) express one's value (value-expressive), (2) help to understand the world (knowledge), (3) facilitate the goals attainment process (instrumental), and (4) protect self-worth (ego-defensive) (Leung & Bond, 2004). On the basis of these functions, social axioms were found to distinguish from values (Bond et al., 2004b), and predicted different attitudinal measures and behavioural tendencies, such as vocational preferences (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004a), political attitudes (Leung et al., 2002), paranormal beliefs (Singelis, Hubbard, Her, & An, 2003), filial behaviours (Chen, Bond & Tang, 2007), suicidal ideation (Chen et al., 2009), and organizational citizenship behaviour (Cem Ersoy, Derous, Born, & Van der

Molen, 2015). Moreover, social axioms can also predict psychological well-being, including loneliness (Neto, 2006), life satisfaction (Lai, Bond, & Hui, 2007), adjustment (Kurman & Ronen-Eilon, 2004; Safdar, Dupuis, Lewis, El-Geledi, & Bourhis, 2008; Safdar, Lewis, & Daneshpour, 2006), hope (Bernardo & Nalipay, 2016), posttraumatic growth (Naliplay, Bernardo, & Mordeno, 2017) and in the remedial processes of well-being, namely, coping strategies and conflict resolution styles (Bond et al., 2004a). Therefore, social axioms offer an important perspective to understand people's functioning.

Social Complexity and Adjustment

Among the five social axioms, social complexity is the major focus of the present research. Social complexity resembles the complexity measures in the Wrightsman's (1992) Philosophies of Human Nature Scale and the Self-Monitoring Scale (Snyder, 1974). However, social complexity distinguishes itself from these scales by being a pure belief construct to solely describe the general judgement of the social world, rather than mixing up with values or behaviours (Leung & Bond, 2004)[2]. For instances, social complexity was found to be mildly or only moderately related to the values of self-transcendence ($r = .23$) and openness to change ($r = .18$; Bond et al., 2004). Moreover, social complexity does not emphasize dependence on others' reactions to monitor one's own behaviours as in self-monitoring, but focuses on aspects of the outside world.

Social complexity, as a belief to reflect the *social causation*, is especially important to individual functioning. The element *social* is important because people need a set of social representations – comprising a group's common knowledge, languages, values, norms, and attitudes – to understand the external world (Wagner, 1993, 1995, 1998). These representations are continually developed in the social contexts (Moscovici, 1984, 1988,

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[2] Social beliefs and values are distinct: values serve as motivators to guide peoples' behaviours whereas beliefs are the cognitive judgments about the social world (Leung & Zhou, 2008).

2001). The element *causation* is also important in the sense that it provides the basic principles for people to explain phenomena. People rely on these principles to prepare for the unknown future, such as forecasting the future occurrence of an event (Weiner, 1992), or making decisions to learn new behavioural repertoires for problem solving (Bandura, 1977). Therefore, social complexity has been selected among all the axioms factors.

Social complexity, tapping the expectation of social causality, plays a crucial role in influencing how people approach and solve problems. The basic assumption is drawn from the self-fulfilling prophecy theory, which posits that people perceive, act, and interact in ways to conform their expectations, and thereby influence social realities (Jussim, 1986; Merton, 1948). People high in social complexity note and accept the variability of human behaviours resulting from their complex worldviews to expect the logic of social event is not transparent, but multi-causal. Such an acceptance of variability predisposes them to believe that there are many equally valid ways for them to achieve the same outcome, and therefore they tend to adopt a contingency approach to solve problem on a case-by-case basis (Leung & Bond, 2004; Leung & Zhou, 2008). In contrast, variabilities are rarely noticed by people who are low in social complexity because they believe that causes-and-effects are monolithic and straightforward. Many events can be easily predicted by a general rule, and therefore a single solution is adequate and effective in solving problems across time and circumstances (Bond, 2009; Leung et al., 2002; Leung & Bond, 2004). Hence, people believe in the multi-causality of the world (high in social complexity) are more prepared to adopt a contingent approach to solve problems with situations appropriate strategies, thereby facilitating their adjustment across situational contexts (Neto, 2006; Safdar et al., 2006). Yet, some studies revealed a negative relation between social complexity and life satisfaction (Chen, Cheung, Bond, & Leung, 2006; Lai et al., 2007), leaving the possibility that endorsing complex worldviews

makes one's social world overly-complicated to dampen adjustment. Hence, the present research aims to further understand the effects of social complexity on adjustment.

Self-Complexity and Social Complexity

In review of the current socio-cultural and political contexts, it is timely to further understand self-complexity and social complexity. Because of social mobility, technology advancement, and globalization, many societies are becoming more diverse than before. People are no longer living in a traditional society that is surrounded by similar others (Roccas & Brewer, 2002). Such an emerging social diversity not only challenges people's adjustment, but also creates abundant novel experiences for people. On one hand, it is more common for people to engage in multiple roles than before. For example, more women are leaving their home and trying to balance their career and family (Cheung & Halpern, 2010), while more men are willing to take up housework (Leung, Chen, & Bond, 2015). Apart from the changes in traditional gender roles, many university students are part-time employees in addition to their student role; many people have purposefully left their home countries and are permanently settling in another culture for better living standards and career prospects. These social experiences provide people realistic opportunities to learn that the self is dynamic and changeable across time and situations, thereby complicating one's self-views (Linville, 1985, 1987). On the other hand, people are more likely to be connected with heterogeneous social information. Nowadays, there are voices to quit globalization (Brexit, e.g., Outhwaite, 2017) and to stop inter-country cooperation (US quit Paris climate agreement, e.g., Goldthau, 2017), while there are other voices continuously supporting globalization and inter-country cooperation. As such, people are more likely to realize that multiple perspectives are co-existing, which may complicate one's worldviews. Hence, the emerging social diversity provides realistic experiences for people to define the self and understand the world in a complex way.

While social diversity is closely related to the complexity of self-views and worldviews, the relationship of self-complexity and social complexity may be reciprocal. Previous studies about the complexity of cognitive system suggested that the level of complexity in one domain is likely to transform to another related domain if they share similar components (Streufert & Swezey, 1986). Self-views and worldviews are also highly likely to share some key characteristics. First, they are both developed from people's social experiences. Second, their levels of complexity both depend on the diversity of the social world. More importantly, both of them constitute important parts of the belief systems. Hence, they are highly likely to be mutually dependent to exert influences on each other. Because of this reciprocal nature, I hypothesize that self-complexity and social complexity will function jointly to influence people's adjustment, rather than regarding worldviews as the distant force that function through the proximal force of self-views in previous research.

Self-Views and Worldviews as Belief Schemas

Self-complexity and social complexity may operate as schemas to influence people's adjustment. Schemas are the cognitive representations of knowledge, beliefs, and expectations that are stored in the brain (Cohen, Kiss & Le Voi, 1993; Flavell, 1963; Markus, 1977; Rumelhart, 1975, 1984). They gather all the episodic memory (e.g., specific autobiographical events) and semantic memory (e.g., facts) to reflect an individual's understanding of different types of social realities (Gillihan & Farah, 2005). Indeed, beliefs as schemas have been highlighted in both social axioms and self-complexity literature: as a process to describe how social axioms function (Leung & Bond, 2004), and as a synonym of self-aspects to define self-complexity (Linville, 1985). Hence, self-complexity and social complexity are highly likely to reflect the complexity of self-schema and social schema.

The importance of schema in cognitive processes has been well-established in the literature. Social information that is consistent with the content of the activated schema stands

a better chance to be attended, processed, and retrieved (e.g., Cohen, 1981; Darley & Gross, 1983; Hamilton, 1979; Nickerson, 1998; Taylor & Fisker, 1981). In other words, people selectively choose to interpret the social information that can confirm their existing expectations in schemas. Without making extra efforts to counter-argue with the inconsistencies, processing the expectancy-consistent information takes shorter time and demands fewer resources (e.g., Garcia-Marques & Hamilton, 1996; Garcia-Marques, Hamilton, & Maddox, 2002; Macrae, Hewstone, & Griffiths, 1993; Stangor & McMillan, 1992). This can save the limited, but valuable mental resources for other cognitive activities (Bargh, 1982). For instance, Czienskowski and Giljohann (2002) found that when asking participants to encode word materials of oneself or of an intimate friend, they showed better recall performance than the time when they read and memorized materials about a non-intimate public figure (i.e., Gerhard Schröder). This shows that both self-schema and social schema can facilitate people to process their expected information. Hence, the information in the social world that is consistent with the expectancies of self-complexity and social complexity is also easier to be cognitively processed. In this way, self-complexity and social complexity may exert their effects through influencing people's cognitive processes during social interactions. Hence, I propose that complex beliefs function as schemas to foster adjustment through providing social and cognitive benefits, and these socio-cognitive beneficial outcomes depend largely on people's motivation to process social information. Therefore, a dual-path moderated mediation model is hypothesized and will be tested in this research.

Complex Beliefs and Increased Social Skills

Self-complexity and social complexity operate as schemas to influence people's cognitive processing path from attending and encoding, to retrieval, but what do they highlight? In general, self-complexity and social complexity both emphasize human

behaviours are variable. Given their different foci, they are highly likely to expect different sources of behavioural changes. Specifically, people high in social complexity expect that the causes-and-effects underlying social events is not transparent, but multi-causal – many equally good ways can co-exist; therefore, they are more likely to note and accept the variability of human behaviours in the external world. On the other hand, people high in self-complexity notice that their own behaviours have been changing across occasions (Rafaeli-Mor & Steinberg, 2002) because situational stimulus can activate the most relevant self-aspect (Linville, 1985, 1987). The theoretical basis for this argument lies in role theory that each identity provides discrete knowledge system to guide behaviours (Callero, 1994), and can be accessed separately when different social identities are salient at once (Fiske, 1998; Higgins, 1996). Therefore, complexity believers have a variety of social experiences in processing the information about the variability of their own and socially others' behaviours.

People with high levels of complexity beliefs can learn from these social experiences. According to experiential learning theory (Kolb, 1984; Kolb & Kolb, 1999), learning is an active process that occurs when people transform their social experiences through reflection. After active experience of an event, learners reflect on their social experiences, devise ways to understand the behaviours, and then plan or perform the learnt behaviours. Experiential learning can be channelled in forms of mentoring, field work, internship, practicum, and exchange program (e.g., Kolb, 2015; Kolb & Kolb, 2005), but can also be applied outside the formal academic setting for people to learn cross-cultural competence (Ng, Van Dyne, Ang, 2009) and team building skills (Kayes, Kayes, & Kolb, 2005). Therefore, complexity believers attend to how they respond and how others react to the social world, and then reflect to understand these behaviours. Finally, they can adopt these learnt behaviours to solve different social problems. As a result, they have wide behavioural repertoires for future problem solving.

While people with high levels of complexity beliefs can learn social skills to solve problems, they also gain the opportunities for social learning. Each self-aspect of people high in self-complexity is a unique source for them to experience social contexts, providing discrete opportunities to learn social skills. For example, Mok, Morris, Benet-Martinez, and Karakitapoglu-Aygun (2007) found that people who possess dual identities can have more opportunities for social interactions, as implied from the diversity of social resources. On the other hand, people high in social complexity may be intrinsically motivated to learn. Previous studies in both personality (Chen, Fok, Bond, & Matsumoto, 2006; Leung et al., 2012) and value domains (Bond et al., 2004a) have consistently supported that social complexity can predict openness. Hence, people high in social complexity are highly likely to treasure new opportunities to explore the world. Perhaps, this is because believing the social world is multi-causal enables one to open to variabilities and inconsistencies. Hence, complexity believers are more likely to grasp the extended opportunities to enhance social skills.

Consistent with this prediction, people high in complexity beliefs demonstrate the capability to function well in social contexts. People high in social complexity possess some socially desirable qualities of empathic (Dincǎ & Iliescu, 2009) and grateful (Joshanloo, Afshari, & Rastegar, 2010). They adopt a collaborative approach in social exchange to benefit both parties (Bond et al., 2004a). Although accepting the inconsistency of human behaviours might reduce one's interpersonal trust, people high in social complexity are still able to maintain satisfied interpersonal relationships (Dincǎ & Iliescu, 2009) and feel comfortable about talking to the strangers (Singelis et al., 2003). In the meantime, endorsing complex representation of the self is related to positive inter-group attitudes and behaviours (e.g., Roccas & Brewer, 2002), and therefore people with complex self-views can grasp the increased opportunities to develop a large and richly interconnected social network (Mok et al., 2007). Hence, complexity believers would have increased social skills for functioning.

Therefore, I hypothesize that social intelligence is one of the processes in which complex beliefs operate to foster adjustment. Social intelligence has been defined in different ways, with some emphasizing the cognitive understanding of others and some focusing on the behavioural aspect of acting wisely in the social contexts (e.g., Habib, Saleem, & Mahmood, 2013; Kosmitzki & John, 1993; Silvera, Martinussen, & Dahl, 2001, Snow, 2010), but all of them point to the view that social intelligence consists of a wide range of social skills that focus on successful interpersonal interactions.

Complex Beliefs and Increased Cognitive Skills

Following the logic of schemas, self-complexity and social complexity heighten the attention to the variability of behaviours, and then facilitate the reflection on these related experiences to learn social skills. In the meantime, self-complexity and social complexity also enhance the acceptance of the situational changes. If the situations are not thought to be constantly changing, the self and behaviours will not vary across time and situations, and therefore no alteration is needed. Hence, self-complexity and social complexity also prepare people to deal with situational changes.

Complexity believers, who expect to switch their behaviours across occasions, are highly likely to engage in flexible thinking to avoid situational incongruency. This is similar to the multi-tasking process. When simultaneously engaging in multiple tasks, people activate a supervisory control system to regulate and to switch their behaviours with cognitive flexibility (e.g., Deaˊk, 2003; Meyer & Kieras, 1997; Rubinstein, Meyer & Evans, 2001). Cognitive flexibility is the ability to switch among different task sets in response to the changing environment (e.g., Dennis & Vander Wal, 2010; Martin & Rubin, 1995). The frequent alternations between different behavioural expressions of complexity believers are hence highly likely to enhance cognitive flexibility. Research also found complex self-views (Conway & White-Dysart, 1999) and worldviews (Conway, 2000) were correlated with fast

processing speed and extended working memory capacity, thereby reflecting the function of cognitive flexibility on rapid transferring information in-and-out of a memory (e.g., Blackwell, Cepeda, & Munakata, 2009; Cepeda, & Munakata, 2007; Tharp, & Pickering, 2011). Therefore, I also hypothesize that cognitive flexibility is another mechanism underlying the effects of complex beliefs.

