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Singapore Management University, laysee.ong.2010@phdps.smu.edu.sg

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I need to be in control:

Motivations to compensate personal control threat through hierarchy endorsement
among individuals with low vs. high relational mobility

ONG LAY SEE

SINGAPORE MANAGEMENT UNIVERSITY

2015

I need to be in control:
Motivations to compensate personal control threat through hierarchy endorsement
among individuals with low vs. high relational mobility

by
Ong Lay See

Submitted to School of Social Sciences, in partial fulfillment of the requirements for
the Degree of Doctor of Philosophy in Psychology

Dissertation Committee:

Angela Leung (Supervisor/Chair)
Associate Professor of Psychology
Singapore Management University

Cheng Chi-Ying
Assistant Professor of Psychology
Singapore Management University

Ivy Lau
Assistant Professor of Psychology (Education)
Singapore Management University

Chi-yue Chiu
Dean, Faculty of Social Science
Choh-Ming Li Professor of Psychology
Chinese University of Hong Kong

Singapore Management University
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ABSTRACT

Recent research on compensatory control indicate a motivation seek out external sources of control (e.g., hierarchical structures) when subjective control is threatened. As exiting/formation of interpersonal relationships within low relational mobility environments is likely to be beyond personal choice and may threaten subjective control, three studies were conducted to investigate whether the compensatory control account could explain the negative relationship found between hierarchy endorsement and low relational mobility.

Study 1 provided initial evidence for the link; low personal-low environmental mobility individuals (vs. high personal-high environment mobility participants) were more likely to indicate higher internal control when they had higher (.vs lower) hierarchy endorsement. Study 2 and Study 3 extended Study 1 by showing (a) the different patterns of perceived internal control gain among high and low relational mobility individuals after hierarchy exposure (Study 2), and (b) how a macro-level threat (i.e., system threat) moderates the compensatory control phenomenon among high and low relational mobility individuals (Study 3). Altogether, the studies inform us of how social ecology and individual experiences may interact to influence the individual psyche.

Keywords: Relational mobility, Hierarchy, Socio-ecological Psychology, Compensatory Control Theory

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DEDICATION

This dissertation is dedicated to the Lord Jesus Christ.

TO GOD BE THE GLORY.

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CHAPTER ONE

INTRODUCTION

“Hence it is evident that the state is a creation of nature, and that man is by nature a political animal. And he who by nature and not by mere accident is without a state, is either a bad man or above humanity; he is like the "Tribeless, lawless, hearthless one," whom Homer denounces... he who is unable to live in society, or who has no need because he is sufficient for himself, must be either a beast or a god: he is no part of a state.”

– Aristotle (Politics, c. 350 B.C.)

Being embedded within interpersonal environments is an important characteristic of being human (Aristotle, 350 B.C./1885), as human beings require the formation of social relationships to survive healthily (e.g., Cohen, 2004; Uchino, Cacioppo, & Kiecolt-Glaser, 1996). The interpersonal environment forms part of the natural and social habitats of humans, along with the physical, economic, and political environments. These environments can be understood as the social ecology within which an individual is embedded (Oishi, 2014).

Understanding how the social ecology and individuals define each other forms the central focus of socio-ecological psychology (Oishi & Graham, 2010). In this approach, researchers seek to understand and predict how an individual thinks and behaves by studying the social ecology that he/she is embedded in. For example, the types of rules and incentive payoffs form part of the social ecological structure that individuals have learned to adapt to in order to organize their everyday social transactions (Yamagishi, 2011; Yuki & Schug, 2012).

Extant research has provided empirical evidence demonstrating the impact of social ecology on individuals in various domains. For example, Oishi, Schimmack, and Diener (2012) found that societies with more progressive taxation policies (i.e., policies supporting redistribution of wealth) are more likely to have higher subjective well-being. This relationship was mediated by people's satisfaction with public and common goods (e.g., public transportation system). Talhelm and colleagues (2014) showed that thinking styles within China could be explained by agricultural history. As rice farming requires more manpower and the coordination of water resource, people from rice planting regions were found to be more holistic in their thinking and more interdependent as compared to those from wheat planting regions.

Interestingly, Bahns, Pickett, and Crandall (2012) found that the size of college campus matters in determining whether people are more likely to have friends with greater similarity to the self or not. Specifically, larger campuses with its larger student bodies results in a larger pool of available friendship choices, creating more opportunities for its members to make friends and yielding friendships high in similarity. In another research, Putnam (2007) showed that residents from heterogeneous American cities are less trusting of people in general, as compared to residents from homogeneous American cities. He theorized that heterogeneous cities encourage its people to "hunker down" and keep to themselves more because the presence of dissimilar people increases feelings of uncertainty. Finally, Gelfand and her colleagues (2011) theorized that societies that faced many (few) threats were expected to have stronger (weaker) norms and lower (higher) tolerance towards deviant behaviors. This is because tighter control through norms and punishment

ensures better social coordination and social order to effectively deal with these threats. Across 33 nations, they found that a society's history of threats, which could be either ecological (e.g., disease prevalence), or human-created threats (e.g., territorial threats), predicts its level of tightness or looseness of cultural norms.

Together, these findings illustrate the power of social ecology in shaping individuals' mind and behavior. Given a particular setting or condition of the social ecology, an incentive structure is set up such that it shapes individuals towards adopting certain behaviors, thoughts, and emotions that are ecologically wise (see Yamagishi, 2011).

In this paper, I will focus on the interpersonal environment of the social ecology through the study of relational mobility. Briefly, relational mobility refers to the level of opportunities of exiting old and building new interpersonal relationships that an environment affords individuals. Specifically, I hypothesize that less relationship building opportunity at lower relational mobility environments threatens individuals' sense of personal control because the formation of interpersonal relationships is likely to be beyond personal choice (Yuki & Schug, 2012). Based on the compensatory control theory (Kay, Gaucher, Napier, Callan, & Laurin, 2008), I further hypothesize that this threatened sense of personal control will lead to higher levels of endorsement of hierarchy as hierarchy's structural stability is presumed to be able to restore a higher sense of personal control.

CHAPTER TWO

THE STUDY OF RELATIONAL MOBILITY: AN ECOLOGICAL FACTOR

According to Yuki and colleagues (2007), relational mobility refers to “*the amount of opportunities people have in a given society or social context to select new relationship partners when necessary*” (p. 1). The Relational Mobility Scale developed by Yuki and colleagues (2007) measures individuals’ perception of how much opportunity people in their immediate environment have to exit established social relationships and/or to form new ones when desired.

Social ecologies with higher relational mobility afford individuals more opportunities to find new acquaintances, form new relationships, and leave existing social groups or relationships that are no longer beneficial (Oishi, Schug, Yuki, & Axt, 2015). In other words, relationships formed are generally based on personal preferences of individuals themselves and of their potential relationship partners (i.e., whether others like you enough). There is a ‘free market’ of interpersonal relationships in high relational mobility ecologies (Yuki, Sato, Takemura, & Oishi, 2013).

Contrastingly, social ecologies with lower relational mobility tend to encourage the forming of relationships due to structural and group membership considerations (e.g., pre-existing social networks), and not by personal choice. Unlike the ‘free market,’ transient nature of interpersonal relationships in high relational mobility ecologies, relationships within low relational mobility ecologies are stable and bound by obligations, and most likely prescribed by existing

interpersonal structures (Oishi et al., 2015; Yamagishi, Jin, & Miller, 1998; Yuki, 2003). Crucially, relational mobility is not about random or coerced relational movements but refers specifically to the level of opportunities or choices to form potential relationships that the environment affords the individuals (Oishi et al., 2015; Schug, Yuki, Horikawa, & Takemura, 2009; Yuki & Schug, 2012). In other words, across high and low relational mobility environments, individuals experience different levels of difficulty or ease should they choose to move from one relationship or social network to the next.

Existing research demonstrates that this socio-ecological variable matters when studying characteristics of interpersonal relationships. Schug and colleagues (2009) found that friendships within high relational mobility environments tend to be higher in self-other similarity as compared to low relational mobility environments (see also Bahns et al., 2012; Heine & Renshaw, 2002). However, evidence suggests that this difference is not due to different preferences for the degree of self-friend similarity. The preference for similar friends does not differ across high and low mobility environments, as people from both environments equally prefer similar friends. Rather, it is the availability of potential opportunity of making new friends that determines the likelihood of whether the friends are similar to the self or not.

The work by Adams and Plaut (2003) provided indirect evidence of the effect of relational mobility on interpersonal relationship characteristics. The researchers theorized two possible forms of constructions of reality: atomistic-independent construction and relational-interdependent construction. Individuals with atomistic-independent construction of reality are characterized to have the freedom to make as

many friends as one possibly can because agency is assumed to be within the individual. In contrast, individuals with relational-interdependent construction of reality are characterized to have less freedom to form new relationships because an authority-ranked interdependent environment is assumed to exist. Therefore, relational mobility can be understood as a result of the self's and others' construction of reality. Indeed, the researchers found that Ghanaians, who have the relational-interdependent construction of reality, have smaller social networks as compared to the Americans. Importantly, they are also less likely to have friendships that are voluntary in nature and are more obligated to help their friends as compared to the Americans.