In addition, previous studies also provided support for the present predictions. People who hold complex self-views are flexible in switching their self-representations (Benet-Martínez, Leu, Lee, & Morris, 2002; Hong, Morris, Chiu, & Benet-Martínez, 2000; Sacharin, Lee, & Gonzalez, 2009). In general, the switching of self-representations enables people to have access to a more situation appropriate set of thoughts, knowledge, and behaviours (Fiske, 1998; Higgins, 1996), thereby allowing people to respond in situation appropriate ways. For example, bicultural Chinese Americans would think in a more Chinese way if they were exposed to Chinese cues (and suppressed the American identity), while a more American way would be expressed when they were exposed to American cues (Hong et al., 2000). Moreover, this switching is an active process that can be controlled by people's cognitive effort and mental regulation. For example, Crisp, Bache, and Maitner (2009) showed that female engineering undergraduates can actively suppress the salient incongruent identity (as a female) and mentally construe in another adaptive one (as an engineer) to cope with the situational incongruences to optimize their performances. Hence, people high in self-complexity should have increased cognitive skills for them to control and regulate their self-representations.

Whereas the above findings support that self-complexity predicts cognitive flexibility, the below suggest how social complexity can be related to cognitive flexibility. In one study of social axioms, Kurman (2011) investigated how participants' social complexity influenced their responses to a suddenly changed situation. In her study, people who were high (vs low)

in social complexity used shorter time and were less reluctant to change their behaviours in response to the altered situation, indicating that social complexity is related to the awareness of the situational change, and the ability to suppress their current non-adaptive behaviours to leave room to change their behaviours in response to the altered situations. Taken all these findings together, it is possible that self-complexity and social complexity predict cognitive flexibility to facilitate functioning in different situations.

Conditions for the Beneficial Processes

Self-complexity and social complexity are hypothesized to benefit adjustment through enhancing people's cognitive flexibility and social intelligence, when do they exert stronger influence on these beneficial processes? Previous research has consistently found that motivation can influence information processing (e.g., Kruglanski & Webster, 1996). Therefore, I further suggest that the socio-cognitive beneficial outcomes of self-complexity and social complexity vary as a function of peoples' motivation, especially by the epistemic motive, need for cognitive closure (NFCC, Roets & Van Hiel, 2011; Webster & Kruglanski, 1994).

Need for cognitive closure is characterized by the desire for quick and definite answers, rather than ambiguous and provisional solutions, to close the uncertain epistemic gap (Dijksterhuis, van Knippenberg, Kruglanski, & Schaper, 1996; Kruglanski, Webster, & Klem, 1993; Webster & Kruglanski, 1994). Without a discrete answer, people with high NFCC would experience psychological discomfort and physiological distress indicated by higher systolic blood pressure, faster heart rate, and greater galvanic skin response (Roets & Van Hiel, 2008). Hence, they process information in ways to protect their comfortable state of closure by focusing only on the expected information, and avoiding new, surprising, and contradicting information.

This selective attention to expectancy-consistent information, on one hand, may reduce people's sensitivity to consider multiple perspectives and understand additional information, as the new information may threaten their comfortable state of closure. For instance, when making judgement, while people with low NFCC are more likely to use systematic thinking, people with high NFCC tend to solely rely on mental shortcuts to form arguments, such as attributes (Choi, Koo, Choi, & Auh, 2008), heuristic cues (Ip, Chen, & Chiu, 2006), and primary impression (Richter & Kruglanski, 1998; Tomic, Tonkovic, & Ivanec, 2017). Hence, people with low NFCC are more likely to break their conventional thinking patterns to practice flexible thinking when monitoring different behavioural expressions. Such a cognitive style makes self-complexity and social complexity more likely to predict cognitive flexibility.

The selective avoidance, on the other hand, influences social functioning. People with high NFCC dislike groups that share heterogenous opinions as the disagreements contradict their expectations (e.g., Kruglanski, Pierro, Mannetti, & De Grada, 2006; Kruglanski, Shah, Pierro, & Mannetti, 2002; Kruglanski & Webster, 1991; Roets, Kruglanski, Kossowska, Pierro, & Hong, 2015; Shah, Kruglanski, & Thompson, 1998). This preference makes people with high NFCC be more likely to interact with those who are similar to them while reducing the contact with the others; for instance, they prefer to develop co-national friendship (rather than local friendship) when studying abroad (Kashima & Pillai, 2011) and select dyadic partners with agreements (Kruglanski et al., 1993). Relatedly, when discussing an issue, they rejected group members with dissenting opinions (Kruglanski & Webster, 1991). Such tendency was found to be related to ingroup favouritism and outgroup derogation (Shah et al., 1998), reducing the social benefits acquired from interacting with diverse others, such as social awareness and social understanding (e.g., Astin, 1993; Hurtado, 2001; Milem, 1994). In this way, people with high NFCC usually prefer to interact in homogeneous environments,

whereas people with low NFCC are more likely to encounter heterogeneous social contexts. Hence, people with low NFCC have more diverse social experiences for reflection and learning, which in turn facilitate people with low NFCC to learn social intelligence, thereby strengthening the predictive power of self-complexity and social complexity on social intelligence. As a consequence, low NFCC people with complex self-views and worldviews are more likely to be higher in social intelligence and cognitive flexibility than high NFCC people with complex self-views and worldviews.

Social Intelligence and Cognitive Flexibility on Adjustment

While social intelligence and cognitive flexibility are the social skills and cognitive skills that benefit from complex beliefs, they can help people to fit in different situations. In understanding social situations, social intelligence increases the alertness and the ability to decode social cues, such as thoughts, feelings, intentions, and behaviours (Barnes & Sternberg, 1989), while cognitive flexibility helps to gather the viewpoints from multiple perspectives to generate alternative explanations (Bennett & Müller, 2010; Dennis & Vander Wal, 2010; Jacques & Zelazo, 2005; Takeuchi et al., 2010). During encoding, people high in social intelligence can process social information in an in-depth way to achieve the goals (Kaukiainen et al., 1999; Zirkel, 2000), while cognitively flexible people can allocate the limited cognitive resources (Crisp & Turner, 2011); therefore, they can allocate more resources in generating the strategies to solve the problems at hand. When solving the problems, social intelligence can help to provide different sets of social skills to solve their problems (Marlowe, 1986; Silvera et al., 2001), while cognitive flexibility can help to gather different strategies from multiple perspectives (Bennett & Müller, 2010; Dennis & Vander Wal, 2010; Jacques & Zelazo, 2005; Takeuchi et al., 2010). Both cognitive flexibility and social intelligence can help to search, select, and apply the chosen situation appropriate strategies, and simultaneously deploy the inappropriate strategies (Bennett & Müller, 2010;

Kaukiainen et al., 1999; Marlowe, 1986; Silvera et al., 2001). Hence, social intelligence and cognitive flexibility function in parallel to foster people's adjustment.

Both cognitive flexibility and social intelligence are important for people to gain social support and cooperation, and therefore facilitate subsequent functioning such as goal attainment (Kaukiainen et al., 1999; Zirkel, 2000) and effective communication (Martin & Anderson, 1998). In fact, the positive presence of others in life has been revealed as one of the major protective factors against maladjustment (e.g., Cohen, Sherrod, & Clark, 1986) or high-risk behaviours (e.g., Kleiman & Liu, 2013). Meanwhile, the ability to think flexibly across situational contexts, for example, produced more keywords during internet search (Dommes, Chevalier, & Rossetti, 2010), acquired more knowledge for problem-solving (Dong, Du, & Qi, 2016), and engaged in adaptive thinking (Dennis & Vander Wal, 2010) enhance behavioural functioning, such as leadership ability (Reiter-Palmon & Illies, 2004), creativity (Goclowska, Crisp & Labuschagne, 2013; Ritter et al., 2012, 2014), and the use of problem-solving strategies (Ahn, Kim, & Park, 2008). Therefore, it is reasonable that social intelligence and cognitive flexibility are related to positive psychological functioning, such as resilience (Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005), self-esteem (Brewster, Moradi, Deblaere, & Velez, 2013; Koesten, Schrodt, & Ford, 2009; Maltese, Alesi, & Alù, 2012), life satisfaction (Brewster et al., 2013), job satisfaction (Yahyazadeh-Jeloudar & Lotfi-Goodarzi, 2012), physical health (Koesten et al., 2009), and reduced psychological (e.g., Brewster et al., 2013; Hampel, Weis, Hiller, & Witthöft, 2011; Koesten et al., 2009) and behavioural problems (e.g., Riggs, Blair, & Greenberg, 2004; Tchanturia et al., 2011, 2012). Therefore, social intelligence and cognitive flexibility are essential for people to adjust to the changing contexts.

The Present Research

In order to understand the contributions of both self-views and worldviews, the main objective of this research is to examine the interplay of social complexity (i.e., the complex worldviews) and self-complexity (i.e., the complex self-views) in predicting adjustment. Drawn on schema theory (e.g., Abelson, 1981; Rumelhart, 1984), experiential learning theory (Kolb, 1984) and multi-tasking literature (e.g., Meyer & Kieras, 1997; Rubinstein et al., 2001), a model on the beneficial processes of self-complexity and social complexity is hypothesized. On one hand, self-complexity and social complexity function as schemas to emphasize that human behaviours are variable, but also facilitate the subsequent encoding and reflection processes on the related social experiences to enhance social skills. On the other hand, self-complexity and social complexity also highlight that the situations are always changing, so their believers approach situations with flexible thinking to prevent situational incongruence. These beneficial outcomes depend largely on people's motivation to tolerate ambiguity when processing social information. Hence, self-complexity and social complexity operate through both social and cognitive pathways to facilitate people's adjustment.

Based on the above theoretical considerations and findings from previous studies, a dual-path moderated mediation model is proposed with the following hypotheses (see Figure 1): Self complexity and social complexity will be positively correlated (Hypothesis 1), and both predict adjustment (Hypothesis 2). Social intelligence and cognitive flexibility are the beneficial outcomes of self-complexity and social complexity. Specifically, social intelligence and cognitive flexibility will mediate the relations between the two complexity constructs and adjustment, such that people with higher levels of self-complexity and/or social complexity will have higher levels of social intelligence and cognitive flexibility, which in turn predict better adjustment than those with lower levels of self-complexity and/or social complexity (Hypotheses 3 and 4). Need for cognitive closure will moderate the effects

of complex beliefs (self-complexity and social complexity) on social intelligence and cognitive flexibility (Hypotheses 5 and 6), so that the effect will be stronger among people with low rather than high need for cognitive closure.

Examining the hypothesized model with both daily hassles and life transition can provide a clear and comprehensive testing of the hypotheses. Hence, the present research included a series of studies with multiple methods and target populations to examine various domains of adjustment. Specifically, a cross-sectional design was employed in Study 1 to examine career adjustment among a group of working adults, with the aims to establish the associations among self-complexity, social complexity, social intelligence, cognitive flexibility and career adjustment. A longitudinal design was employed in Study 2 to examine mainland Chinese university students' psychological adjustment changes before and during their settling in Hong Kong. Furthermore, in order to ascertain the causations between independent variables and dependent variables, an experimental design was adopted in Studies 3A (manipulating self-complexity) and 3B (manipulating social complexity). In Study 4, university students were recruited to investigate the boundary conditions for the effects of self-complexity and social complexity to predict social intelligence and cognitive flexibility, which in turn foster university adjustment.

Chapter 2: The Beneficial Processes of Complex Beliefs

Study 1: Career Adjustment

People encounter daily hassles from time to time, such as traffic congestion, time constraints, noise, disagreement, and so on. Working adults usually deal with career-related hassles. These hassles accumulate to impact daily adjustment (e.g., Blankstein & Flett, 1992; Bridley & Jordan, 2012; Gaudet, Clément, & Deuzeman, 2005). The present study aims to examine (1) whether complex beliefs can be beneficial to working adults, (2) how complex beliefs operate through socio-cognitive pathways to benefit adjustment. Methodologically, cross-sectional design is suitable for the present study to ascertain the associations among variables (Babbie, 2016).

Method

Participants and Procedure

One hundred and six Hong Kong local adults (59 females) were recruited, aged 19 – 62 (M_{age} = 33.81, SD = 10.53). All participants worked on a full-time basis from various industries, such as law, medical, financial, construction, manufacturing, and social services. The questionnaire was administered online, using traditional Chinese characters, with the following measures and demographic information, such as age and gender. In all studies reported in this research, participants completed a survey after informed consent was obtained and confidentiality was ensured.

Measures

For all scales reported in this research, if a scale does not have an existing Chinese version, it was translated into Chinese and back-translated into English by two different bilingual persons to ensure the equivalence of the content and meaning (Brislin, 1986).

Social Complexity. The 8-item subscale of social complexity was extracted from the Social Axioms Survey (SAS II; Leung et al., 2012) to measure the generalized beliefs about the social causation. A sample item is "People may have opposite behaviours on different occasions." Responses were anchored on a five-point scale from 1 (*strongly disbelieve*) to 5 (*strongly believe*) (α = .76).

Self-Complexity. The 4-item Self-Complexity Scale (SCS; Sullivan, Landau, Young, & Stewart, 2014) measured the multiplicity and inter-relatedness of self-aspects. The instructions read as follows:

> Think about the word "aspects" very broadly to mean any and all of the following: Roles you have at work, with family and friends, and in your community; activities such as hobbies, fitness activities, and interests; relationships you have with different people; aspects of who you are, such as your creativity, your sense of humor, your religious beliefs, and your career goals.

Then, participants responded to four items. A sample item is "I like to keep my aspects separate from each other." Responses were anchored on a seven-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*). One item was deleted because its item-total correlation was negative, which indicated that this item did not measure the central construct in the same direction as other items of the scale. The reliability resulted from the remaining items was .43. Due to its low reliability, caution is needed when interpreting the results.

Social Intelligence. The 21-item Tromso Social Intelligence Scale (TSIS; Silvera et al., 2001) measured the ability to interact successfully in social contexts. A sample item is "I fit in easily in social situations." The measure consists of three components, namely, social skills, social information processing, and social awareness, which yielded a single factor (α = .81). Responses were anchored on a seven-point scale from 1 (*describes me extremely poorly*) to 7 (*describes me extremely well*).

Cognitive Flexibility. The 20-item Cognitive Flexibility Inventory (CFI; Dennis &

Vander Wal, 2010) measured the perceived flexibility for task switching. A sample item is "I

try to think about things from another person's point of view." Responses were anchored on a

5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*) ($\alpha = .83$).

Career Adjustment. The evaluation of one's present job was measured by Brayfield and

Rothe's (1951) 4-item measure of job satisfaction. A sample item is "Most days I am

enthusiastic about my work". Responses were anchored on a four-point scale ranging from 1

(*strongly disagree*) to 4 (*strongly agree*) ($\alpha = .81$).

Results and Discussion

Descriptive statistics, including means and standard derivations of all the measures are

summarized in Table 1.

Correlation Analysis

Before testing the mediation model, correlational analysis was conducted to examine the

relationships among self-complexity, social complexity, social intelligence, cognitive

flexibility, and job satisfaction (see Table 1).

Self-complexity and social complexity were positively correlated ($r = .24$, $p < .001$).

Self-complexity was positively correlated with social intelligence and cognitive flexibility (r

$= .32$ and $r = .34$, respectively, $ps < .01$), whereas social complexity was also positively

correlated with social intelligence and cognitive flexibility ($r = .32$ and $r = .39$, respectively,

$ps < .01$). Moreover, self-complexity and social complexity were positively correlated job

satisfaction ($r = .21$ and $r = .27$, respectively, $ps < .01$).

As the patterns of bivariate correlations were consistent with the hypotheses, path

analysis was preformed to test the hypothesized dual-path mediation model.

Dual-Path Mediation

All the path analyses in this research (unless otherwise specified) were conducted to test

the hypothesized model based on analysis of covariance structure using Mplus (Muthén &

Muthén, 2012) with 1,000 bias-corrected bootstrap sampling (Bollen & Stine, 1990;

MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2008; Shrout & Bolger, 2002)

and controlling for the effects of age and gender. The comparative fit index (CFI), non-

normed fit index (NNFI), and root mean square error of approximation (RMSEA) were used

to evaluate how well the path model fit the observed data. Usually, CFI and NNFI higher than

0.90 and an RMSEA lower than 0.08 are indicators of adequate fit of the model (Byrne,

1994). The hypothesized dual-path mediation model shown in Figure 2 had a satisfactory fit

with the data, $\chi 2$ (4) = 2.85, p = .58, CFI = 1.00, NNFI = 1.05, RMSEA = .00, SRMR = .04.

The two independent variables (self-complexity and social complexity) and the two

mediators (social intelligence and cognitive flexibility) were positively correlated (β = .24

and β = .42, respectively, ps < .05). Self-complexity significantly predicted social intelligence

and cognitive flexibility (β = .27, and β = .25, respectively, ps < .05). The standardized path

coefficient from social complexity to social intelligence was .27 (p < .05), and that from

cognitive flexibility to career adjustment was .33 (p < .001). Moreover, social intelligence

and cognitive flexibility significantly predicted career adjustment (β = .26, and β = .24,

respectively, ps < .05). The bias-corrected bootstrapping (MacKinnon et al., 2004) was used

to confirm whether the indirect effect was significant. The indirect effects of self-complexity

and social complexity on career adjustment through either social intelligence (z = .09, 95%

CIs [.02, .25], z = .17, 95% CIs [.02, .51], respectively) or cognitive flexibility was significant

(z = .08, 95% CIs [.00, .26], z = .20, 95% CIs [.02, .48], respectively). However, the direct

effect from either self-complexity or social complexity to career adjustment was not

significant (z = .10, 95% CIs [-.13, .34], z = .01, 95% CIs [-.45, .49], respectively). Based on

Baron and Kenny's (1986) criteria for testing mediation, the significant indirect effects and

non-significant direct effects indicated full mediation effects of social intelligence and cognitive flexibility from self-complexity and social complexity to career adjustment, resulted in four full mediation effects.

In general, the findings of Study 1 supported the hypothesized dual-path mediation model in the expected directions. Yet, the self-complexity scale has low reliability that might reduce the power to detect the predictive effects. It may be due to the small number of items in this scale (Allen & Yen, 1979). Nonetheless, this study revealed for the first time that the mechanisms underlying the effects of self-complexity and social complexity on career adjustment among working adults. People with high levels of complexity, who embrace situational changes, approach situations with adequate cognitive flexibility to solve social problems with tailor-made strategies, thereby facilitating their adjustment.

Study 2: Psychological Adjustment

Under globalization, many people choose to study in another culture for better career prospects. According to the University Grants Committee (UGC) in Hong Kong, there were 15,730 non-local students enrolled in UGC-funded programmes in 2015/16, representing 16% of total enrolment. Mainland Chinese students continue to be the largest group of non-local students at the universities in Hong Kong, accounting for 76% of the non-local students in government-funded programmes. People who have moved to another culture are required to learn new interpersonal behaviours and cultural knowledge to fit in the new culture (Heine, 2012). The experiences of this life transition may create obstacles to people when they are trying to fit in. Hence, it is noteworthy to examine the changes of psychological adjustment outcomes over a period of time, especially during the first half year of settling in.

Methodologically, although cross-sectional results in Study 1 support the associations of the hypothesized model, it is difficult to infer the temporal associations. Employing a longitudinal design not only indicates the direction of influences, but also reduces the bias arising from the common method variance by the temporal separation between the predictor and outcome variables (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Thus, a longitudinal design is employed to examine the temporal relationships involved in the hypothesized model. More specifically, it can also examine whether the independent variables (i.e. self-complexity and social complexity) affect the change of mediators (i.e., social intelligence and cognitive flexibility) which in turn influence the dependent variables (i.e., psychological adjustment), or the other way round. Hence, the present study adopts an interval of six months with two-waves of data to track the changes of psychological adjustment over time.

Method

Participants and Procedure

Participants were sixty-nine mainland Chinese university students (47 females; M_{age} = 18.39, SD = 1.17) who came to Hong Kong from Mainland China for less than one month at the time of first data collection. They were recruited from three universities in Hong Kong. In the initial session (*T1*), participants were asked to fill out a questionnaire in simplified Chinese characters online. In the second session (*T2*) approximately six months later, they were invited to fill out the same questionnaire online. Hence, the same variables were measured at different time points by the same participants.

Measures

Validated instruments were administered. After excluding the irrelevant measure of job satisfaction, the same set of instruments used in Study 1 was adopted and converted to simplified Chinese characters by a Ph.D. student who came from mainland China and speaks native Mandarin. The measures include social complexity (SAS II; Leung et al., 2012; Time 1 α = .74 and Time 2 α = .86), self-complexity (SCS; Sullivan et al., 2014; Time 1 α = .60 and Time 2 α = .81)[3], social intelligence (TSIS; Silvera et al., 2001; Time 1 α = .86 and Time 2 α = .90), cognitive flexibility (CFI; Dennis & Vander Wal, 2010; Time 1 α = .86 and Time 2 α = .83), life satisfaction (SWLS; Diener et al., 1985; D-T Scale, Andrews & Withey, 1976; Time 1 α = .87 and Time 2 α = .91), and self-esteem (RSES; Rosenberg, 1965; Time 1 α = .87 and Time 2 α = .87). The comprehensive measure of psychological adjustment in Study 2 was derived with the mean of standardized scores for life satisfaction and self-esteem.

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[3] One item SCS3r (same as Study 1) was deleted due to its negative item-total correlation. The same pattern occurred in the remaining studies.

Results and Discussion

Descriptive statistics and bivariate correlations of the measures used across two waves are summarized in Table 2. It is worthy to note that despite the high test-retest reliability of all the measures across the six-month period, the average correlation was .46 with the range of .23 to .76, $ps < .07$, and the scores were moderately stable over time but did not completely overlap. Around 14% to 52% of the variances were not explained, which might predict the changes over time.

Cross-Lagged Correlations

The cross-lagged correlations among the measures across the six-month period were first examined (see Table 2) to provide evidence for the directions of influence between variables. Self-complexity at Time 1 was significantly and positively correlated with all the variables at Time 2, namely social complexity ($r = .30, p < .05$), social intelligence ($r = .43, p < .001$), cognitive flexibility ($r = .39, p < .01$), life satisfaction ($r = .41, p < .01$), and self-esteem ($r = .23, p < .07$). Social complexity at Time 1 was also related to all the variables at Time 2, including self-complexity ($r = .36$), social intelligence ($r = .47$), cognitive flexibility ($r = .52$), life satisfaction ($r = .38$), and self-esteem ($r = .41$), all $ps < .01$. Moreover, social intelligence at Time 1 was correlated with all other variables at Time 2, in particular social complexity ($r = .26, p < .05$), self-complexity ($r = .22, p < .07$), cognitive flexibility ($r = .58, p < .001$), life satisfaction ($r = .51, p < .001$), and self-esteem ($r = .56, p < .001$). Meanwhile, cognitive flexibility at Time 1 also showed positive and significant relations with social complexity ($r = .43$), self-complexity ($r = .30$), social intelligence ($r = .61$), life satisfaction ($r = .56$), and self-esteem ($r = .57$), all $ps < .05$. These cross-lagged correlations revealed that self-complexity and social complexity might exert lagged effects on social intelligence and cognitive flexibility, which in turn prospectively affected psychological adjustment.

Cross-Lagged Modelling

In response to the critique of cross-lagged correlation analysis (e.g., Rogosa, 1980), cross-lagged panel analysis was employed to model the possible temporal relationships more stringently, examining whether the predictive relationships were reciprocal or uni-directional. Consistent with Study 1, age and gender were controlled in all analyses. In addition to the demographic variables, both the autoregressive effect of Y (Y at Time t) and the concurrent effect of X (X at Time t+1) were also controlled when predicting Y at Time t+1. This is to nullify the effects of the unmeasured third variables (Duncan, 1969; Kenny, 1975; Kenny & Harackiewicz, 1979; Pelz & Andrews, 1964).

Overall, the cross-lagged panel model, as shown in Figure 3, fitted the data well, $\chi2$ (8) = 6.61, p = .58, CFI = 1.00, NNFI = 1.02, RMSEA = .00, SRMR = .07. Self-complexity (β = .47), social intelligence (β = .54), cognitive flexibility (β = .48), and psychological adjustment (β = .28) were all positively and significantly predicted by their preceding measures, all ps < .01. After controlling for the autoregressive effects, as expected, four prospective effects were identified. Self-complexity at Time 1 positively and significantly predicted social intelligence and cognitive flexibility at Time 2 (β = .25 and β = .17, respectively, ps < .05). Meanwhile, social intelligence and cognitive flexibility also predicted psychological adjustment over time, β = .24 and β = .29, respectively, ps < .05.

Alternatively, the cross-lagged panel model depicted in Figure 4 had a satisfactory fit with the data, $\chi2$ (8) = 5.71, p = .68, CFI = 1.00, NNFI = 1.04, RMSEA = .00, SRMR = .06. All the measures, including social complexity (β = .45), social intelligence (β = .56), cognitive flexibility (β = .41), and psychological adjustment (β = .30) were predicted by their preceding measures, all ps < .01. Similar to the cross-lagged panel model of self-complexity, four prospective effects were identified from social complexity to psychological adjustment

through social intelligence ($\beta = .21$ and $\beta = .25$, respectively, $ps < .05$), and cognitive flexibility ($\beta = .19$ and $\beta = .26$, respectively, $ps < .05$).

In summary, the results from the cross-lagged panel analysis revealed that self-complexity and social complexity prospectively predicted social intelligence and cognitive flexibility; meanwhile, social intelligence and cognitive flexibility exerted beneficial effects on psychological adjustment across six months. Most importantly, all of these temporal relations were not significant in the reverse direction (p values range from .21 to .98 for self-complexity, and from .16 to .69 for social complexity) providing empirical evidence for the temporal influences of the hypothesized model identified in Study 1, and rule out other alternative models by the unmeasured third variables.

Nonetheless, one limitation in the present two-wave longitudinal design is that it may not be convincing enough to test a prospective mediation effect. It would be more persuasive to conduct a longitudinal study with at least three waves, such that the time-specific indirect effect (i.e., mediators at Time 2 mediate the effect of the predictor at Time 1 on outcomes at Time 3) or the overall indirect effect can be estimated (i.e., the mediator at any time between the first wave and the final wave mediates the effect of the predictor at the first wave on the outcome at the final wave; Gollob & Reichardt, 1991). Moreover, by doing so, a longer-term effect of complex beliefs and the relative size of the lagged effect (i.e., X at Time t to Y at Time t + 1 vs. Y at Time t to X at Time t+1) can also be tested and compared (Duncan, 1969; Kenny, 1975; Kenny & Harackiewicz, 1979; Pelz & Andrews, 1964). Secondly, stringent criteria had to be set in order to examine the changes of adjustment during the first year of settling in. This largely increased the difficulty to recruit adequate sample. Hence, the small sample size in this study had limited the statistical power to detect the joint effect of complex beliefs on psychological adjustment, thereby prohibiting the investigation of how complex beliefs operate jointly to influence people's functioning across time. Taken together Studies 1

and 2, self-complexity and social complexity enhance social intelligence and cognitive flexibility, thereby promoting career and prospective psychological adjustment. After obtaining a probable answer to the temporal question, a more robust causal conclusion is going to be drawn by manipulating self-complexity and social complexity.

Chapter 3: Momentary Activation of Self-Complexity and Social Complexity

The correlational results from Studies 1 and 2 are useful to ascertain the associations and the temporal relations of the hypothetical model. It is less useful, however, to provide a more robust answer to the question about causality on the beneficial effects of complex beliefs. To attain this goal, the hypothetical model will be tested using an experimental approach. Experimental method involves the manipulation of a predictor variable systematically and observes the changes of other variables. If the changes of a predictor induce systematic changes in an outcome variable, then it is reasonable to draw causal conclusions between them, especially when all other extraneous influences are kept constant, such as randomly assigning participants to the experimental conditions with a between-group design (Baron, Branscombe, & Byrne, 2008; Heine, 2012).

One way to manipulate the predictors is by priming, that is, momentarily heightening the accessibility of predictors by presenting stimuli in a controlled setting. Priming has long been utilized as an experimental technique to manipulate different predictors to observe the changes of affects (e.g., Greitemeyer, 2009), attitudes (e.g., Kawakami, Dovidio, Dijksterhuis, 2003), behaviours (e.g., Bargh, Chen, & Burrows, 1996), and cognitions (e.g., Trafimow, Triandis, & Goto, 1991) within a culture (e.g., Srull & Wyer, 1979) or between cultures (e.g., Lee, Aaker & Gardner, 2000). Hence, priming can act as situational cues to activate self-complexity and social complexity to influence subsequent socio-cognitive processes. Yet, research that experimentally manipulates self-complexity and social complexity is limited. Only two studies reported self-complexity priming (see Koch & Shepperd, 2004, for a review) and none for social complexity (to my knowledge). In this study, the unobtrusive priming methods for self-complexity and social complexity were developed and utilized to examine their predictive effects on adjustment.