Accordingly, this difference in relational mobility translates into many tangible relationship outcomes (e.g., Komatsu, Yuki, Barclay, & Mifune, 2012; Schug, et al., 2009; Schug, et al., 2010; Takemura, 2014; Wang, & Leung, 2010; Wang, Leung, See, & Gao, 2011; Yamagishi, Hashimoto, & Schug, 2008). For example, Komatsu and colleagues (2012) found that preference for over-cooperators was moderated by level of relational mobility in the environment such that they were more preferred by people in high relational mobility environments as compared to those in low relational mobility environments. As over-cooperation signals high resources (e.g., money, skills, social capital), the researchers theorized that high relational mobility people welcome over-cooperators because it means that others are able to tap into the over-cooperator's resources. However, low relational mobility people did not show the same enthusiasm because high resources of over-cooperators magnify status differences between the over-cooperator and others. Without the

ability to leave existing relationships readily, the presence of magnified status differences increases competition among individuals trapped in low mobility situations (see also Yamagishi, 2011).

In terms of the self, Takemura (2014) theorized that in a high relational mobility environment (open and free but competitive) where individuals want to and are able to seek out better relationship partners, a strategy is to look within oneself and develop his/her own uniqueness as “selling points”. Contrastingly, emphasis on being unique within low relational mobility environment (fixed, closed, and exclusive) is a problem because it may lead one to deviate from norms and potentially be shunned by fellow peers. Indeed, across three studies, Takemura found that (a) unique individuals are viewed more (less) favorably as a friend by high (low) relational mobility societies, and (2) being unique is an adaptive strategy within high relational mobility societies as unique individuals are more likely to have high life satisfaction, but not within low relational mobility societies.

Personal Relational Mobility: Individual Variability within an Ecology

Although relational mobility is conceptually regarded as an ecological-level factor (i.e., does the existing social ecology afford its people high or low opportunities to form social relationships?), there may be two levels of mobility – personal and environmental – that interact to influence a person (Oishi et al., 2015).

While the current relational mobility measure taps into the perceived opportunity of general others in the surrounding environment to move from one relationship to another, it is possible to expect individual differences in terms of experienced mobility. In their proposed CuPS (Culture X Person X Situation)

approach, Leung and Cohen (2011) showed a comprehensive picture that how people behave is dependent on the culture they belong to, the level of personal endorsement of the culture, and the type of situational press presented in the context. Accordingly, it might be possible to expect that the relational mobility experienced by an individual in his or her immediate friendship networks (i.e., personal relational mobility) varies from his/her perceived relational mobility that is characteristic of the general others embedded in the larger environment (i.e., environmental relational mobility). Specifically, a Person X Ecology interaction might emerge such that how an individual behaves or thinks is dependent on both the level of relational mobility that exists in the larger environment and the individual's actual experience of relational mobility.

Building on Oishi and colleagues (2015)'s brief mention, potential within-ecology variability could exist. For example, within East Asian cultures that are relatively lower in environmental relational mobility, it is possible that those working in professions that require much socializing and networking (e.g., public relations specialists, event planners) would perceive themselves as having higher relational mobility as compared to other people in their larger surrounding environment (i.e., those do not work in the same profession; see also Sato & Yuki, 2014; Yuki et al., 2013). Alternatively, it is possible to expect that low extraverted or high introverted individuals would perceive themselves as having lower relational mobility as compared to others in their immediate environment (e.g., introverts within America). For example, Lucas and colleagues (2008) found that individuals high in extraversion engaged in more social activities (e.g., helping others, being at a party or a bar) as

compared to those low in extraversion. The difference in experiences may influence the perception of potential relationship opportunities for the self and others, resulting in a difference in perceived personal relational mobility. Subsequently, these differences could translate into individual differences in behavior and/or beliefs endorsed within the same environment.

Although not always explicitly stated as a variable in its own right, personal relational mobility level has been studied in several existing relational mobility research. For example, Schug and colleagues (2010; Study 2) captured personal relational mobility by asking participants to report the number of new friends they had made in the recent months. In another study, Yuki and colleagues (2013) manipulated personal relational mobility by asking participants to either recall their past experience of speaking to a stranger or speaking to a family member. Similar to Schug and colleagues (2010), Sato and Yuki (2014) measured the number of new friends made by first- and second-year university students. Their analysis showed a weak correlation between the number of friends made and perceived environmental relational mobility. Finally, Falk and colleagues (2009) also studied personal relational mobility indirectly. Utilizing the Relational Mobility Scale by Yuki and colleagues (2007), they showed that Asian Canadians and Euro-Canadians perceived different levels of environmental relational mobility, even though they were within the same university environment. It is possible to understand the discrepancy between Asian Canadians and Euro-Canadians as a reflection of their personal relational mobility.

Across these studies, the researchers had measured personal relational mobility and their results were coherent with environmental relational mobility and their variables of interest, thus subsuming the findings on personal relational mobility under environmental relational mobility¹. While the effects of environmental relational mobility and personal relational mobility appear to be compatible, these findings also suggest that at a given level of relational mobility within the environment, there could be room for variation in personal relational mobility. For example, both Sato and Yuki (2014), and Falk and colleagues (2009) found within-environment variability in their participants' perception of relational mobility of the immediate environment. This variability indicates that it is possible for the level of experienced personal relational mobility to affect judgment of environmental relational mobility.

One possible way to understand personal and environmental relational mobility from the socio-ecological perspective is to envision dual levels of relational mobility embodied by individuals. The relational mobility an individual experiences (e.g., potential acquaintances, existing relationships) forms the proximal immediate environment (Figure 1), while the relational mobility that an individual perceives surrounding others to experience (e.g., strangers, friends, family members, neighbors) forms the more distal immediate environment (Figure 2).

¹This is most likely driven by the fact that relational mobility has been seen solely as an ecological-level variable and not an individual-level variable (Oishi et al., 2015).

CHAPTER THREE

RELATIONAL MOBILITY AND EXPERIENCED CONSTRAINTS

Since relational mobility taps into the likelihood of personal choice in determining relationship outcomes, it is possible to understand different levels of relational mobility as exerting different levels of constraints on the individuals in the interpersonal context. Here, personal control can be understood as the self-determination of outcomes in life's domains, with one domain pertaining to interpersonal relations (Rotter, 1966; Spittal, Siegert, McClure, & Walkey, 2002). If outcomes are due to causal factors originating within the individual, these outcomes are seen as controllable (e.g., personal choice of relationships, personal preference for engaging in certain behaviors). If outcomes are due to causal factors originating outside the individual (e.g., pre-existing social networks, socially sanctioned behaviors), these outcomes are seen as uncontrollable and threatening personal control. Based on Skinner (1996)'s paper on the construct of control, experienced constraints can be seen as contributing to both experienced control and subjective control of the individual. Relatedly, relational mobility can be seen as an antecedent of control since it creates the conditions, which can influence an individual's experienced and subjective control. Potentially, experienced constraints may arise from two areas.

First, constraints may be felt at making choices of building new relationships. Specifically, low relational mobility people may experience higher constraints in the context of interpersonal relationships due to the lower freedom in negotiating their

interpersonal relationships. Since relationships are less likely to be outcomes of personal choices but of pre-existing structures (e.g., social networks, group membership; Oishi et al., 2015; Yuki & Schug, 2012), the limitations imposed upon the individuals by environmental and structural factors on the seeking for and/or leaving of relationships reduce their sense of personal control. Conversely, people in high relational mobility environments may experience fewer constraints when dealing with interpersonal relationships because relationship outcomes are primarily based on personal choices. Compared to the low relational mobility people, individuals in high relational mobility environments should experience higher personal control over relationship outcomes.

Second, constraints may be felt at making choices of leaving existing relationships (i.e., how “stuck” a person is to the interpersonal network). Within high relational mobility environments, the ability to leave unfavorable existing relationships is higher because these relationships were formed based on personal choices. However, within low relational mobility environments, the ability to leave unfavorable existing relationships is lower because these relationships are obligated and fixed. Thus, individuals within high relational mobility environments should feel a higher sense of control over the exiting of their interpersonal relationships.

Because of the experienced constraints due to relational mobility levels, its consequences become most apparent during interpersonal interactions with others, such as fear of social sanction and experience of social pressure and coercion. I elaborate below two categories of consequences that people within low relational mobility might experience: (a) influence of (imaginary) relational partners on own

behavior, and (b) heightened sensitivity toward potential social transgressions by the self.

Influence of Others Threatens Personal Control

The effects of relational mobility constraint can be observed through people's behavioral decisions that involve others, whether imaginary or real. In the original study, Kim and Markus (1999) conducted a cross-cultural study involving pen choice. They had participants fill out a simple survey and select a pen from a cup of pens as a token of appreciation. They found that (Western) East Asian participants were (less) more likely to select the colored pen, the majority pen. The researchers attributed this choice as reflecting the participants' personal preferences.

However, Yamagishi and colleagues (2008) found that the Japanese would show the same preference tendencies as the Americans towards selecting a unique pen – only if the situation made potential negative evaluations unlikely. In other words, unlike what Kim and Markus (1999) theorized about internalized preferences, the Japanese participants' act of picking the non-unique pen was not simply a reflection of their liking of the pen but a socially wise decision – a behavioral strategy to prevent their choice from interfering with the choice of others so that others will not view them negatively. Subsequent studies by Hashimoto, Li, and Yamagishi (2011) found that the socially prudent (i.e., those who are chronically concerned about how others perceive and evaluate them) participants were the ones who used the behavioral strategy of picking the majority pen (see also Yamagishi, Hashimoto, Li, & Schug, 2012).

To elaborate, from the relational mobility perspective, the rationale of the Japanese (with generally low relational mobility) making the behavioral choice of selecting the majority pen is based on the calculated decision to avoid incurring the wrath of others. Since relationships are fixed and the opportunity to replace unbeneficial relationships is low, social transgressions could mean (a) potential social exclusion, and (b) having to live as ‘marked’ by others who know about their social transgression. Findings from these studies indicate the influence of (imaginary) others on low relational mobility individuals when they engage in behavioral decision-making.

Importantly, this influence from others on behavior is not unwarranted. Extant research indicates that low relational mobility group members actively regulate behaviors of others. People within low relational mobility environments show a greater likelihood of punishing social transgressors as compared to individuals within high relational mobility environments (Wang & Leung, 2010). Specifically, low relational mobility individuals punish and reward other group members in the same frequency, while high relational mobility individuals engage in reward behaviors more frequently than punishment behaviors toward others. The researchers posit that transgressors within low relational mobility environments need to be stopped for the betterment of the group and to prevent themselves from suffering the negative consequences of the transgressors’ actions. However, people within high relational mobility environments can choose to distance themselves away from the transgressors and their negative consequences instead of incurring a cost to punish them.

Replicating Wang and Leung (2010)'s finding, Whitson and colleagues (2014) found that when the mobility level of the environment (e.g., job market) was high, individuals tend to exclude transgressors (e.g., dishonest people) more than when the environment mobility level is low. However, the level of social inclusion was not affected by perceived mobility level. Crucially, it was the perceived difficulty of exclusion that mediated the relationship between perceived mobility in the environment and level of social exclusion.

Together, these findings indicate a strong influence of others on one's own behaviors within low relational mobility environments. In other words, there is a strong external source of control over one's actions and it harkens back to the idea of why social prudence is an ecologically wise strategy to be used by low relational mobility people (Hashimoto et al., 2011).

Influence of Self-Censorship Threatens Personal Control

In addition to the influence from others, individuals in low relational mobility environments may engage in self-censorship on their own behavior as part of being socially prudent. For example, Adams and Plaut (2003) found that the Ghanaian participants, who are low in relational mobility, were more likely to advocate caution towards friends, as compared to American participants (high relational mobility). Moreover, the Ghanaians judged people with many friends to be unwise. Similarly, Schug and colleagues (2010) found that low relational mobility individuals were less likely to use self-disclosure (i.e., revealing of own personal secrets to others) as a social device for maintaining relationships, as compared to their high relational mobility counterparts (see also Maier, Zhang, & Clark, 2013).

In a series of studies that investigated the relationship between social prudence and relational mobility more directly, Li and colleagues (2014) found that individuals in high relational mobility environments were more likely to show promotion-oriented relationship strategies (e.g., less cautious approach towards friendships, less concerned about enemyship, and an emphasis on emotional social support) as compared to individuals in low relational mobility environments.

Interestingly, this relationship between a cautious approach towards others and relational mobility can also be observed in the virtual world via social networking platforms (Thomson & Ito, 2012) and location-sharing preferences (Lin, Benisch, Sadeh, Niu, Hong, Lu, & Guo, 2013). Thomson and Ito (2012) found that Japanese tend to engage in less self-disclosure while on Mixi (a Japanese version of Facebook, which reflects a low relational mobility environment) as compared to being on Facebook (which reflects a high relational mobility environment). Similarly, Lin and colleagues (2013) found that the Chinese were less willing to share their locations to their close friends and family as compared to their American counterparts, but were more willing to share their locations with their university community than the Americans. Therefore, there is lower trust and higher caution associated with low relational mobility environments (Adams & Plaut, 2003; Yamagishi, 1988a; Yamagishi, 1988b; Yamagishi, Cook, & Watabe, 1998; Yamagishi & Yamagishi, 1994).

When social prudence is chronically engaged, one possible outcome is to develop higher sensitivity towards potential transgressions, to internalize the control of others over the self. For example, proneness to shame could serve a functional role

in deterring individuals from potential actions that could result in social devaluation. Sznycer and colleagues (2013) found that Japanese (with lower relational mobility) showed greater proneness to shame towards a close friend as compared to people in the U.S. and the U.K (with higher relational mobility). Importantly, they found that relational mobility partially mediated this relationship between cultural differences and proneness to shame towards a close friend. However, the Japanese and Americans did not differ in their proneness to shame towards a stranger.

Likewise, sensitivity towards feedback or information that is related to potential social rejection is effective in protecting individuals from being socially excluded. Sato and colleagues (2014) found that individuals within low relational mobility environments were more sensitive to information related to potential social rejection as compared to their high relational mobility environment counterparts. Like Sznycer and colleagues (2013), Sato and colleagues (2014) found a partial mediation of relational mobility on the relationship between cultural differences and rejection sensitivities. In sum, these findings suggest that the higher social constraint faced by individuals in a low relational mobility environment results in social adaptations of an increased sensitivity towards information that indicates an individual's social performance or standing (see also Leary, Tambor, Terdal, & Downs, 1995).

Altogether, these two categories of consequences represent potential mediators for the relationship between relational mobility and sense of personal control. Future studies can seek to explore this possibility so as to understand the link between relational mobility and sense of personal control better.

Person X Ecology in Relational Mobility: Understanding the Constraints

As described earlier, relational mobility may threaten a person's sense of control through the constraints it exerts upon the individual. Initial evidence supports this link: People who were primed with low relational mobility environment were more likely to indicate that their life was dictated by powerful others than those primed with high relational mobility environment (San Martin, 2014).

Building on this finding, I theorize that threat to sense of personal control not only occurs under low environmental relational mobility but under low personal relational mobility as well. Individual-based factors (e.g., personality, job scope) may create the proximal immediate interpersonal environment, heightening or lowering potential opportunities of the individuals to seek for or leave old relationships. The experience felt by the individuals within the proximal immediate environment may serve to threaten the sense of personal control when personal relational mobility is low, in addition to the level of constraints imposed by the distal immediate environment.

As personal relational mobility can vary within an environment (e.g., Schug et al., 2010; Sato & Yuki, 2014), the Person X Ecology approach specifies four expected groups of individuals:

	High Environment Relational Mobility	Low Environment Relational Mobility
High Personal Relational Mobility	<p>High personal relational mobility people within high relational mobility environments.</p> <p>E.g., Public relations specialists working in America</p>	<p>High personal relational mobility people within low relational mobility environments.</p> <p>E.g., Public relations specialists working in Japan</p>
Low Personal Relational Mobility	<p>Low personal relational mobility people within high relational mobility environments.</p> <p>E.g., Computer programmers working in American corporations</p>	<p>Low personal relational mobility people within low relational mobility environments.</p> <p>E.g., Computer programmers working in Japanese corporations</p>

High Personal Relational Mobility X High Environmental Relational Mobility

Individuals in this category experience high personal relational mobility and perceive the environment to have high relational mobility. In other words, both the proximal immediate environment and distal immediate environment have a 'free market' of interpersonal relationships. This category of individuals should be least constrained in the context of interpersonal relationships and thus should not suffer a sense of personal control threat.

High Personal Relational Mobility X Low Environmental Relational Mobility

Individuals in this category have high personal relational mobility but are embedded within a low relational mobility environment. In other words, proximal immediate environment experienced by the individuals is highly mobile. However, despite some level of autonomy experienced by the individuals, the distal immediate environment has low mobility, indicating that there are some constraints exerted on its members, including the referent individual. For example, a public relations specialist has high personal relational mobility, as her job requires her to meet new people and create new contacts. However, she may find it difficult to broaden the boundaries of her proximal immediate environment (e.g., unable to move beyond contacts of current industry into other industries), even if she sees the need to. Indeed, research by Oigihara and Uchida (2014) hints that even when individuals choose to create a mobile proximal environment, they may still be constrained by the distal environment in making potential relationship choices. Across two studies on interpersonal relationships, they found that Japanese participants who held more individualistic values reported fewer close friends and lower subjective well-being as compared to those who held more collectivistic values (see also Takemura, 2014). Because individualistic values emphasize on independence and personal choice, individuals holding these values may have chosen to distance themselves away from existing rule-based relationships. This distancing, which could have destroyed existing relationships, is reflected in the lower number of close friends as compared to those with collectivistic values. The observed lower number of close friends also suggests that Japanese with individualistic values face more constraints in forming

new relationships. As it is beneficial for individuals to seek better relationships (Takemura, 2014), if such constraints do not exist, there should not be a difference in number of friends between individualistic and collectivistic Japanese.

Also, since existing subjective well-being research indicates that quantity of friends predicts higher subjective well-being among East Asians (e.g., Li & Cheng, 2015; Philips, Siu, Yeh, & Cheng, 2008), the lower subjective well-being provides another signal that individualistic Japanese face constraints in the distal immediate environment. These Japanese want friends but are unable to form the new relationships as they would like to and this affects their subjective well-being. Indeed, Oighara and Uchida (2014) found that the relationship between individualistic orientation and subjective well-being is mediated by the number of close friends individuals have.

Low Personal Relational Mobility X High Environmental Relational Mobility

Contrasting from individuals with high personal relational mobility embedded within low relational mobility environments, individuals in this category experience low relational mobility within their proximal immediate environment but observe high relational mobility in their distal immediate environment. It is possible to understand that these individuals are constrained by individual-level factors at the proximal immediate environment, which prevents them from taking full advantage of the opportunities afforded by the distal environment.