Study 3: Social Adjustment

People not only adjust in different domains, but also deal with different social situations. The ways in which people solve their real-life problems have been of great relevance to their adjustment. Unsurprisingly, successfully solving problems can reduce maladjustment and facilitate positive adjustment (D'Zurilla & Nezu, 2007; Heppner, Witty, & Dixon, 2004; Platt & Spivack, 1972, 1975; Siegel, Platt, & Peizer, 1976; Watkins & Baracaia, 2002). In order to examine the impact of self-complexity and social complexity on problem-solving, an experimental research design was adopted. Adopting an experimental design, I intend to carry out a more robust investigation on the question about causality between beliefs and adjustment. Meanwhile, participants in Studies 1 and 2 were asked to evaluate their cognitive tendencies in a well-validated instrument using a Likert scale. To go beyond participants' structured responses, the current study invited participants to respond and formulate step-by-step strategies on different real-life scenarios, in an open-ended manner.

Taken together, the beneficial processes of self-complexity and social complexity would be extended to social adjustment. Social adjustment was examined in two separate studies with the manipulation of self-complexity and social complexity in Studies 3A and 3B, and then the impact of unobtrusive priming on social adjustment would be examined with open-ended questions to assess peoples' social problem-solving ability.

Study 3A: Priming Self-complexity

Method

Participants and Procedure

A total of 58 university students (36 females; $M_{age} = 19.19$, $SD = 1.18$) from different departments in a university in Hong Kong were invited to go to a computer room to attend a laboratory session.

Participants were randomly assigned to two experimental conditions: self-complexity (*N* = 29) or control (*N* = 29) and asked to complete an unobtrusive priming task. After completing the priming task, they completed the measures of social intelligence and cognitive flexibility. Next, participants were asked to respond in a social problem-solving task. No participants related these two measures with the priming task when they were directly probed to speculate the uses of the priming task and the hypotheses. Participants were then debriefed and thanked for their participations.

After debriefing, they were invited to ask questions regarding the whole experiment. Several emails were sent for follow-up.

Materials

Priming self-complexity. Accessibility of complex self-views was manipulated by asking the participants to reflect on a sentence "Everyone has different self-aspects, playing different roles, belonging to different social groups, participating in different activities, and having different experiences.", and then write a minimum of 200-word essay on at least three of their self-aspects to introduce themselves. They were then asked to select at least one suitable description of the self from a list of five short statements. For the control group, the participants were asked to reflect, write, and select the descriptions related to Hong Kong's countryside. The whole unobtrusive priming task was introduced to participants as a test to understand people's reading and comprehension ability.

Evaluations on the priming task. Immediately after the unobtrusive priming task, participants were asked to rate the following statements related to the priming task, using 1 (*not at all*) to 7 (*very much*): "To what extent do you think the task is difficult for you?", "To what extent do you think the instructions are difficult for you to understand?", and "To what extent do you think the questions are difficult for you to respond?" To avoid participants

guessing the research hypothesis, they were told that the experimenter would like to receive some feedback on a test for future use.

Social intelligence. The measure was identical to the one used in Study 1 while each item was rated on a 5-point scale from 1 (*describes me extremely poorly*) to 5 (*describes me extremely well*) (α = .80).

Cognitive flexibility. The same measure as in Study 1 was adopted (α = .81).

Social Adjustment. The Means-Ends Problem-Solving Test (MEPS; Platt & Spivack, 1975) was used to measure the ability to solve real-life social problems with strategies. Participants had to write the content of the story to link with the provided beginning and ending. Participants were asked to describe what they would do to solve the social problems step-by-step to reach the specific ending (Marx, Williams & Claridge, 1992). The MEPS has been reported to have satisfactory internal consistency and construct validity (e.g., Platt & Spivack 1972, 1975) even in the shortened version (Marx et al., 1992). The shortened version consists of four selected scenarios in different life areas that were common to university students, such as argument with romantic partner, friendship issue, making suggestion in a formal social setting, and communicating with a professor to solve an academic problem. All the scenarios were worded in the second person, replicating Lyubomirsky and her colleagues (Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky, Tucker, Caldwell, & Berg, 1999), and presented in a randomized order so as to reduce the order effect (Shaughnessy, Zechmeister, & Zechmeister, 2006).

Two coders, who graduated from psychology degree programs, rated the participants' responses to each story without being aware of participants' experimental conditions. Social problem-solving ability was scored as two measures. First, coders used the Lyubomirsky and Nolen-Hoeksema's (1995) coding scheme to count the number of model solutions and the total number of solutions. Second, each student's response was given a global rating of

problem-solving effectiveness on a 7-point scale from 1 (*not at all*) to 7 (*extremely*). The coders discussed regularly to resolve the discrepancies. The inter-rater reliability was satisfactory, $r = .98$ for the percentage of model solutions and $r = .89$ for problem solving effectiveness. Once the coders reached this acceptable inter-rater reliability, they coded their own set of participants' responses. The scores of each participant obtained in each story were then averaged to generate the overall scores for subsequent analyses.

Immediately following each story, participants were asked to evaluate the stories on a 7-point scale from 1 (*not at all)* to 7 (*very much*): (a) To what extent have you encountered this issue in your daily life?   (b) To what extent do you think you are able to settle this issue? (c) To what extent do you think this issue is severe to you?

Self-complexity. The same measure as in Study 1 was adopted ($\alpha = .67$).

Results and Discussion

Participants' characteristics, evaluations on the unobtrusive priming task, and the social problem-solving task were first examined and compared across conditions to rule out the possibility that alternative factors exist to bias the results. No significant differences were found with respect to participants' demographic characteristics of age and gender. Moreover, participants' academic results of Hong Kong Diploma of Secondary Education (HKDSE) in the Chinese subject, and their latest GPA did not differ significantly (all $ps > .05$), indicating they had comparable language proficiency in expressing themselves. Regarding the materials, there were no significant differences in the difficulty, understanding, and complexity of the priming task (all $ps > .05$), as well as the occurrence, solvability and severity of each scenario (all $ps > .05$).

Priming Effects

The priming effect of self-complexity was significant, $t(56) = 3.70$, $p < .01$. Participants in the self-complexity priming condition ($M = 4.94$, $SD = .13$) significantly rated themselves

as more complex than their counterparts in the control condition ($M = 4.26$, $SD = .18$).

Likewise, the priming effects on social intelligence and cognitive flexibility were also

significant, $t(56) = 4.76$, and $t(56) = 2.61$, respectively, $ps < .05$. Participants in the self-

complexity priming condition rated themselves with higher social intelligence ($M = 3.47$, SD

$= .32$) and cognitive flexibility ($M = 3.64$, $SD = .35$) than those in the control condition ($M =$

3.08, $SD = .31$; $M = 3.40$, $SD = .34$, respectively). Furthermore, the global rating of the

problem-solving effectiveness was also significant across groups ($t(56) = 2.09$, $p < .05$) with

the participants in the self-complexity priming condition ($M = 4.73$, $SD = .77$) scored higher

than their counterparts in the control condition ($M = 4.32$, $SD = .74$) (see Figure 5). However,

the percentage of model solutions did not differ significantly ($t(56) = .80$, $p = .43$).

Dual-Path Mediation

I used path analysis, with 1,000 bias-corrected bootstrapping resamples, to test the

hypothesized mediation model (see Figure 6). The path analysis model was tested through a

fully saturated model, with zero degrees of freedom, so the fit indices were neither examined

nor reported. As expected, self-complexity priming positively and significantly predicted

social intelligence and cognitive flexibility ($\beta = .54$ and $\beta = .33$, respectively, $ps < .01$).

Social intelligence and cognitive flexibility also significantly predicted problem-solving

effectiveness ($\beta = .32$ and $\beta = .31$, respectively, $ps < .05$), while self-complexity priming did

not ($\beta = .01$, $p = .97$). As a result, social intelligence and cognitive flexibility fully mediated

the effects of condition on problem-solving effectiveness with significant indirect effect (z

$= .27$, 95% CIs [.03, .65], $z = .16$, 95% CIs [.01, .46], respectively) and non-significant direct

effect ($z = .01$, 95% CIs [-.28, .36]). Meanwhile, social intelligence and cognitive flexibility

were positively and significantly correlated ($\beta = .51$, $p > .001$).

In brief, the results from path analyses support the hypotheses that experimental

manipulation of self-complexity had substantial influence on social intelligence and cognitive

flexibility. Moreover, social intelligence and cognitive flexibility fully mediated the priming

effects of self-complexity on social adjustment.

Study 3B: Priming Social Complexity

Method

Participants and Procedure

Fifty-six introductory psychology students (28 females; M_{age} = 19.27, SD = 1.20) from

different departments at a university in Hong Kong were invited to go to a computer room for

the present psychology experiment. Participants were randomly assigned to two experimental

conditions: social-complexity priming (N = 28) or control (N = 28). In general, the remaining

procedure was similar to Study 3A, in a sequence of unobtrusive priming task, social

problem-solving task, and then debriefing.

Materials

Priming social complexity. The priming task was introduced to participants as a test to

understand people's reading and comprehension ability so as to prevent participants from

guessing the hypotheses. In the social-complexity priming condition, participants were

presented a passage on social complexity. This passage was devised by the author after

reviewing the literature on social complexity and avoiding jargons and abbreviations.

Modification was made after discussing with a group of social psychologists, comprising four

PhD candidates and one professor, and then the passage was evaluated by a separate group of

15 university students on its comprehensibility and difficulty.

Participants in the social complexity priming condition were instructed to read this

passage on social complexity. To help them understand the passage, they were asked to

highlight all the key points and summarize the passage with their own words. To facilitate

their in-depth processing, they were asked to select at least one suitable description on social

complexity from a list of eight short statements. For the control group, the participants were asked to read, write, and select the descriptions related to a country park in Hong Kong. The passages in the two conditions were carefully counterbalanced for the total number of words. All other materials were identical to previous studies including the evaluations on the priming task, social intelligence (TSIS; Silvera et al., 2001; $\alpha = .94$), cognitive flexibility (CFI; Dennis & Vander Wal, 2010; $\alpha = .94$), social problem-solving task (MEPS; Platt & Spivack, 1975; ICC = .94 for the percentage of model solutions and ICC = .91 for problem solving effectiveness), and social-complexity (SAS II; Leung et al., 2012, $\alpha = .67$).

Results and Discussion

Across the social complexity priming condition and the control condition, participants were not significantly different in the participants' demographic characteristics (age, and gender) and academic performances (Chinese results in the Hong Kong Diploma of Secondary Education, and latest GPA), evaluations of the priming task (difficulty, understanding, and complexity of the priming task) and the social problem-solving task (occurrence, solvability and severity), all $ps > .05$. Thus, the potential influences of confounding variables could be ruled out.

Priming Effects

Significant differences in social complexity ($t(54) = 4.29, p < .001$), social intelligence ($t(54) = 2.72, p < .01$), cognitive flexibility ($t(54) = 3.12, p < .01$) and social problem-solving effectiveness ($t(54) = 2.95, p < .01$) were found across conditions, but not on the percentage of model solutions ($t(54) = 1.74, p = .09$). Participants in the social-complexity priming condition rated themselves higher in social complexity ($M = 4.12, SD = .33$), social intelligence ($M = 3.64, SD = .55$), cognitive flexibility ($M = 3.93, SD = .53$) and social problem-solving effectiveness ($M = 4.79, SD = .66$) than their counterparts in the control condition (see Figure 7).

Dual-Path Mediation

Similar to Study 3A, path analysis was conducted to investigate the mediating effect of the social complexity priming on social problem-solving effectiveness. Results from path analysis (Figure 8) showed that social complexity priming positively and significantly predicted social intelligence and cognitive flexibility (β = .34 and β = .37, respectively, *ps* < .01), while social intelligence and cognitive flexibility also significantly predicted social problem-solving effectiveness (β = .48 and β = .48, respectively, *ps* < .001). Tested with 1,000 bias-corrected bootstrap resampling, the indirect effects of social intelligence and cognitive flexibility were significant (z = .24, 95% CIs [.08, .51], z = .26, 95% CIs [.11, .49], respectively); in contrast, the direct effect of social complexity priming on social problem-solving effectiveness was not significant (z = .03, 95% CIs [-.17, .26]), confirming a full mediation model.

The findings of Studies 3A and 3B indicated that manipulation of self-complexity and social complexity could improve the cognitive and social abilities to foster social adjustment. The self-complexity and social complexity priming groups differed in their social problem-solving effectiveness from their counterparts in the control group, but unexpectedly not in the percentage of model solution. In other words, self-complexity and social complexity priming groups generated as many model solutions as those in the control groups. At first sight, it seems that the experimental groups do not have advantages in devising appropriate solutions to a given social problem. However, the MEPS instructions did not ask participants to generate as many solutions as possible. Rather, participants were asked to imagine themselves experiencing the situation and provide their strategies to overcome the problem. This instruction was most likely to reduce the quantity differences between the two groups. Nevertheless, the results indicated that the complexity priming groups were significantly

more capable of using similar numbers of steps but solving problems with greater

effectiveness than the control groups.

Chapter 4: Conditions for the Beneficial Processes

Study 4: University Adjustment

University life, nowadays, comprises not only conventional learning and interacting with fellow students, but also a wide array of other experiences that challenges students' adjustment (Adams, Ryan, & Keating, 2000; Pascarella & Terenzini, 1991). Academic and social adjustment may be the most significant dimension of adjustment in the university life. While Studies 1-3 have already answered the "how" question in the beneficial processes of self-complexity and social complexity on different adjustment outcomes from cross-sectional, longitudinal, and experimental perspectives, the present study aimed to further answer the "when" question. As mentioned in the Introduction, I hypothesized that need for cognitive closure would moderate the effects of self-complexity and social complexity on social intelligence and cognitive flexibility, such that the links between complex beliefs and socio-cognitive abilities would be stronger among people whose need for cognitive closure is low.

Method

Participants and Procedure

Participants were 363 Chinese undergraduate students (212 females, $M_{age} = 18.85$, $SD = 1.33$) in Hong Kong. They completed an online questionnaire individually. The present sample size met the rule of thumb of 5 times as the number of free parameters (Bentler & Chou, 1987), so the sample size of the present study was considered as adequate.