An example of this group of individuals can be found in Zhang and Li (2014) who studied whether immigrants would change their psychological orientations after moving to a new culture. In particular, they examined relational mobility perceptions

of Euro-Canadians and Asian-Canadians within the same environment (i.e., a Canadian university) (see also Falk et al., 2009). As the school environment is the same, the relational mobility of the environment should remain roughly the same for all students. However, they found that Asian-Canadian students perceived a lower level of environmental relational mobility in the school as compared to the Euro-Canadian students. Importantly, they found that there was a positive relationship between perceived environmental relational mobility of the school and the Asian-Canadian students' socio-cultural adaptation, and a positive relationship between perceived environmental relational mobility of the school and their age of immigration. Thus, it can be inferred that how likely Asian-Canadian students are able to accurately perceive the high relational mobility of the school was related to their individual ability to utilize the opportunities provided by the environment, that is, by overcoming socio-cultural adaptation problems.

Low Personal Relational Mobility X Low Environmental Relational Mobility

Finally, this group of individuals experience low relational mobility in their proximal immediate environment and perceive low relational mobility in the distal immediate environment. Constraints with regards to interpersonal relationships is experienced from two sources: (1) the larger environmental factors, and (2) individual-level factors. It is possible that this group of individuals chronically experience threatened personal control in the interpersonal context.

It is important to note that these categories are relative and are based on individual perceptions. It is possible to have a gap between objective relational mobility and subjective relational mobility for both the environmental and personal

levels. It is also possible that others do not share the same perception as the referent individual (e.g., others regarding an individual who thinks that he/she has low personal relational mobility as having high personal relational mobility). However, if the individual feels constrained and perceives that his/her sense of personal control is threatened in the context of interpersonal relationships, the psychological implications render the subjective relational mobility to be more important than objective relational mobility.

CHAPTER FOUR

COMPENSATING THE LOSS OF CONTROL: REACTING TO EXPERIENCED CONSTRAINTS

What happens when an individual's sense of personal control is threatened? Existing literature indicates that when personal control is threatened or diminished, individuals would increase their endorsement of or belief in stable external systems so as to preserve their sense of a controlled world (e.g., Kay et al., 2008; Kay, Whitson, Gaucher, & Galinsky, 2009). This general tendency is encapsulated by the compensatory control theory. Central to this tendency is people's motivation to perceive that they have personal control over their immediate environment and outcomes (Kelly, 1955), thus reducing the perception of a random, uncontrollable world (Kay et al., 2008; Kruglanski & Webster, 1996). The theory predicts that individuals will support or endorse external structures or institutions, which are recognized to be structured and orderly, so as to maintain their sense of control.

Although compensatory control theory initially did not incorporate the idea that people could regain their personal control via external sources of control (Kay et al., 2008), recent research has started to acknowledge that external sources of control can lead to instilling confidence within individuals and facilitating actions (Kay, Sullivan, & Landau, 2015). Indeed, Kay and colleagues (2014) found that when participants were exposed to orderly and stable events (e.g., the earth's orbit around the sun), they were more motivated to pursue their important goal. The researchers theorized that exposure to structure had somehow reassured the participants that individual efforts and outcomes were tightly linked. Relatedly, Rothschild and

colleagues (2012) found that when participants faced a significant negative outcome that had unknown causes (i.e., experiencing control threat), punishing a scapegoat led to an increase in perceived personal control (i.e., resuming personal efficacy over one's own life). Likewise, Friesen and colleagues (2014) showed that participants who worked in a structured, orderly environment (i.e., a hierarchical workplace with predictable structure) had higher personal efficacy as compared to those working in a disorderly environment (i.e., a hierarchical workplace without predictable structure). Together, these findings indicate that compensatory control theory also encompasses the notion supporting the restoration of personal sense of control through external sources of control (see also Sullivan, Landau, & Rothschild, 2010).

Across various types of external source of control, researchers in this area have found consistent empirical support for the theory of compensatory control. For example, Kay and colleagues (2008) found that when participants were tasked to recall a positive event in which they had no control over (vs. one that they had control over), participants were more likely to indicate that there was a presence of a controlling God. In this case, a controlling God, one that provides an external source of control, was seen as a compensatory tool used to re-establish the individuals' sense of control. Similarly, existing institutional systems such as the government or existing sociopolitical ideologies could also provide the same compensation for the loss of personal control. Goode and colleagues (2014) showed that participants, whose sense of personal control was threatened, were more likely to endorse meritocracy as compared to those with their personal control intact. The authors theorized that since meritocracy (a) gives a prescription of success and failure, and (b)

provides a description of success and failure for individuals within the society, endorsing the ideology would help bolster a threatened individual's sense of an orderly world because it provides order and structure by creating a predictable system for success and failure (see also Jost, Glaser, Kruglanski, & Sulloway, 2003).

Of interest, one of the external sources of control that individuals could use for compensation is hierarchy. Friesen and colleagues (2014) found that people tend to perceive hierarchies as being more structured and providing order as opposed to egalitarian structures. When the researchers threatened the participants' sense of personal control, they were more likely to (a) perceive that there was a hierarchical structure within ambiguous social scenarios, and (b) were more likely to endorse the presence of hierarchies within a workplace. The endorsement for hierarchy was further shown when the threatened participants preferred hierarchy-enhancing jobs, even when those jobs were low in power and status (e.g., advertising clerk, librarian's assistant).

Before I go further, it is important to recognize that this is a difference between being in control of things and maintaining a perception that things are being under control. Compensatory control theory concerns the maintenance of the latter perception. In other words, people are not expected to become in control of things after seeking external sources of control. Rather, they should only be more likely to perceive that things are under control. Similarly, the bolstering effect of the compensatory control theory on internal control only concerns the individual's perception that he/she has control over his/her life. It does not imply that the individual actually has control over his/her life.

The connection between hierarchy and lowered sense of personal control offers a novel theoretical basis of explaining why there was a consistent negative relationship between personal relational mobility and interpersonal hierarchy expectation across six studies I previously conducted. In order to generate stronger statistical evidence for this relationship, I conducted a meta-analysis on these six studies. In these studies, I used Schmid Mast (2005)'s Interpersonal Hierarchy Expectation (IHE) scale to measure the individuals' expectations of hierarchical structures within social relationships (e.g., "I feel more comfortable if I know the hierarchical structure of a group of people I am introduced to" and "If people work together on a task, one person is always taking over the lead."), which was presented with a 6-point Likert scale ranging from 1 (*disagree strongly*) to 6 (*agree strongly*). Personal relational mobility was measured with an adapted version of the original Relational Mobility Scale (e.g., "There are few opportunities for me to form new friendships" and "I have many chances to get to know other people."), with a 6-point Likert scale ranging from 1 (*disagree strongly*) to 6 (*agree strongly*). The meta-analysis revealed that for the relationship between personal relational mobility and interpersonal hierarchy expectation, the true effect size was $r = -.25$, which represented a small to medium relationship. The 95% confidence interval ranged from $-.42$ to $-.09$, indicating that the negative relationship between IHE and relational mobility was significantly different from zero. In other words, people with low (vs. high) personal relational mobility tend to expect the presence of hierarchy within interpersonal relationships.

Understanding this finding within the compensatory control theory perspective, it is possible to posit that hierarchy endorsement by low personal relational mobility people could be due to their chronic lowered sense of personal control given their experienced constraints in the proximal immediate environment. Since expecting hierarchy is a way for these people to restore their lowered personal sense of control, the heightened expectations of hierarchy present within interpersonal relationships may be indicative of the low sense of personal control experienced by low personal relational mobility people.

In addition to a threatened sense of control due to low mobility levels, feelings of uncertainty may arise when the environment (e.g., nations) is threatened as a whole. In their study on existential security (i.e., the level of protection an existing system provides an individual from a threatening and uncertain world) across 55 nations, Norris and Inglehart (2010) found that there was a positive relationship between lived poverty (i.e., how many times people live without a range of basic necessities during one year) and religiosity such that poorer developing countries were more likely to place religious values as a priority, as compared to more affluent developed countries. Unlike poorer nations, monetary resources of affluent nations are able to provide high levels of existential security to its people, reducing their need for other compensatory sources of control (e.g., religion). Additionally, the researchers also found that religious values had a strong positive relationship with security values; those who prioritized living in a secure, safe environment were more likely to regard religion as an important part of their lives. Thus, threats at the macro level (e.g., existing system's security) could reduce an individual's sense of control in an ordered world,

leading individuals to seek external sources of control regardless of their experienced mobility levels.

Overview of Present Research

The current thesis seeks to investigate the mechanism behind the relationship between relational mobility and hierarchy endorsement. Based on the compensatory control theory, I posit that the prior observed negative relationship between personal relational mobility and hierarchy expectation tendency is contributed by higher levels of experienced constraints by individuals with lower personal relational mobility. To the extent that hierarchy endorsement is a means through which individuals compensate their threatened sense of personal control, it follows that people with lower relational mobility (i.e., personal and environmental) are more likely to display greater hierarchy endorsement in an attempt to restore personal control over relationship-related outcomes.

The current research comprises of three studies. Study 1 serves to provide initial evidence of the interaction between personal and environmental relational mobility on sense of personal control and hierarchy endorsement by utilizing self-report measures. Based on the expected levels of constraints experienced by individuals who belong to the 2 (low vs. high personal relational mobility) X 2 (low vs. high environmental relational mobility) categorizations, I hypothesize that there will be an interaction between personal relational mobility and environmental relational mobility on perceived sense of control and endorsement of hierarchy. Specifically, (a) people with low personal relational mobility embedded within low relational mobility environments (low personal-low environmental mobility group),

(b) people with low personal relational mobility embedded within high relational mobility environments (low personal-high environmental mobility group), and (c) people with high personal relational mobility embedded within low relational mobility environments (high personal-low environmental mobility group) will show a lower sense of personal control and a higher endorsement of hierarchy, as compared to (d) people with high personal relational mobility embedded within high relational mobility environments (high personal-high environmental mobility group). In addition, I hypothesize that the high personal-low environmental mobility group will display higher personal control and lower endorsement of hierarchy than the low personal-low environmental mobility and the low personal-high environmental mobility groups. It is because their low relational mobility constraints only occur at the more distal immediate environment, allowing them to exert some level of control over their proximal environment. Finally, I hypothesize that the relationship between hierarchy endorsement, relational mobility, and sense of personal control will reflect the compensatory control theory such that low relational mobility people who endorse higher hierarchy will show higher sense of personal control.