Measures

Consistent with previous studies, participants completed a Chinese questionnaire with the following psychological measures, namely, social complexity (SAS II; Leung et al., 2012; $\alpha = .74$), self-complexity (SCS; Sullivan et al, 2014; $\alpha = .61$), social intelligence (TSIS;

Silvera et al., 2001; α = .77), and cognitive flexibility (CFI; Dennis & Vander Wal, 2010; α = .80).

The measure of university adjustment is a 10-item academic and social adjustment scale (Gong & Fan, 2006), measuring sojourning international students' perceived adjustment to the academic and social activities in the United States. Some minor modifications were made to fit the current context, for example, "How well adjusted are you to the instructional methods in the United States?" was changed to "How well adjusted are you to the instructional methods at your university?" (academic adjustment), and "How well adjusted are you to interpersonal relationships in America?" was changed to "How well adjusted are you to interpersonal relationships at your university?" (social adjustment). Responses were anchored on a 7-point scale ranging from 1 (*not well adjusted at all*) to 7 (*very well adjusted*). Reliability for university adjustment scale is satisfactory (α = .90).

Moreover, a 15-item Need for Cognitive Closure Scale (NFCS; Roets & Van Hiel, 2011) was included to tap the epistemic needs to close the uncertain epistemic gap. Responses were anchored on a five-point scale from 1 (*strongly disagree*) to 6 (*strongly agree*). A sample item is "I dislike unpredictable situations" (α = .79).

Results and Discussion

Descriptive statistics and bivariate correlations of the measures are summarized in Table 3. On one hand, self-complexity was positively correlated with social intelligence ($r = .22$), cognitive flexibility ($r = .28$), and university adjustment ($r = .19$, all $ps < .001$). On the other hand, social complexity was also positively correlated with social intelligence ($r = .17$), cognitive flexibility ($r = .34$), and university adjustment ($r = .17$, all $ps < .01$). In addition, both social intelligence and cognitive flexibility were also correlated with university adjustment ($r = .42$ and $r = .41$, respectively, $ps < .001$).

Dual-Path Moderated Mediation

A dual-path mediation model was first tested with 1,000 bias-corrected bootstrap resampling. The results from the path analysis in this group of university students were similar to the results in Study 1 among a group of community adults (see Figure 9). Next, the dual-path moderated mediation model was tested following the approach described in Preacher, Rucker and Hayes (2007). More specifically, the mediating effects of social intelligence and cognitive flexibility on the relations between self-complexity or social complexity and university adjustment, as well as the moderating effects of need for cognitive closure on these linkages were tested (see Figure 10). This model fitted the data well, $\chi 2$ (13) = 13.77, p = .39, CFI = .10, NNFI = .10, RMSEA = .01, SRMR = .03. Results indicated that self-complexity, social complexity and need for cognitive closure predicted social intelligence after controlling for age and gender (β = .18, β = .14 and β = -.18, respectively, ps < .05) and cognitive flexibility (β = .20, β = .30 and β = -.13, respectively, ps < .01) in parallel, while social intelligence and cognitive flexibility in turn positively and separately predicted university adjustment (β = .27 and β = .22, respectively, ps < .001).

The indirect effects from self-complexity to university adjustment through social intelligence, z = .05, 95% CIs [.02, .09], and cognitive flexibility, b = .04, 95% CIs [.02, .08], were both significant. Alternatively, the effects from social complexity to university adjustment through social intelligence, z = .04, 95% CIs [.01, .08], and cognitive flexibility, z = .07, 95% CIs [.04, .11], were also significant. Meanwhile, the direct effects of either self-complexity or social complexity to university adjustment was not significant (z = .08, 95% CIs [-.03, .19], z = .02, 95% CIs [-.07, .12], respectively). The above results indicated the four full mediation effects of social intelligence and cognitive flexibility on self-complexity and social complexity to university adjustment.

Meanwhile, four significant interactions with need for cognitive closure were observed. On one hand, the effect of need for cognitive closure × self-complexity was significant on social intelligence and cognitive flexibility (β = -.16 and β = -.14, respectively, *ps* < .05). On the other hand, the effect of need for cognitive closure × social complexity was significant on social intelligence and cognitive flexibility (β = -.15 and β = -.18, respectively, *ps* < .05). That is, both social intelligence and cognitive flexibility mediated the effects of self-complexity and social complexity on university adjustment differently and depended on the level of need for cognitive closure.

To further examine the moderating role of need for cognitive closure, the indirect effects were calculated at different values of need for cognitive closure (1 *SD* above mean value, mean value, and 1 *SD* below mean value) for each significant interaction. Overall, social intelligence mediated the effects of self-complexity and social complexity on university adjustment among those with low (indirect effect = .09, 95% CIs [.05, .16], indirect effect = .08, 95% CIs [.03, .15], respectively) and moderate (indirect effect = .05, 95% CIs [.02, .09], indirect effect = .04, 95% CIs [.01, .08], respectively) levels of need for cognitive closure, but not among those with a high level of need for cognitive closure (indirect effect = .01, 95% CIs [-.06, .05], indirect effect = .00, 95% CIs [-.06, .03]*,* respectively), indicating that need for cognitive closure impeded the effects of self-complexity and social complexity on social intelligence. I also found support for the moderated mediation as the indexes of moderated mediation were negative (Hayes, 2015), further confirming that the two indirect effects from self-complexity or social complexity to university adjustment through social intelligence were a function of need for cognitive closure (index = -.04, 95% CIs [-.09, -.01], index = -.04, 95% CIs [-.09, -.01], respectively).

The exacerbating role of need for cognitive closure was also observed on cognitive flexibility. Specifically, cognitive flexibility mediated the effects of self-complexity and

social complexity on university adjustment among those with low (indirect effect = .09, 95% CIs [.05, .13], indirect effect = .12, 95% CIs [.08, .17], respectively) and moderate (indirect effect = .05, 95% CIs [.03, .10], indirect effect = .08, 95% CIs [.05, .14], respectively) levels of need for cognitive closure, but when the level of need for cognitive closure was high, the indirect effects of self-complexity and social complexity were not significant (indirect effect = .02, 95% CIs [-.02, .08], indirect effect = .04, 95% CIs [-.01, .11], respectively). The indexes of moderated mediation (Hayes, 2015) from self-complexity or social complexity to university adjustment through cognitive flexibility were both significant (index = -.03, 95% CIs [-.07, -.01], index = -.04, 95% CIs [-.07, -.01], respectively), further evincing the importance of need for cognitive closure in facilitating cognitive flexibility from complex beliefs.

The moderation of need for cognitive closure on the relations of self-complexity and social complexity to university adjustment showed that people who have a high desire to close the uncertain epistemic gap are less likely to benefit from their complex beliefs, thereby dampening their university adjustment. They may be more likely to interact with people similar to them and attach to their habitual ways of thinking that limit their learning and practising of social and cognitive skills. For those who have a stronger desire to close the uncertain epistemic gap, their social intelligence and cognitive flexibility may not be related to their socio-cognitive processing and well-being.

Chapter 5: General Discussion

In the present research, I have examined *how* (the processes) and *when* (the conditions) beliefs can help people navigate social diversity. The findings supported the notion that self-complexity and social complexity equip people with: (1) social intelligence to solve the encountered problems; and (2) cognitive flexibility to monitor behaviours across situations, which in turn facilitate adjustment. These findings were robust across three different methods assessing these beneficial processes, with both open-ended and close-ended measures of adjustment. Moreover, these effects were observed across different domains of adjustment, and replicated in one working adult sample and three different college student samples.

People experience different types of adjustment during their lives from daily hassles to major life transitions. Successfully adjusting to various situations is crucial for them to achieve optimal functioning. The present findings indicated that people high in complexity exhibited better career adjustment (Study 1), psychological adjustment (Study 2), and university adjustment (Study 4). In addition to the above findings that focused on the personal domains of adjustment, my findings in Study 3 suggested that people high in self-complexity and social complexity were also more interpersonally adjusted. Specifically, self-complexity and social complexity positively predicted social adjustment in two experimental studies (Studies 3A and 3B). Thus, self-complexity and social complexity appear to be two essential catalysts on both personal and interpersonal adjustment.

The current findings were applicable not only across various domains of adjustment, but also across different groups of individuals. The participants in Study 1 were working adults from diverse industries, such as law, medical, financial, construction, manufacturing, and social services. The participants in the remaining studies were university students with different majors in four different universities in Hong Kong. The working adults might experience more challenges, role conflicts, and changes including marriage, parenting,

academic, and/or career change, than the university students. However, the findings in separate studies suggested that self-complexity and social complexity operate similarly to facilitate adjustment across different life stages and events.

This research adopted a multi-method approach to investigate the beneficial processes of self-complexity and social complexity. Findings from the cross-sectional design (Study 1) were replicable across longitudinal, experimental, and another cross-sectional study, with open-ended and close-ended responses. It is very important for quantitative research to triangulate the findings with divergent methods, because each method has its potential methodological inadequacies or alternative theoretical explanations (Small, 2011). The consistency in the results of my research can increase the credibility of the present findings to indicate that self-complexity and social complexity can enrich people's social intelligence and cognitive flexibility for better adjustment across personal and interpersonal domains.

Complex Self-Views and Worldviews

The self is unique by virtue of being the largest structure, and it is most extensively encoded and most frequently assessed in the cognitive system. Any self-relevant memories, thoughts and feelings, or goals and hopes can become part of self-views (e.g., Markus, 1977). Self-views represent a core part in the belief systems and have attracted considerable research attention. The self has been studied from a unitary perspective, or from a multiplicity perspective, such as the organization of self-knowledge (i.e., self-complexity, Linville, 1985, 1987). Whether having complex self-views is associated with psychological deficits (Donahue et al., 1993) or behavioural merits (Gergen, 1971; Goffman, 1959) is hotly debated. Donahue and colleagues (1993) argued that complex self-view was about a sense of self-fragmentation and role diffusion, while Gergen (1971) and Goffman (1959) argued that they enable one to respond to situational contexts with flexibility. My studies supported selves-as-specialization hypothesis but opposed the view of selves-as-fragmentation: self-complexity

was adaptive to various roles, as indicated by the working adults' career adjustment (Study 1) and students' university adjustment (Study 4), rather than being maladaptive to experience role diffusion. Presumably, people high in self-complexity have different knowledge sets that are uniquely associated with each of their multiple and context dependent self-aspects, which in turn facilitate them to adopt situations appropriate self-representations, thereby fostering adjustment across roles. Hence, apart from the widely-studied affective benefits (e.g., Linville, 1985, 1987), self-complexity appears to help people respond flexibly to the changing contexts.

Human mind not only reflects thoughts and feelings experienced by the internal self, but also resonates with the understanding of the outside world. Worldviews represent another core part of the belief systems, but there is limited understanding of worldviews. Leung and colleagues (2002) have drawn researchers' attention to investigating worldviews. Yet, research on social complexity has not yet reached a consensus – whether social complexity affects adjustment positively (Dincǎ & Iliescu, 2009; Safdar et al., 2006) or negatively (Chen et al, 2006; Lai et al., 2007) remained an unanswered question. My findings supported that social complexity can boost adjustment, rather than hinder it. Possibly, the expectation of multi-causality prediposes people with high social complexity to approach situations with contingency, which helps them to devise tailor-made strategies in response to contextual demands, thereby faciliting them to fit in different situations. It is noteworthy that the experimental findings in Study 3B directly showed that social complexity enables people to devise better and more effective solutions. Hence, social complexity is now more clearly related to one's abilites to solve problems, extending previous experiemical results (Kurman, 2011) and further confirming the functional values of social complexity (e.g., Bond et al., 2004a; Leung et al., 2002).

Being two closely related constructs in the belief systems, self-views and worldviews should exert mutual influences and coordinate to function. Although prior research has separately supported the predictive roles of self-complexity (see Koch & Shepperd, 2004, for a review) and social complexity (e.g., Dincă & Iliescu, 2009; Safdar et al., 2006) in psychological health, this research went beyond these studies to show that self-complexity and social complexity can both contribute to people's adjustment. However, do worldviews and self-views exert similar influence on psychological health?

Additional analyses were performed to answer this question by comparing the predictive effects of self-complexity and social complexity on adjustment. Cross-sectional results, from the community adults in Study 1 and university students in Study 4, both indicated that the effects from self-complexity and social complexity on career and university adjustment did not significantly differ ($z = .12$, 95% CIs [-.51, .78], $z = -.05$, 95% CIs [-.22, .10], respectively). Longitudinal results from Study 2 also showed similar patterns. After controlling the autoregressive effects, self-complexity and social complexity at Time 1 prospectively predicted psychological adjustment at Time 2, but more importantly, their predictive effects on prospective psychological adjustment did not differ significantly ($z = .31$, $p = .19$). Hence, results from these additional analyses converge to support that there are no significant differences in the predictions of self-complexity and social complexity on adjustment. Therefore, worldviews not only predicted adjustment, as self-views do, but also exerted similar predictive effects on adjustment. That is, self-views and worldviews are equally important to people.

To my knowledge, the present research is the first to compare the predictive effects of self-views and worldviews on psychological health. Hence, my findings clearly go beyond prior research on either focusing on self-views or worldviews. In line with this, it is fruitful to incorporate worldviews with self-views to yield more comprehensive understanding of

beliefs and social cognition. Future research may continuously explore different pairs of self-views and worldviews. For example, religious beliefs have always been studied from self-view perspective that concentrated on personal religious beliefs and experiences, such as "Do *you* [emphasis added] believe in God?" (Gallup, 2016). These self-views may work jointly with religiosity, another axiom to reflect the general expectancy of the religious world (Leung & Bond, 2004). Although separate work on religious self-views and worldviews predicted physical, social and psychological health (e.g., Bond et al., 2004; Koenig, McCullough, & Larson, 2001, Safdar et al., 2006), whether, how and when they function complementarily to influence believers remain unanswered.

The Beneficial Process: Dual-Mediation Effect

Under the influences of globalization and the advancement of technology, people have more opportunities to deal with heterogeneous information and culturally others, which provide them realistic experiences to categorize the self and the social world, thereby possibly to complicate one's self-views and worldviews. Although there are specific mechanisms to explain how self-complexity can provide psychological benefits (e.g., Linville, 1985, 1987), there are only limited empirical findings on the process in which social complexity functions. In this research, self-complexity and social complexity were found to operate in parallel to enhance personal and interpersonal adjustment through the mediation of social intelligence and cognitive flexibility, at a single time point (Studies 1, 3, and 4) and over time (Study 2). Complexity believers expect and accept the changes of human behaviours across contexts. They are then more likely to reflect on these experiences to enhance social skills, and to adopt contingency approach to flexibly deal with specific circumstances. Hence, they can benefit from not only the increased social intelligence to solve social problems, but also the increased cognitive flexibility to monitor their own behaviours, thereby maximizing their functioning in the face of social diversity. My results

therefore shed light on the previously unexplored issue of the joint processes underlying self-complexity and social complexity.

Does social intelligence or cognitive flexibility possess stronger mediating power? To answer this question, additional analyses were conducted to compare the predictive effects of complex beliefs on social intelligence and cognitive flexibility. Findings from community adults in Study 1 showed that the indirect effects of self-complexity or social complexity on career adjustment through either social intelligence or cognitive flexibility did not significantly differ ($z = -.03$, 95% CIs [-.34, .39], $z = .01$, 95% CIs [-.18, .19], respectively). These results were also supported in university students in Study 4 on university adjustment ($z = -.03$, 95% CIs [-.08, .03], $z = .00$, 95% CIs [-.03, .06], respectively). Hence, these additional analyses supported that there were no significant differences in the mediating power of social intelligence and cognitive flexibility in the relation between complex beliefs and adjustment. In other words, both social intelligence and cognitive flexibility are equally important mechanisms for self-complexity and social complexity to foster adjustment.

Future research can consider moving from these socio-cognitive processes to other psychological processes, or from the joint processes to unique processes to further distinguish the functions of self-complexity and social complexity. Apart from sharing the mechanisms with social complexity, self-complexity may bring psychological benefits through a process of compensation (or self-affirmation theory, Steele, 1998) or decentralization (sociological theory, Thoits, 1983). Self-complex people possess multiple and distinct self-aspects. On one hand, they can focus on the positive qualities of unrelated self-aspects to compensate for the negative feedback which is pertinent to a particular self-aspect. On the other hand, self-complex people can decentralize their investments and commitments to each self-aspect, so the difficulties that are pertinent to one self-aspect will exert in a minimal impact on the

overall self-concept. These studies would be noteworthy because the empirical findings on how self-complexity and social complexity operate are rather limited.

The Conditions: Moderating Effects

In addition to the joint beneficial process of complex beliefs, the moderating effects of need for cognitive closure are also noteworthy. The social and cognitive abilities (social intelligence and cognitive flexibility) accrued from complex beliefs (self-complexity and social complexity) significantly predicted university adjustment only among people with low and moderate rather than high levels of need for cognitive closure. Need for cognitive closure is a motive for people to reduce the uncomfortable arousals by avoiding the uncertainties (e.g., Kruglanski & Webster, 1996). People high in need for cognitive closure are only willing to process the expectancy-consistent information to prove their knowledge is true, and then seize on it without attending to subsequent information (e.g., Heaton & Kruglanski, 1991; Kruglanski & Freund 1983, Webster et al., 1994). They are less likely to endorse mastery goals to learn and improve cognitive ability (e.g., DeBacker & Crowson, 2006, 2008), and therefore may reduce the strength of beliefs and socio-cognitive abilities. Thus, people whose need for cognitive closure is low are more open to variety and have more opportunities to improve social intelligence and practice cognitive flexibility.

Apart from the epistemic motivation of need for cognitive closure, the willingness to reflect on social experiences and think with flexibility should be in accordance with other contextual factors, for example, when people are distracted (Petty, Wells, & Brock, 1976; Sherman, Macrae, & Bodenhausen, 2000) or running out-of-time (Ratneshwar & Chaiken, 1991). These situations consume the cognitive resources that would otherwise devote to reflection and flexible thinking, and therefore influence the learning of socio-cognitive ability. It would be informative for future research to explore such moderating factors in the beneficial processes of self-complexity and social complexity. The identification of such

moderators will shed light on not only the functions of self-complexity and social complexity, but also the understanding of socio-cognitive processes.

The Temporal Relation and Causality Inquiry

The longitudinal analyses in Study 2 suggested that complex beliefs were beneficial to long-term psychological adjustment. Specifically, self-complexity and social complexity can prospectively enhance one's social intelligence and cognitive flexibility, while social intelligence and cognitive flexibility can foster adjustment over time. These results established the temporal relations among self-complexity, social complexity, cognitive flexibility, social intelligence, and psychological adjustment, a conclusion further verified by the findings in the experimental studies with open-ended responses. The experimental findings further strengthen my argument to draw a more robust causal inference regarding the beneficial processes of self-complexity and social complexity.

These findings promoted not only theoretical advancement, but also methodological advancement. In particular, prior research on self-complexity has attempted to manipulate self-complexity by preparing participants to receive or transmit information about the selves (Margolin & Niedenthal, 2000), or requiring participants to organize their specific self-views into three versus seven categories (Halberstadt, Niedenthal & Setterlund, 1996). Rather than preserving the idiosyncratic nature of self-complexity, these studies requested participants to focus on some specified self-aspects. A better solution was suggested by Koch and Shepperd (2004), self-complexity should be manipulated through inducing the ways of thinking characterized by self-complexity, instead of manipulating self-complexity per se. My work was inspired from this idea to invite participants to descibe the self with more than three idnosyncratic self-aspects, and successfully altered participants' level of self-complexity with large effect size ($d = 0.81$). Besides, this research also developed the priming method for social complexity and successfully manipulated social complexity with large effect size ($d =$

1.16). Hence, future studies can further examine the causal relationship of complex beliefs with other cognitive and psychological processes.

Possible Cultural Differences

People's cognitive styles are shaped by the contextual environment (e.g., Fiske, Kitayama, Markus, & Nisbett, 1998; Markus & Kitayama, 1991; Nisbett, 2003; Nisbett, Peng, Choi, & Norenzayan, 2001; Trandis, 1989; Varnum, Grossmann, Kitayama, & Nisbett, 2010). Cultures differ in whether people are interdependent of others (collectivistic) or independent from others (individualistic). Collectivism is more characteristic of Eastern culture, while individualism is more salient in Western culture. Living in an individualistic culture encourages people to consider independent aspects, emphasizing one's own goals to pursue uniqueness and distinctiveness. Alternatively, living in a collectivistic culture encourages people to consider more interdependent aspects of themselves, focusing on contextualized and relational information to maintain harmonious social relationships. In this view, people with different cultural backgrounds may reflect on varied aspects of their social experiences and may adopt flexible thinking to achieve different aims; therefore, the socio-cognitive outcomes of social intelligence and cognitive flexibility may vary across cultures.

People from different cultures are also different in the acceptance of ambiguity, change, and contradiction. Because of deeply-rooted Eastern religious and philosophical traditions that promote acceptance of contradiction and change (Spencer-Rodgers, Peng, Wang, & Hou, 2004), people from Eastern culture were found to be inclined to predict more change in state, more change in the direction of trends, and more change in the rate of change, relative to American participants (Ji, Nisbett, & Su, 2001). In addition to the ability to predict changes, they also show greater preference of proverbs that contain opposing words (e.g., "beware of your friends not your enemies", Peng & Nisbett, 1999), and other people who predict changes (Ji et al., 2001). Such tendency to expect changes and accept contradictions have been

depicted as dialectical thinking (Peng & Nisbett, 1999). The understanding that people and events are changeable predisposes Chinese people (my samples) to endorse a malleability view to process social information, and therefore they are more willing to devote efforts to process contextual and relational information (Choi, Nisbett, Norenzayan, 1999; Miller, 1984; Miyamoto & Kitayama, 2002; Morris & Peng, 1994; Norenzayan, Choi, & Nisbett, 2002; Norenzayan, Smith, Kim, & Nisbett, 2002). Hence, Easterners, who have deeply-rooted expectancy of change, may reflect on their social experiences with more effort and are more likely to adopt flexible thinking, which in turn promote the beneficial processes of complex beliefs and socio-cognitive abilities.

Future research can recruit participants from different cultures, especially those with varying levels of social diversity, to understand how cultures influence the endorsement of self-complexity and social complexity, which in turn affect the development of social intelligence and cognitive flexibility, as well as the outcome of adjustment. Perhaps, some cultures with lower levels of social diversity are more suitable for people low in complex beliefs than those with high levels, as suggested by a widely studied topic of person-environment fit in social psychology (e.g., Bond, 2013; Diener, Larsen & Emmons, 1984; Edwards, Caplan & Harrison, 1998; Guan, Deng, Bond, Chen, & Chan, 2010).

Limitations and Future Directions

Although the importance of complex beliefs has been clearly and consistently demonstrated in the present research, a few caveats and recommendations should be noted. First, the reliability of the self-complexity scale was low in working adults (Study 1) but was adequate in other studies that recruited university students. This scale was originally developed with only four items (Sullivan et al., 2014); however, one of the items was deleted because of its negative item-total correlation across all the studies in this research. Such a small number of items may easily yield low reliability (Allen & Yen, 1979). Future research

should include additional items based on the definition of self-complexity. Second, because of time and resource constraints, my sample sizes were small which affected the statistical power to detect the potential effects. Third, the causality question of the effects of self-complexity and social complexity on social adjustment was answered separately, because complex beliefs were manipulated separately. Future research should incorporate the two experiments in one study by creating four experimental conditions. Moreover, I rely on self-report measures in both open-ended and close-ended formats to assess adjustment. Future research should explore other measures that are not self-report in nature, such as the implicit measures of psychological well-being. Such attempt can provide convergent support for the findings. Finally, the temporal findings of complex beliefs on psychological adjustment came from a two-wave study. Future research should conduct a longitudinal study with at least three waves in order to test the longer-term effect and the relative size of the lagged effect. Future research can also consider extending the current single culture framework to adopt a cross-cultural approach, and extending from the current social and cognitive pathways to other possible underlying mechanisms and boundary conditions.

Chapter 6: Conclusion

The importance of beliefs in psychological health has been clearly demonstrated in previous studies: most of them were on self-views, emphasizing how one perceives the self; some were on worldviews, stressing how one perceives the external world. However, the understanding of how self-views and worldviews can both contribute to people's psychological health is in its nascent stages. To address this issue, the present research has moved forward to incorporate both self-views and worldviews to advance the understanding of how and when beliefs help navigate social diversity.

Starting from the most elemental form of configuration – simplicity and complexity, this research has attempted to understand the effect of complex beliefs on psychological functioning. Drawn on schema theory (e.g., Abelson, 1981; Rumelhart, 1984), experiential learning theory (Kolb, 1984) and multi-tasking literature (e.g., Meyer & Kieras, 1997; Rubinstein, et al., 2001), a dual-path moderated mediation model, outlining the socio-cognitive benefits of complex self-views and worldviews, was hypothesized and examined. Findings from the cross-sectional, longitudinal and experimental studies converged to support that self-complexity and social complexity can facilitate adjustment across different personal and interpersonal domains. People with high levels of complexity, on one hand, reflect on their active social experiences about the variability of behavioural changes to enhance social intelligence. On the other hand, they have prepared to face the changing situations with cognitive flexibility. As a result, they can successfully confront and tackle the challenges from the changing situations.

At first sight, the present findings seem to contradict the widely expressed proverbs that encourage the art of simplicity. Some good sayings describe simplicity as the ingredient of success. For instance, Edward deBeno, a lateral thinker, stated that "Complexity creates confusion, simplicity focus [sic]". He further added that dealing with complexity is

inefficient, wasting time, resources and energy. However, simplicity is possible to be emerged from complexity. That is, simplicity can be achieved through simplifying the complex reality. As noted in this research, people with high levels of complexity have extended social and cognitive repertories, which allow them to search and adopt the most situation appropriate explanations and solutions. Such ability may facilitate people to not only zoom out to understand the situation from a broad perspective, but also zoom in to have a clear line of sight. Hence, people can gain more comprehensive understanding and use more focused effort to solve their problems at hand.

Despite the discussed caveats, the current research has brought both theoretical and methodological significance. This research provides additional scientific inquires to showcase how and when complex self-views and worldviews can facilitate adjustment. The findings were converged from a multi-method approach, adopting cross-sectional, longitudinal, and experimental research designs. Moreover, the generalizability of the hypothesized dual-path moderated mediation model was established in different samples, including students and working adults, and across different domains of adjustment. Furthermore, in response to the limited experimental study on complex beliefs system, this research has successfully developed the manipulation tasks for self-complexity and social complexity with large effect sizes.

Answers from this research are not only theoretically meaningful, but also practically valuable. To increase complexity, educationists can consider further emphasis on the counter-normative ways of thinking. Health practitioners can also encourage clients to reflect on their experiences and to give explanations and solutions from multiple perspectives. Such strategies may encourage people to apply this type of thinking to question their daily lives. The idea that cognitive flexibility and social intelligence can develop from the beneficial processes of complex beliefs reflects whether simplicity or complexity beliefs are beneficial

for people to fit in the evolving social and cultural diversity. Since the traditional boundaries that characterize a homogeneous society gradually break down, understanding the socio-cognitive and other psychological impacts emerging from the experience of social and cultural diversity will be an important agenda.

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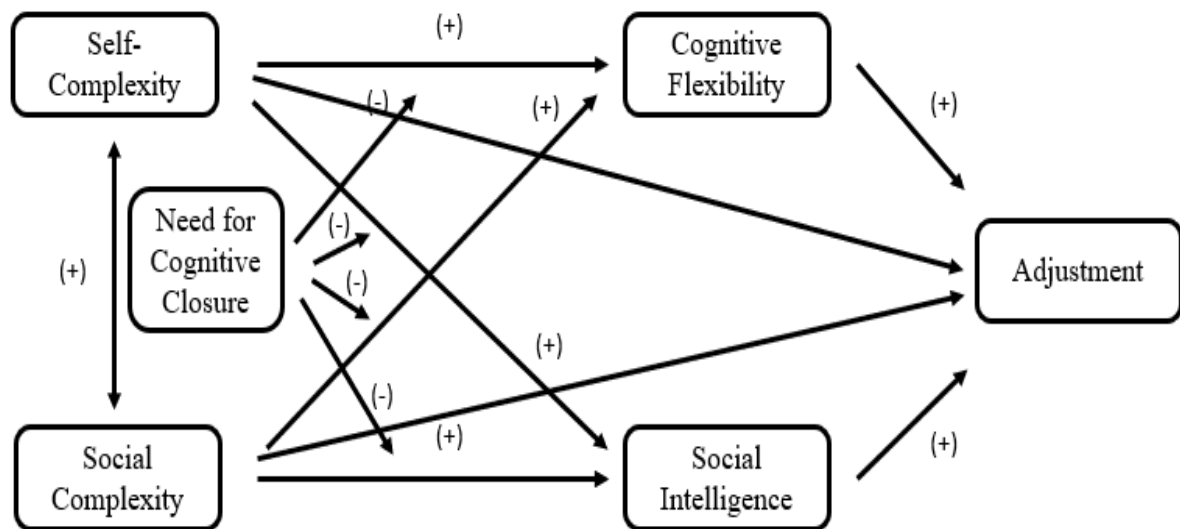
Figure 1. Hypothesized dual-path moderated mediation model.