Study 2 extends the findings by manipulating participants' engagement in a hierarchical structure and testing the change in levels of personal control before and after the experience of hierarchy. I hypothesize post-assessment of sense of personal control after hierarchy manipulation to be higher than pre-assessment. The compensatory control theory serves as the theoretical basis for this prediction as engagement with an external source of order and structure is presumed to increase one's sense of personal control.

Finally, Study 3 seeks to test the interaction between personal and environmental relational mobility on personal control when participants were manipulated to experience a situation where Singapore faces a high (vs. low) level of threat (i.e., system threat). By including a more macro-level threat into the study, I seek to test whether all-encompassing threats like system threat could override the threat effects of relational mobility on sense of personal control. I hypothesize that when the environment faces high system threat, all individuals within the environment will suffer a threatened sense of personal control and support hierarchy.

CHAPTER FIVE

STUDY 1

I conducted a self-report, online study to provide the first empirical evidence about the interaction between personal and environment relational mobility on the sense of personal control and hierarchy endorsement.

Method

Participants

75 undergraduate students were recruited (42 females; M age = 22.01, SD = 2.04) for this study. Participants received course credits for their participation.

Procedure and Measures

Participants completed a series of scales: Relational Mobility scale (measuring environmental relational mobility; Yuki et al., 2007), Personal Relational Mobility scale (measuring personal relational mobility; adapted from Yuki et al., 2007), Internality, Powerful Others, Chance Locus of Control sub-scales (Levenson, 1981), and Power Differential scale (Earley & Erez, 2007).

Relational Mobility scales. In this study, two levels of relational mobility were measured: (a) individuals' perception of the relational mobility of their immediate *environment* (environmental relational mobility), and (2) individuals' perception of their *personal* relational mobility level (personal relational mobility). To measure environmental relational mobility, the Relational Mobility Scale (RMS; Appendix A; Yuki et al., 2007) was used. This scale measures individuals'

perception of the level of mobility of the general others in their surrounding environment with 12 items (e.g., “There are few opportunities for these people to form new friendships”; Cronbach’s $\alpha = .67$), using a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). This provides a measure for the level of relational mobility within the individuals’ distal immediate environment.

To measure personal relational mobility, I modified the original RMS to create the Personal Relational Mobility scale (PRMS; Appendix B). PRMS is similar to the RMS except for the target of the relational mobility judgment. Instead of judging general others, participants judged their own relational mobility level (e.g., “There are few opportunities for me to form new friendships”; Cronbach’s $\alpha = .80$). This provides a measure for the level of relational mobility within the individuals’ proximal immediate environment.

Internality, Powerful Others, Chance Locus of Control subscales. Developed by Levenson (1981), this measure is made up of three independent subscales: Internality, Powerful Others, and Chance (IPC; Appendix C). Unlike the early Internal-External spectrum posited by Rotter (1966), Levenson’s scale examines personal control by measuring level of control accorded to three different control sources of a person’s life. In other words, if a person rates highly on the Powerful Others subscale, it indicates that the individual thinks his/her own life is under the control of powerful others. Likewise, if a person rates highly on the Internality subscale, it indicates that the individual believes he/she has control over his/her own life. Since I am interested in the link between relational mobility and personal control, both Powerful Others and Internality subscales are of interest in this study.

Each subscale contains eight items and was rated with a 6-point Likert scale (-3 = *strongly disagree*; +3 = *strongly agree*). The Internality subscale (Cronbach's $\alpha = .83$) contains items such as "Whether or not I get to be a leader depends mostly on my ability" and "When I make plans, I am almost certain to make them work". The Powerful Others subscale (Cronbach's $\alpha = .83$) contains items such as "My life is chiefly controlled by powerful others" and "Getting what I want requires pleasing those people above me". The score for each subscale was calculated by adding 24 to the summed total of the eight items.² This gives a range of possible scores from 0 to 48 for each subscale.

Power Differential scale. To measure hierarchy endorsement, I used the Power Differential scale by Earley and Erez (1997; Appendix D). This scale measures individuals' acceptability of power and status differences. People who score high (vs. low) on the scale accept that hierarchy is an important and integral part of work, endorsing the presence of hierarchy. There are eight items in this scale (Cronbach's $\alpha = .75$) and are rated using a 5-point Likert scale that ranges from 1 (*strongly disagree*) to 5 (*strongly agree*). Its items include "In most situations, managers should make decisions without consulting their subordinates" and "In work related matters, managers have a right to expect obedience from their subordinates."

To recap, I expected a two-way interaction between environmental and personal relational mobility on personal sense of control and hierarchy endorsement in Study 1 such that (a) the low personal-low environmental mobility group, (b) the

² As this scale contains negative scores (e.g., -3, -2), adding 24 to the total score ensures that the score for each sub-scale is positive. Since there are 8 items in each sub-scale, the lowest score an individual can have is $8 * (-3) = -24$. Adding 24 to the total leads to a lowest possible score of 0.

low personal-high environmental mobility group, and (c) the high personal-low environmental mobility group will show higher endorsement of hierarchy and lower personal sense of control, as compared to (d) the high personal-high environmental mobility group. Also, I expected hierarchy endorsement to moderate the relationship between environmental and personal relational mobility on sense of personal control such that low relational mobility participants will report a higher sense of control if they had high hierarchy endorsement.

Results

The paired-samples *t*-test revealed that the means of environmental relational mobility ($M = 3.98, SD = .50$) and personal relational mobility ($M = 4.02, SD = .65$) were not significantly different from each other ($t(74) = -.64, p < .53$). In addition, there was a positive correlation between environmental and personal relational mobility ($r = .59, p < .001$).³

Unexpectedly, all two-way interactions between personal and environmental relational mobility were not significant for all dependent variables measured by the Powerful Others subscale, Internality subscale, and Power Differential scale (Internality: $\beta = .09, SE = .28, t = .79, p = .43$; Powerful Others: $\beta = .02, SE = .29, t = .202, p = .84$; Power Differential: $\beta = -.09, SE = .23, t = -.69, p = .49$). However, as my prior findings would suggest that the relationships exist, I conducted a K-means

³ Both environmental and personal relational mobility had a relatively normal distribution: Environment relational mobility had skewness of .08 ($S.E. = .27$) and kurtosis of $-.78$ ($S.E. = .55$); personal relational mobility had skewness of .49 ($S.E. = .27$) and kurtosis of .07 ($S.E. = .55$).

cluster analysis on the sample in order to understand the distribution of groups that belong to high vs. low levels of environmental and personal relational mobility.

As four categories of participants were expected, the initial K-means cluster analysis was specified to have four clusters. However, the means of environmental and personal relational mobility of the four clusters did not fit the expected profiles of relational mobility (Table 1). As no clear distinctions between the four groups were found (except for the high-personal-high environmental and low personal-low environmental groups), this is a possible reason why the expected 2-way interactions were not found. I decided to run the K-means cluster analysis again, but with two clusters specified only. This time, there was a clear distinction between the two clusters (Table 2). In the subsequent analyses, I utilized this cluster membership as the relational mobility variable.

Multivariate analyses showed a significant main effect of cluster membership on the Powerful Others subscale, Internality subscale, and Power Differential scale (Internality: $F(1, 73) = 5.32, p = .02, \eta^2_p = .07$; Powerful Others: $F(1, 73) = 9.43, p = .003, \eta^2_p = .11$; Power Differential: $F(1, 73) = 3.74, p = .06, \eta^2_p = .05$). As expected, participants in the high personal-high environmental cluster reported higher personal control ($M = 35.10; SD = 5.32$), lower presence of powerful others ($M = 23.52; SD = 7.44$), and lower endorsement of hierarchy ($M = 2.55; SD = .49$), as compared to participants in the low personal-low environmental cluster (personal control: $M = 31.22; SD = 8.02$; powerful others presence: $M = 29.37; SD = 8.39$; hierarchy endorsement: $M = 2.81; SD = .62$).

Next, I tested the two-way interaction between cluster membership and hierarchy endorsement on personal control. Linear regression analyses indicate that the two-way interaction was only present for the Internality subscale ($\beta = -.35$, $SE = 2.99$, $t = -2.71$, $p = .01$; Figure 3), but not for the Powerful Others subscale ($\beta = -.12$, $SE = 3.45$, $t = -.90$, $p = .37$). Simple slopes analysis on the significant two-way interaction between cluster membership and Internality subscale was conducted. On the one hand, the main effect of hierarchy endorsement on personal control was only observed in the low personal-low environmental relational mobility participants ($\beta = .42$, $SE = 1.76$, $t = 3.11$, $p = .003$), but not in the high personal-high environmental relational mobility participants ($\beta = -.25$, $SE = 2.01$, $t = -1.32$, $p = .20$). Specifically, low personal-low environmental mobility participants who indicated higher levels of hierarchy endorsement (1 *SD* above the mean) indicated higher levels of internal control than those who indicated lower levels of hierarchy endorsement (1 *SD* below the mean). On the other hand, the main effect of cluster membership on personal control was observed among participants with higher levels of hierarchy endorsement ($\beta = 1.42$, $SE = 6.28$, $t = 3.38$, $p = .001$), as well as among participants with lower levels of hierarchy endorsement ($\beta = 2.06$, $SE = 9.72$, $t = 3.16$, $p = .002$). Among participants with higher levels of hierarchy endorsement (1 *SD* above the mean), low personal-low environmental mobility participants reported higher levels of internal control as compared to high personal-high environmental mobility participants. Among participants with lower levels of hierarchy endorsement (1 *SD* below the mean), high personal-high environmental mobility participants reported higher levels

of internal control as compared to low personal-low environmental mobility participants.

Discussion

Although the expected two-way interactions between environmental and personal relational mobility were not found for the Internality subscale, the Powerful Others subscale, and the Power Differential scale, conducting a cluster analysis revealed the expected differences between participants who perceived high-personal, high-environmental relational mobility and participants who perceived low-personal, low-environmental relational mobility. Specifically, high personal-high environmental mobility participants had higher personal control, lower perceived presence of powerful others, and endorsed hierarchy less than low personal- low environmental mobility participants.

Importantly, the sense of personal control level of these two groups of participants was moderated by their hierarchy endorsement such that low personal-low environmental mobility participants who were high in hierarchy endorsement indicated higher personal sense of control than their low hierarchy endorsement counterparts. In contrast, high personal-high environmental participants' personal sense of control was independent of their levels of hierarchy endorsement.

This two-way interaction can be understood as indirect support for the compensatory control theory and the different levels of constraints that individuals experience in low vs. high relational mobility situations. The lack of difference in personal control among high personal-high environmental relational mobility participants across high and low levels of hierarchy endorsement suggests that these

participants may experience low threat to their personal control given their perceptions of high mobility in the relationship networks within both their proximal and distal environments. However, low personal-low environmental mobility participants' sense of internal control varied as a function of their hierarchy endorsement such that those who endorsed hierarchy reported a higher sense of internal control as compared to those who endorsed hierarchy less. Although threat to personal control was not directly measured here, the positive relationship between hierarchy endorsement and sense of internal control for low personal-low environmental mobility participants suggests that hierarchy endorsement might be able to restore their lower sense of internal control contributed by low experienced mobility, thus offering some initial support for the compensatory control theory.

Interestingly, the same two-way interaction was not found when the Powerful Others subscale was the dependent variable, even though the threat on sense of personal control comes from the interpersonal domain (i.e., relational mobility). There are two possible reasons behind this finding. First, it is possible that sense of control threat from powerful others is less malleable as compared to internal control threat because this sense of control is dependent on another person. It will take more than the endorsement of some external sources of control (e.g., hierarchy) to change the perception of powerful others' control over self. Addition, current findings concerning compensatory control theory involves internal control (i.e., personal efficacy) only. It is possible that the compensatory effect may only be found in personal efficacy.

Second, it is possible that the measure of how much powerful others control one's life is a less accurate way to tap into sense of control. This is because even if one needs to please the boss to gain the promotion, the act of pleasing the boss still falls under one's control. In other words, a measure of perceived interpersonal control could be less precise, as compared to a measure of internal control, in determining an individual's threatened sense of control. Additionally, Burger (1989) also found that a strong presence of powerful others may not necessarily affect an individual's sense of control. Specifically, if the external agent has legitimacy, acts on the behalf of the individual, and responds toward the individual's concerns, the external agent can supplement the individual's sense of control. Thus, looking at the powerful others sub-scale in this case may be a less accurate way in measuring an individual's sense of control.

CHAPTER SIX

STUDY 2

Study 1 provided initial evidence on the link between environmental relational mobility, personal relational mobility, sense of personal control, and hierarchy endorsement. However, there are several limitations despite the overall support for the compensatory control theoretical account. First, there was no two-way interaction between environmental and personal relational mobility on sense of control and hierarchy endorsement. Although there was evidence showing that the two extreme groups, high personal-high environmental vs. low personal-low environmental mobility participants, differed from each other in terms of sense of control and hierarchy endorsement, Study 1 was silent regarding the other two groups: high personal-low environmental mobility people and low personal-high environmental mobility people. Study 2 tries to address this limitation by collecting data via the Amazon Mechanical Turk platform in hopes for a more varied non-student sample.

Second, Study 1 was also silent on changes in personal control after endorsing an orderly hierarchical structure. Although responses on hierarchy endorsement and sense of internal control of low personal-low environmental mobility participants reflect the compensatory control pattern, it is not known whether their sense of personal control is restored after an external source of control is sought. Studies by Frisen and colleagues (2014) and Rothschild and colleagues (2012) indicate the restorative potential by external control providers, but Study 1 did not test this

possibility directly. Study 2 attempts to address this limitation through a pre-test and post-test design so that the change in sense of personal control level could be tracked.

Third, directionality of hierarchy endorsement on sense of personal control was implied when sense of personal control was studied as a dependent variable in Study 1. As Study 1's variables were only measured, this directionality was not tested. Study 2 seeks to address this limitation by manipulating the presence of the external source of control. By doing so, any changes in sense of personal control can be attributed to the presence of the external source of control, establishing the directionality between sense of personal control and hierarchy endorsement.

Method

Participants

76 participants were recruited (46 females; M age = 40.12, SD = 11.61)⁴ through the Amazon Turk platform for this study. Participants received either US\$.80 or US\$1.20⁵ for their participation.

Procedure and Measures

Participants completed an online questionnaire containing scales in this order: the two relational mobility scales (environmental relational mobility: Cronbach's α =

⁴ Originally, 94 responses were obtained. However, 18 of them took less than 10 minutes to complete the study, leading to concerns that the online questionnaire was not answered with adequate attention. Analyses of all 94 participants revealed marginally significant three-way interaction between environmental relational mobility, personal relational mobility, and hierarchy exposure manipulation for the personal efficacy subscale (β = -.31, SE = .25, t = -1.89, p = .06), but not for the interpersonal control subscale (β = .28, SE = .27, t = 1.76, p = .08).

⁵ The different payment rates was due to the need to increase participation. At US\$.80, the sign up rate was extremely slow, hence the subsequent increase in payment amount after four days into data collection period.

.87; personal relational mobility: Cronbach's $\alpha = .86$), the first half of the Spheres of Control scale (Paulhus, 1983), a filler survey on personality, a scenario task, the second half of Spheres of Control scale, and demographics questions.

Spheres of Control scale. Paulhus (1983)' Spheres of Control scale was used to measure the sense of personal control in this study. Similar to Levenson's IPC scale, Paulhus identifies three independent sub-components of control: Personal Efficacy, Interpersonal Control, and Sociopolitical Control. However, unlike Levenson, Paulhus' scale is developed with an Internal-External spectrum within each sub-component. In other words, if an individual has low ratings on Interpersonal Control subscale, this indicates that he/she perceives the self to have low personal control over his/her interpersonal interactions with others. Similar to Study 1's domains of interest, the Personal Efficacy and Interpersonal Control subscales are the foci of Study 2.

Each subscale has 10 items and is rated with a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The Personal Efficacy subscale measures the level of personal control in the form of personal efficacy and achievement, whereas the Interpersonal Control subscale measures the level of personal control over interpersonal interactions and relationships. Items for Personal Efficacy include "I can usually achieve what I want if I work hard for it" and "Almost anything is possible for me if I really want it", whereas items for Interpersonal Control include "I have no trouble making and keeping friends" and "I can usually establish a close personal relationship with someone I feel attractive". To create equivalent forms for the pre-test and post-test, I randomly split each sub-scale into

equal halves. The pre-test can be found in Appendix E (Personal Efficacy: $\alpha = .74$; Interpersonal Control: $\alpha = .84$), and the post-test can be found in Appendix F (Personal Efficacy: $\alpha = .69$; Interpersonal Control: $\alpha = .81$).

Scenario Task. The scenario task (Appendix G; adapted from Anicich, Swaab, & Galinsky, 2015) served to manipulate the exposure to an external source of control involving interpersonal hierarchy. Participants randomly assigned to the hierarchy condition read a cover story that told of this study's interest in examining hierarchy values within teams on hiking expeditions. They were asked to describe how they would work with teammates within a hierarchical team to generate a solution to an advent problem. Participants randomly assigned to the control condition did not read the first paragraph about the cover story examining hierarchy values and were only told to describe how they would work within a team to solve the same hiking problem. Manipulation check showed that both conditions were significantly different in their tendency to rate their imaginary team as having a hierarchical structure ($F(1, 74) = 48.51, p < .001$), with the hierarchy condition ($M = 5.21, SD = 1.08$) being more likely to do so, compared to those in the control condition ($M = 3.16, SD = 1.57$).

Results

A paired-samples *t*-test revealed that the means of environment relational mobility ($M = 4.39, SD = .68$) and personal relational mobility ($M = 4.31, SD = .80$) were not significantly different ($t(75) = 1.10, p = .28$). In addition, there was a

positive correlation between environmental and personal relational mobility ($r = .62$, $p < .001$).⁶

Pre-test for Spheres of Control. Unexpectedly, there was no significant two-way interaction between environmental and personal relational mobility on the level of Personal Efficacy ($\beta = .11$, $SE = .11$, $t = 1.10$, $p = .28$) and on Interpersonal Control ($\beta = .02$, $SE = .15$, $t = .26$, $p = .80$) subscales. However, further analyses showed main effects of relational mobility on Personal Efficacy (environmental mobility: $\beta = .44$, $SE = .12$, $t = 4.22$, $p < .001$; personal mobility: $\beta = .53$, $SE = .10$, $t = 5.41$, $p < .001$) and Interpersonal Control (environmental mobility: $\beta = .34$, $SE = .20$, $t = 3.12$, $p = .003$; personal mobility: $\beta = .70$, $SE = .13$, $t = 8.53$, $p < .001$) subscales. Specifically, participants who perceived high personal mobility (1 *SD* above the mean) indicated higher levels of personal efficacy and interpersonal control as compared to those who perceived low personal mobility (1 *SD* below the mean). Similarly, participants who perceived high environment mobility (1 *SD* above the mean) indicated higher levels of personal efficacy and interpersonal control as compared to those who perceived low environment mobility (1 *SD* below the mean).