Note. Predictors: Social Complexity, Self-Complexity; Mediators: Cognitive Flexibility,

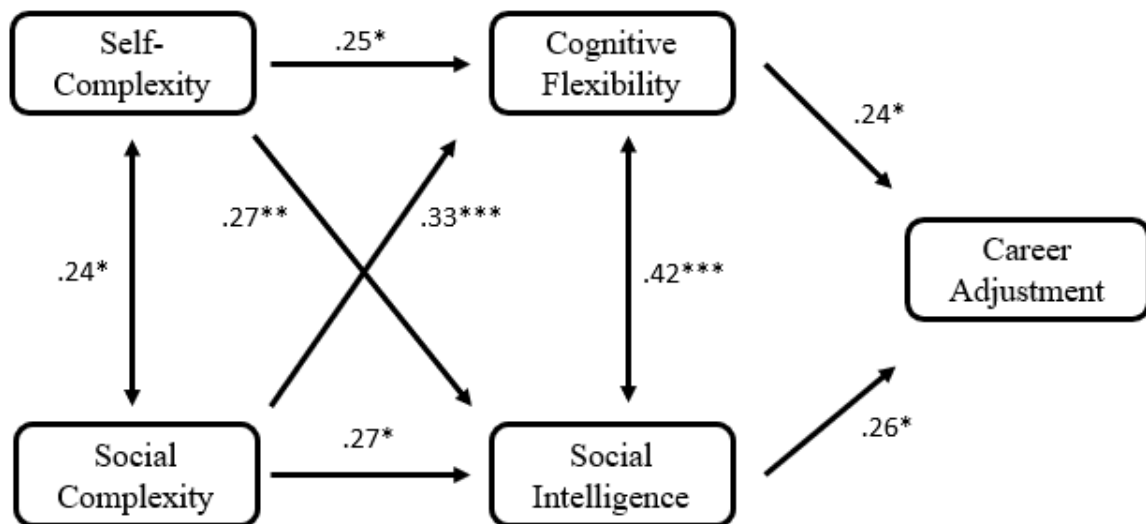Social Intelligence; Moderators: Need for Cognitive Closure; Outcome: Adjustment.

Figure 2. Dual pathways mediation model with standardized coefficients in Study 1.

Note. All paths were controlling for age and gender with 1,000 bootstrap sampling.

For the sake of simplicity, the non-significant direct effects from self-complexity and social

complexity to career adjustment were not indicated.

$\chi2$ (4) = 2.85, p = .58, CFI = 1.00, NNFI = 1.05, RMSEA = .00, SRMR = .04
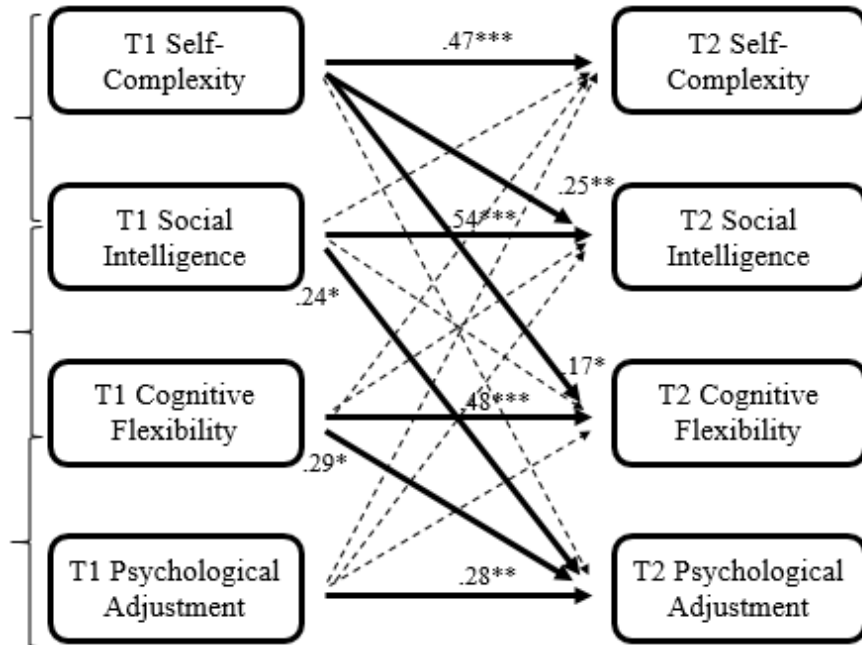
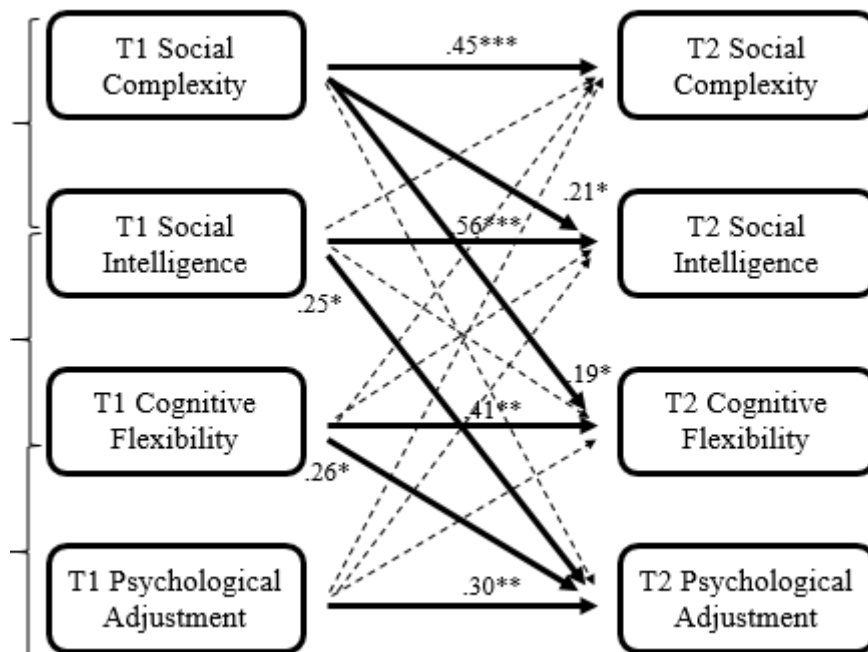* *p* <   .05, ** *p* <   .01, *** *p* < .001.

Figure 3. Cross-lagged panel model testing prospective effects across 6-month period in

Study 2.

Note. All paths were controlling for age and gender. T1: Variables measured at Time 1; T2:

Variables measured at Time 2. Dashed lines represent non-significant relationships (*ps* >.05).

$\chi2$ (8) = 6.61, *p* = .58, CFI = 1.00, NNFI = 1.02, RMSEA = .00, SRMR = .07.

* *p* <   .05, ** *p*<   .01, *** *p* < .001.

Figure 4. Cross-lagged panel model testing prospective effects across 6-month period in

Study 2.

Note. All paths were controlling for age and gender. T1: Variables measured at Time 1; T2:

Variables measured at Time 2. Dashed lines represent non-significant relationships (*ps* >.05).

χ^2 (8) = 5.71, *p* = .68, CFI = 1.00, NNFI = 1.04, RMSEA = .00, SRMR = .06.

* *p* < .05, ** *p* < .01, *** *p* < .001.
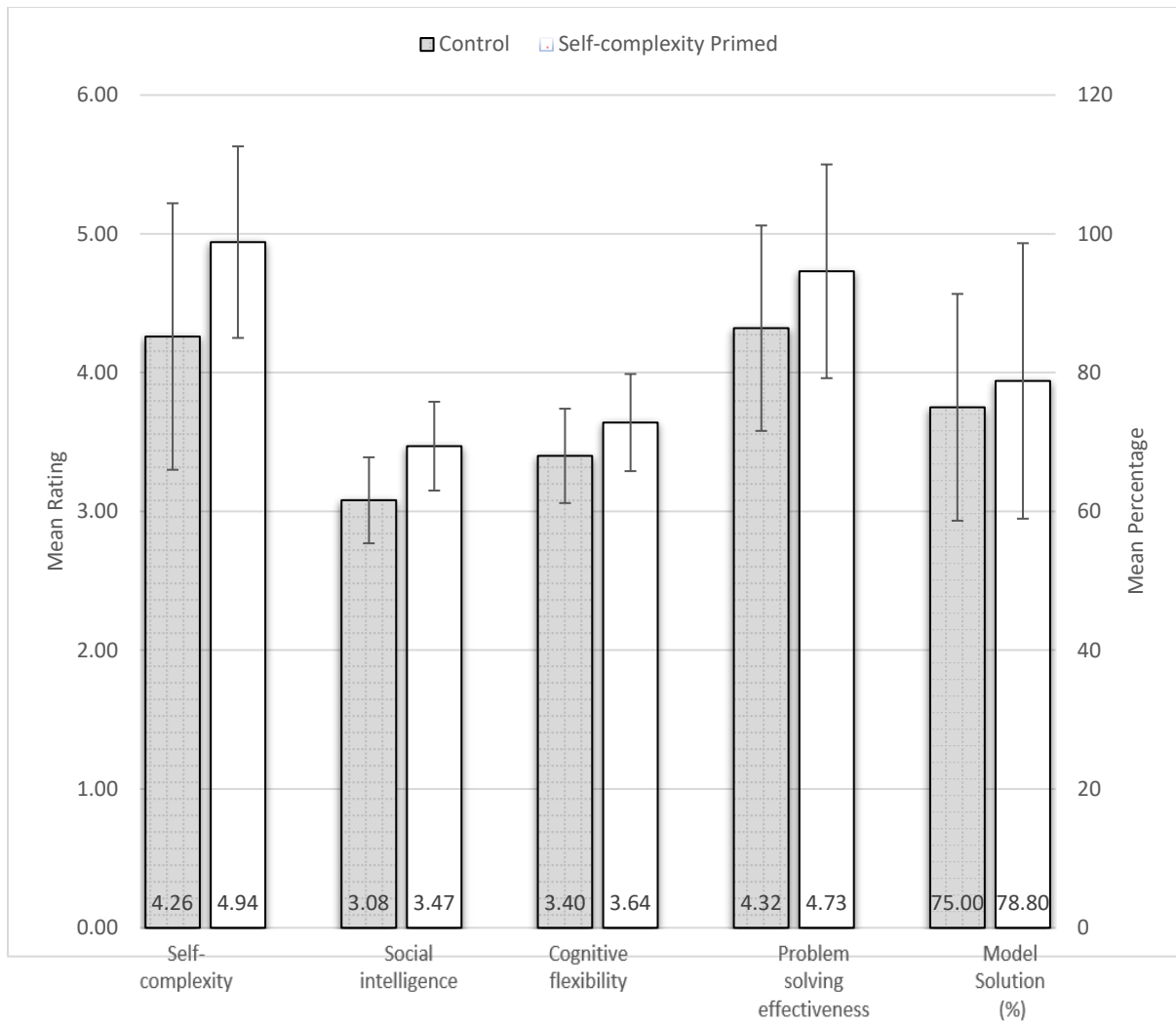
Figure 5. Mean ratings and percentages of self-complexity, social intelligence, cognitive