Bivariate correlations between environmental mobility and Personal Efficacy ($r = .44$, $p < .001$), and Interpersonal Control ($r = .34$, $p = .003$) subscales were significantly positive. However, the relationships disappeared when personal relational mobility was controlled for: Personal Efficacy ($r = -.17$, $p = .15$) and Interpersonal Control ($r = .17$, $p = .14$). Bivariate correlations between personal

⁶ Both environmental and personal relational mobility had a relatively normal distribution: Environment relational mobility had skewness of $-.49$ ($SE = .28$) and kurtosis of $.51$ ($SE = .55$); personal relational mobility had skewness of $-.48$ ($SE = .28$) and kurtosis of $-.09$ ($SE = .55$).

relational mobility and Personal Efficacy ($r = .53, p < .001$), and Interpersonal Control ($r = .70, p < .001$) subscales were significantly positive and they remained so even after controlling for environmental relational mobility: Personal Efficacy ($r = .37, p = .001$) and Interpersonal Control ($r = .67, p < .001$).

K-means cluster analysis was conducted to probe whether the expected four groups of individuals were present in the sample. Cluster means (Table 3) indicated that this was so. Contrast comparisons (Table 4) comparing high personal-high environmental mobility participants to the other three groups were conducted for both subscales. As expected, high personal-high environmental mobility participants rated themselves to be the highest in both Personal Efficacy and Interpersonal Control subscales, as compared to the rest of the three groups of participants (Figure 4).

Additionally, high personal-low environmental mobility participants were compared against low personal-high environmental mobility and low personal-low environmental mobility participants (Table 5). As hypothesized, high personal-low environmental mobility participants had higher sense of control (in terms of personal efficacy and interpersonal control) as compared to low personal-low environmental mobility participants. High personal-low environmental mobility participants also had higher levels of sense of control (in terms of personal efficacy and interpersonal control) as compared to low personal-high environmental mobility participants, except the difference for personal efficacy was not significant.

Three-way interaction. Although there was no significant three-way interaction between environment mobility, personal mobility, and hierarchy manipulation on the change in sense of interpersonal control ($\beta = .24, SE = .27, t =$

1.40, $p = .17$), the expected three-way interaction on the change in personal efficacy was significant ($\beta = -.41$, $SE = .23$, $t = -2.36$, $p = .02$; Figure 5). To understand this effect better, I conducted separate two-way ANOVAs for the hierarchy and control conditions. Analyses showed that the two-way interaction between environmental and personal relational mobility was only significant in the hierarchy condition ($\beta = -.45$, $SE = .18$, $t = -2.32$, $p = .03$), but not in the control condition ($\beta = .16$, $SE = .14$, $t = .94$, $p = .35$).

To understand this interaction pattern, simple slopes analyses were conducted for the hierarchy condition. On the one hand, the personal relational mobility main effect on change in personal efficacy was only significant when environmental mobility was low (1 *SD* below the mean, $\beta = .45$, $SE = .18$, $t = 2.07$, $p = .05$), but not when environmental mobility was high (1 *SD* above the mean, $\beta = .24$, $SE = .27$, $t = 1.40$, $p = .17$). Specifically, when environmental mobility was low (1 *SD* below the mean), high personal mobility participants (1 *SD* above the mean) reported an increase in their internal control, whereas low personal mobility participants (1 *SD* below the mean) reported a decrease in their internal control.

On the other hand, the environmental mobility main effect was only significant when personal mobility was high (1 *SD* above the mean, $\beta = -.80$, $SE = .29$, $t = -2.58$, $p = .01$), but not when personal mobility was low (1 *SD* below the mean, $\beta = -.08$, $SE = .18$, $t = -.44$, $p = .66$). Only high personal mobility participants (1 *SD* above the mean) showed a difference in their reported internal control levels across high and low levels of environmental mobility. In particular, after experiencing the hierarchy prime, high personal-low environmental mobility

participants reported an increase in their internal control, but their high environmental mobility counterparts reported a decrease in their internal control. There was no difference in change in personal control between high and low levels of environmental mobility for low personal mobility participants (1 *SD* below the mean).

Discussion

Although the expected two-way interactions between environmental and personal relational mobility were not found for the personal efficacy and interpersonal control pre-tests, the four expected clusters of participants showed the expected mean levels for the dependent variables. In particular, high personal-high environmental mobility participants were found to have the highest sense of personal control (in terms of personal efficacy and interpersonal control) of the four clusters. Comparisons among the other three categories of participants provided empirical support for the notion that high personal relational mobility individuals embedded in low relational mobility environments still enjoy a certain level of personal control within their proximal environment. This was not true for low personal relational mobility individuals, especially those embedded within low relational mobility environments.

Findings from the three-way interaction for the change in general personal control (i.e., personal efficacy) provided empirical support for the compensatory control theory, albeit with boundaries. Specifically, only high personal-low-environmental mobility participants showed an increase in sense of personal control after being asked to imagine working in a hierarchical team. Their low personal

relational mobility counterparts did not show similar increase in subsequent sense of personal control; their sense of personal control actually decreased.

This finding seems to contradict Study 1's indirect support for compensatory control where low personal-low environmental mobility people showed a positive association between personal control and hierarchy endorsement. However, it is possible to reconcile the inconsistent findings between Study 1 and Study 2. To do so, it is useful to note a difference between the two studies in how hierarchy was operationalized. Study 1 measured participants' hierarchy endorsement within a general organizational context. However, in Study 2, participants were asked to imagine themselves working in a team with strong hierarchical values.

It is possible that getting participants to imagine working within a hierarchical team benefited the high personal-low environment mobility participants with its compensatory characteristic because these people enjoy a certain level of control within their interpersonal relationships in the proximal immediate environment. Thus, when primed to think about working within an interpersonal hierarchy setting, based on their prior experiences of being in control, this act is linked to feelings of control and order. In turn, this allows the act of being embedded within interpersonal hierarchy to function as a bolster for sense of personal control.

In contrast, both low personal-low environment and low personal-high environment mobility participants experience high constraints within their interpersonal relationships in their proximal immediate environment. Hence, when primed to think about working within an interpersonal hierarchy setting, based on their prior experiences of not being in control, there is a lack of association between

this mindset with control and order. In turn, this prevents the act of being embedded within interpersonal hierarchy to function as a bolster for sense of personal control.

In other words, there is a possibility that the type of external source of control that can be used to bolster an individual's sense of personal control may be specific. Existing compensatory control literature seems to imply that as long as the control source is recognized to be orderly and structured (e.g., Kay et al., 2008), people will seek the source in the motivation to avoid the feeling of chaos. However, my current findings indicate that while the motivation of seeking may involve general orderly and structured control sources (Study 1), to increase sense of personal control, specificity in the type of control source matters (Study 2). Further studies are needed to explore these speculations further.

For high personal-high environment participants, the reduction in perceived personal control after the hierarchy prime suggests the aftermath of individuals who do not suffer from threats to sense of personal control, but yet are reminded of external sources of control. If the compensation of personal control is not required, priming external sources of control may end up hurting the individuals, due to the reduction of perceived personal control when individuals are reminded about potential external controllers that exist.

Again, the compensatory control phenomenon was only observed for general sense of control (personal efficacy) but not for interpersonal control. Together with Study 1's similar finding, it indicates that only general sense of control elicits compensation. Thus, the compensatory control theory may be more applicable in explaining the shift in sense of personal control when the source of control rests

within the self; sense of control that involves uncontrollable others might not subject to the possibility of compensation.

CHAPTER SEVEN

STUDY 3

Studies 1 and 2 provide converging evidence regarding different levels of personal control and hierarchy endorsement across high and low environmental and personal relational mobility. They also agree on the existence of compensatory control phenomenon with hierarchy as an external source of control. Study 3 attempts to extend those studies by investigating whether these findings hold across different levels of environmental threat. Earlier, I mentioned that threat to personal sense of control could be generated when the existing environment is threatened (i.e., system threat; c.f. Norris & Inglehart, 2010). By manipulating the level of system threat within an environment, I will examine whether the effect of relational mobility still holds if individuals face a more macro-level, all-encompassing threat. Specifically, I expect that when there is a high system threat inducing an uncertain and chaotic situation, all individuals within that environment will react by engaging in compensatory control and endorsing hierarchy, thus overriding the effects of relational mobility. Conversely, when there is low system threat, the effects of personal and environmental relational mobility emerge and individuals may opt for hierarchy endorsement to compensate for threatened sense of personal control.

Method

Participants

I recruited 141 undergraduate students who received course credits for their participation. Sixteen participants were removed because they did not fully complete the open-ended scenario manipulation check task, so it was impossible to check if manipulation was successful among these participants. Fifteen participants were removed because they were not born in Singapore and did not move into Singapore at the age of 6 years and below. The removal of these fifteen participants is important as the scenario manipulation task is set in Singapore. There is a possibility that the scenario manipulation might be less meaningful to foreign and international students as they can easily leave if something bad happens to Singapore. This resulted in 110 usable participants (70 females; M age = 21.16, SD = 1.84) for this study.