flexibility, problem-solving effectiveness and model solutions across experimental conditions
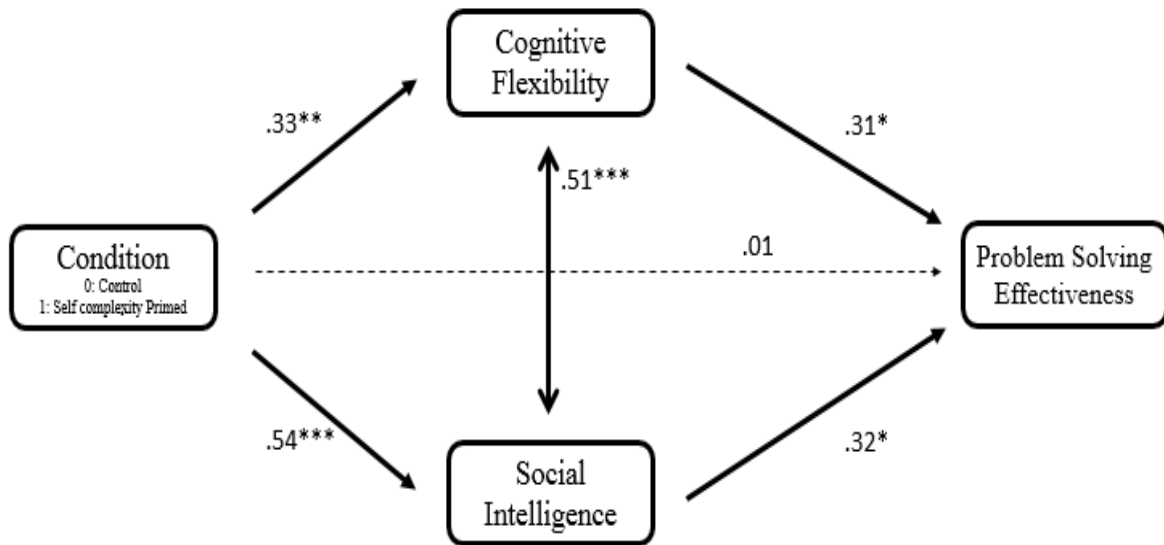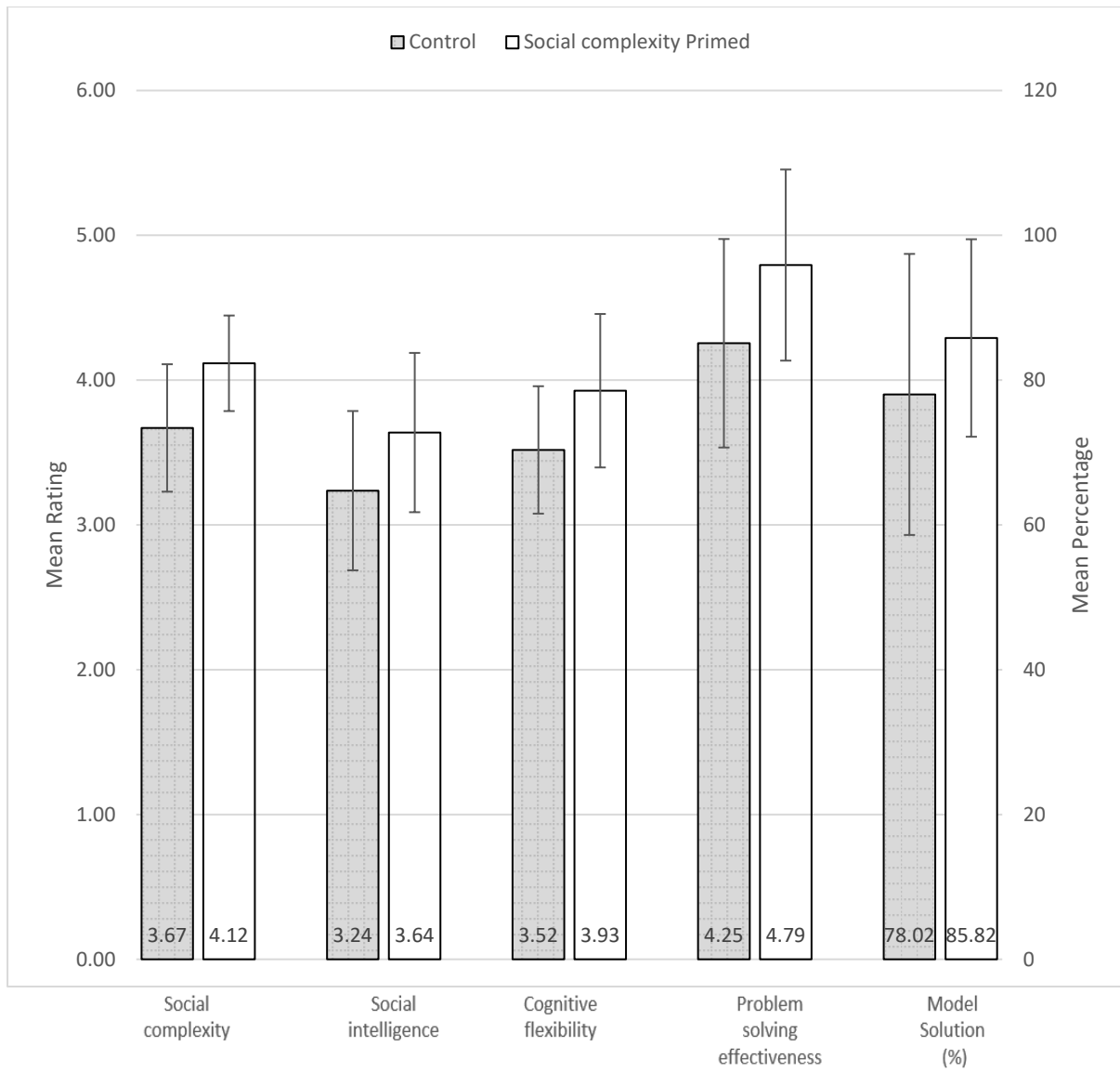
in Study 3A.

Figure 6. Dual pathways mediation model with standardized coefficients in Study 3A.

Note. All paths were controlling for age and gender with 1,000 bootstrap sampling.

Dashed lines represent non-significant relationships (*ps* >.05).

* *p* < .05, ** *p* < .01, *** *p* < .001.

Figure 7. Mean ratings and percentages of social complexity, social intelligence, cognitive

flexibility, problem solving effectiveness and model solutions across experimental conditions
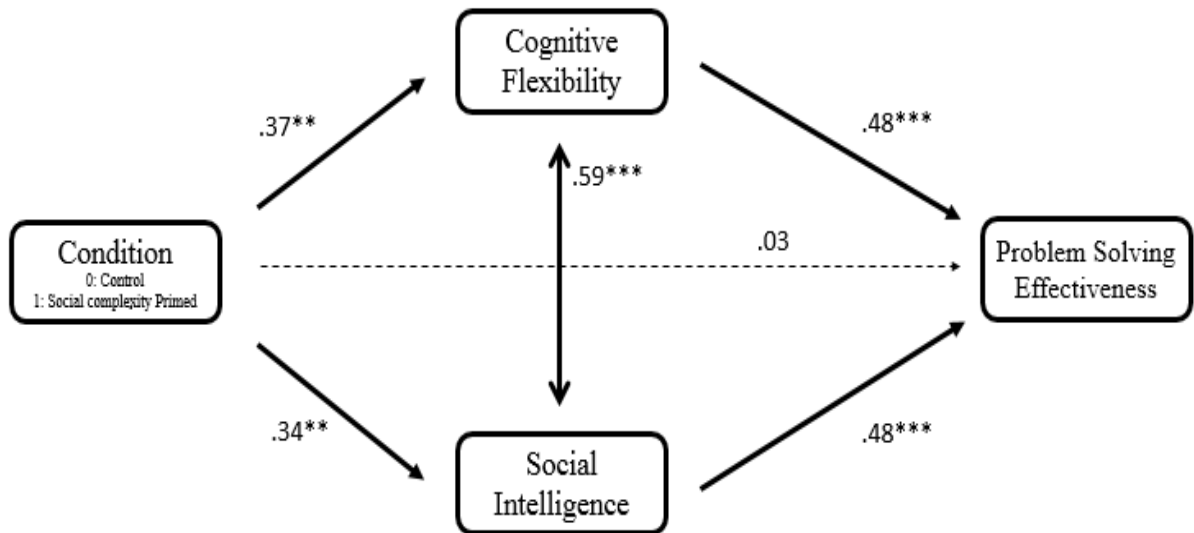
in Study 3B.

Figure 8. Dual pathways mediation model with standardized coefficients in Study 3B.

Note. All paths were controlling for age and gender with 1,000 bootstrap sampling.

Dashed lines represent non-significant relationships (*ps* >.05).

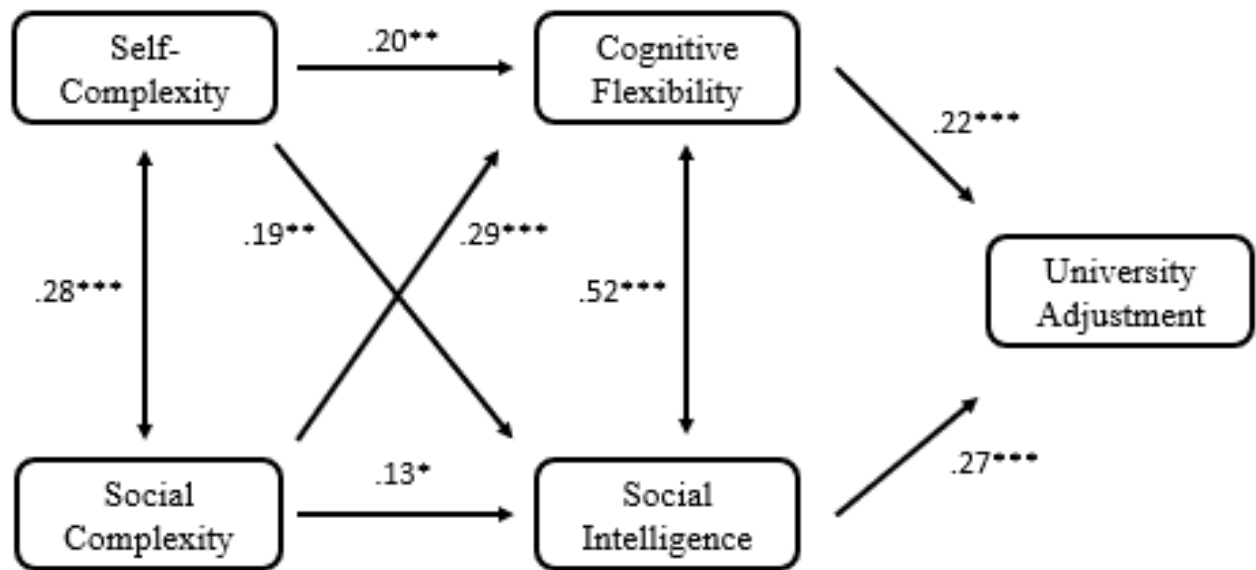* *p* < .05, ** *p* < .01, *** *p* < .001.

Figure 9. Dual pathways mediation model with standardized coefficients in Study 4.

Note. All paths were controlling for age and gender with 1,000 bootstrap sampling. For the sake of simplicity, the non-significant direct effects from self-complexity and social complexity to univesrity adjustment were not indicated.

χ2 (4) = 6.37, p = .16, CFI = .99, NNFI = .97, RMSEA = .04, SRMR = .03.

* *p* < .05, ** *p* < .01, *** *p* < .001.
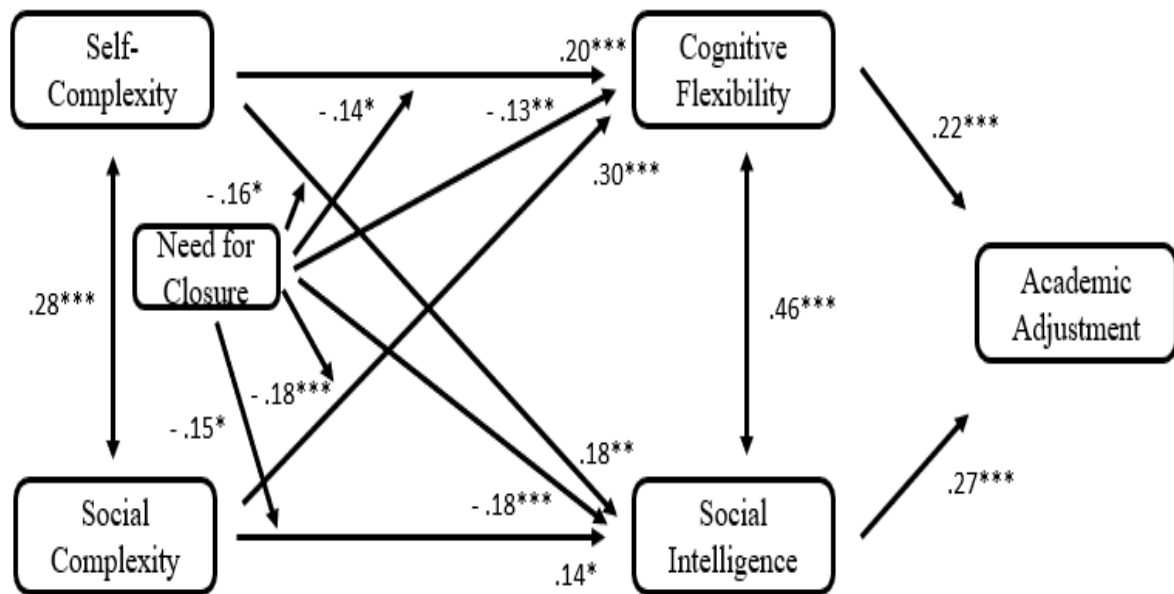
Figure 10. Dual pathways moderated mediation model with standardized coefficients in

Study 4.

Note. All paths were controlling for age and gender with 1,000 bootstrap sampling. For the

sake of simplicity, the non-significant direct effects from self-complexity and social

complexity to univesrity adjustment were not indicated.

$\chi 2$ (13) = 13.77, p = .39, CFI = .10, NNFI = .10, RMSEA = .01, SRMR = .03.

* *p* < .05, ** *p* < .01, *** *p* < .001.

Table 1

Descriptive Statistics and Bivariate Correlations among Measures for Hong Kong Community Adults in Study 1

	Study 1 ($n = 106$)					
	Mean (*SD*)	1	2	3	4	5
1 Social Complexity	3.98 (0.42)	-	.24*	.32**	.39***	.21*
2 Self Complexity	4.64 (0.83)		-	.32**	.34***	.27**
3 Social Intelligence	3.20 (0.38)			-	.51***	.38***
4 Cognitive Flexibility	3.56 (0.37)				-	.44***
5 Job Satisfaction	4.50 (1.10)					-

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

Table 2

Descriptive Statistics and Bivariate Correlations among Measures for Mainland Chinese Students in Study 2

	Mean (SD)	1	2	3	4	5	6	7	8	9	10	11	12
						Study 2 (*n* = 69)							
1 T1 Social Complexity	4.09 (0.44)	-	.33**	.35**	.52***	.36**	.41***	.58***	.36**	.47***	.52***	.38**	.41**
2 T1 Self Complexity	4.58 (0.93)		-	.27*	.33**	.51***	.26*	.30*	.52***	.43***	.39**	.41**	.23†
3 T1 Social Intelligence	3.23 (0.46)			-	.76***	.42***	.50***	.26*	.22†	.69***	.58***	.51***	.56***
4 T1 Cognitive Flexibility	3.65 (0.42)				-	.40**	.58***	.43***	.30*	.61***	.68***	.56***	.57***
5 T1 Life Satisfaction	4.38 (1.12)					-	.49***	.26*	.25*	.39**	.40**	.47***	.34**
6 T1 Self-Esteem	3.73 (0.61)						-	.39**	.28*	.48***	.52***	.44***	.66***
7 T2 Social Complexity	3.98 (0.59)							-	.50***	.37**	.58***	.43***	.45***
8 T2 Self-Complexity	4.59 (1.19)								-	.43***	.46***	.51***	.32**
9 T2 Social Intelligence	3.22 (0.50)									-	.73***	.58***	.62***
10 T2 Cognitive Flexibility	3.52 (0.39)										-	.61***	.65***
11 T2 Life Satisfaction	4.21 (1.18)											-	.53***
12 T2 Self-Esteem	3.51 (0.59)												-

Note. T1: Measures at Time 1. T2: Measures at Time 2. † *p* < .07, * *p* < .05, ** *p* < .01, *** *p* < .001.

Table 3

Descriptive Statistics and Bivariate Correlations among Measures for Chinese Students in Study 4

Study 3 (n = 363)

		Mean	(SD)	1	2	3	4	5	6
1.	Social complexity	4.04	(0.40)	-	.28***	.17***	.34***	.17**	.04
2.	Self-complexity	4.87	(0.74)		-	.22***	.28***	.19***	.06
3.	Social intelligence	3.17	(0.36)			-	.56***	.42***	-.21***
4.	Cognitive flexibility	3.47	(0.34)				-	.41***	-.17**
5.	Academic & social adjustment	4.33	(0.85)					-	-.03
6.	Need for Closure	4.09	(0.52)						-

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