Procedure and Measures

Participants first completed a two-part scenario task and its open-ended questions before completing the PRMS from Study 1 (Cronbach's α = .70), and the hierarchy subscale from the Cultural Perspective Questionnaire (CPQ; Maznevski, Gomez, DiStefano, Nooderhaven, & Wu, 2002).

Scenario Task. This task (Appendix H) is made up of two segments that serve to manipulate system threat level faced by Singapore and perceived environmental relational mobility of Singapore respectively. Participants were assigned to read a paragraph where Singapore either faced high threat or low threat in social, economic and political arenas (adapted from Kay, Jost, & Young, 2005). After reading the scenario, those in the high threat condition were asked to list down as many threats

that they think Singapore is facing now, whereas those in the low threat condition were asked to list down as many advantages or strengths that Singapore currently has.

Thereafter, participants were told that Singaporeans had either high or low difficulty in leaving Singapore, manipulating their perceived environmental mobility (adapted from Laurin, Shepherd, & Kay, 2010). They were asked to list down three detailed examples from their lives that supported the said difficulty level in leaving Singapore. Notably, this environmental mobility manipulation resembles more of migratory or residential mobility. However, it is possible to assume that the high and low environmental mobility conditions correspond to the high and low relational mobility within the environment; 30% of the open-ended responses of the participants concerned examples that involved interpersonal relationships. As noted by Oishi and colleagues (2015), environmental relational mobility is more likely to be high within a residentially mobile society, and more likely to be low within a residentially immobile society.

Cultural Perspective Questionnaire - Hierarchy sub-scale. I measured hierarchy endorsement using the hierarchy sub-scale from the Cultural Perspective Questionnaire by Maznevski and colleagues (2002; Appendix I; $\alpha = .69$). This scale measures hierarchy endorsement with seven items (e.g., People at lower levels in an organization should not expect to have much power) with a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

To recap, I expect a two-way interaction between personal and environmental relational mobility on hierarchy endorsement levels within the low system threat condition such that there would be higher endorsement of hierarchy among (a) high

personal-low environmental, (b) low personal-low environmental, and (v) low personal-high environmental mobility participants as compared to the high personal-high environment mobility participants. In contrast, I expect participants to show similar levels of hierarchy endorsement within the high system threat condition regardless of their mobility levels.

Results

An independent-samples *t*-test showed that the means of personal relational mobility in the high environmental mobility condition ($M = 4.20, SD = .60$) and the low environmental mobility condition ($M = 4.28, SD = .52$) did not differ significantly from each other ($t(108) = -.77, p = .44$)⁷.

The three-way interaction between personal relational mobility, environmental mobility manipulation, and system threat manipulation was significant ($\beta = .42, SE = .61, t = 2.09, p = .04$; Figure 6). No other relationships were significant except for the two-way interaction between personal relational mobility and threat condition ($\beta = -.50, SE = .42, t = -2.59, p = .01$).

Conducting separate linear regression analyses across low vs. high system threat manipulation showed that the two-way interaction between personal relational mobility and environmental mobility manipulation was only significant within the low system threat condition ($\beta = -.50, SE = .40, t = -2.67, p = .01$), and not within the high threat condition ($\beta = .09, SE = .46, t = .42, p = .67$). In other words, when the system faces high threat, everyone within that system endorse hierarchy equally.

⁷ Distribution of personal relational mobility was relatively normal-distributed with a skewness of $-.05$ ($SE = .23$) and a kurtosis of $.15$ ($SE = .46$).

To understand the interaction pattern between personal relational mobility and environmental mobility manipulation, simple slopes analyses were conducted for the low system threat condition. On the one hand, the main effect of personal relational mobility was only significant in the high environmental mobility condition ($\beta = -.41$, $SE = .30$, $t = -2.35$, $p = .03$), but not in the low environmental mobility condition ($\beta = .26$, $SE = .26$, $t = 1.40$, $p = .17$). When environmental mobility is high, low personal mobility participants (1 *SD* below the mean) endorsed greater hierarchy as compared to high personal mobility participants (1 *SD* above the mean). When environmental mobility is low, the two groups of participants did not differ in their hierarchy endorsement.

On the other hand, environmental mobility manipulation was only significant when personal relational mobility was high (1 *SD* above the mean; $\beta = -.35$, $SE = .31$, $t = -2.01$, $p = .05$), and not when personal relational was low (1 *SD* below the mean; $\beta = .35$, $SE = .33$, $t = 1.83$, $p = .07$). Specifically, high personal mobility participants (1 *SD* above the mean) endorsed greater hierarchy when environmental mobility was manipulated at a low (vs. high) level. However, low personal mobility participants (1 *SD* below the mean) did not differ in their hierarchy endorsement across the two environmental mobility conditions.

Discussion

Supporting the findings of Study 2, I found that participants with high personal relational mobility endorsed hierarchy more if they were embedded within an environment with low mobility, as compared to their high environmental mobility counterparts. When sense of personal control is threatened in the distal environment

for the high personal relational mobility individuals, they responded by compensating their lowered sense of personal control with hierarchy endorsement. However, the same pattern of findings is not true for participants with low personal relational mobility. Hierarchy endorsement for these participants does not differ across environments of high or low mobility, it remains at a relatively high level that indicates a constant compensatory mode.

Of import, the above findings were only found when the environment faces low system threat. When the macro-environment faces high system threat, there is no difference in hierarchy endorsement across individuals with high vs. low personal and environmental relational mobility. This implies that when the environment is subjected to an all-encompassing threat, the effect of internal control threat due to low personal or environmental mobility gets overridden because now everyone is subjected to the threat⁸.

⁸ Mean for hierarchy endorsement was higher in the high system threat condition ($M = 4.54, SD = .91$), as compared to the low system threat condition ($M = 4.36, SD = .88$). However, the two conditions were not significantly different from each other ($t(108) = 1.10, p = .28$).

CHAPTER EIGHT

GENERAL DISCUSSION

Three studies were reported with the aim of investigating the relationship among environmental relational mobility, personal relational mobility, hierarchy endorsement, and sense of personal control within the compensatory control theoretical framework. Together, the studies demonstrate distinct patterns of perceived sense of personal control and motivation to endorse external source of hierarchical control by the four categories of individuals: (1) high personal-high environmental mobility, (2) high personal-low environmental mobility, (3) low personal-low environmental mobility, and (4) low personal-high environmental mobility.

Study 1 found that low personal-low environmental mobility participants (vs. high personal-high environmental mobility participants) reported higher levels of internal control when they had endorsed higher levels of hierarchy. Study 2 found that only high personal-low environmental mobility participants showed an increase in personal sense of control after being exposed to a hierarchy prime, while the remaining participants showed a relative decrease in personal sense of control. Finally, Study 3 found that when an environment faces high system threat, all participants behaved similarly by endorsing hierarchy more regardless of their personal and environmental mobility levels. However, when system threat is low, the findings were compatible with those in Study 2: low personal mobility participants endorsed the same level of hierarchy regardless of the mobility level of the

environment, whereas high personal-low environmental participants endorsed higher hierarchy as compared to their high environmental mobility counterparts.

Overall, it can be seen that when there is low relational mobility, the motivation to seek and endorse an external source of hierarchical control is present. However, the same general statement cannot be claimed for restoration of sense of personal control among low relational mobility. Across Studies 1 and 2, it seems that whether sense of personal control can be increased depends on the way external source of control administered. When the external source of control is only linked with order (i.e., the general idea of organizational hierarchy), it is possible to observe the increase in personal sense of control in low personal relational mobility people (Study 1). In contrast, if the external source of control is linked to prior experiences of control (i.e., experiences in working within hierarchical teams), only high personal-low environmental mobility participants showed an increase in sense of personal control. Both low personal-low environmental, and low personal-high environmental participants do not show benefits from it. Further studies are required to investigate whether the difference in patterns of bolstered personal control is due to this speculated reason.

Curiously, the compensatory motivation pattern was not found in all types of personal control threat. Although personal and environmental relational mobilities were found to correlate positively with both interpersonal control and personal efficacy, only lowered personal efficacy was seen to elicit compensatory control tendency. Thus, it seems that constraints due to relational mobility may result in

compensatory control tendency but the elicitor is personal efficacy and not control of interpersonal relations.

As mentioned, there might be two possible reasons behind this result. First, the perception of interpersonal control threat could be less malleable as compared to internal control threat as this sense of control is dependent on another person and not just the self. While perceived internal control can be adjusted with little or no change from the factors external to the self, the same is not true for interpersonal control. Thus, it is also possible that compensatory control phenomenon only occurs for a sense of general personal control (i.e., personal efficacy), instead of a specific type of control (i.e., interpersonal control). As existing literature on compensatory control has currently only explored personal efficacy as a measure of perceived personal control (e.g., Friesen et al., 2014; Sullivan et al., 2010; Rothschild et al., 2012), further studies are required to test these speculations in order to understand the link between sense of personal control and compensatory theory better.

Second, it is also possible that perceived interpersonal control is a less accurate way to tap into how in control an individual feels. For example, even if one needs to please the boss to gain the promotion, the decision to please and/or act of pleasing the boss still falls under one's control. Also, if the external agent who has a high sense of control over the individual's life is benevolent, this external agent could instead increase the individual's sense of control (Burger, 1989; Skinner, 1996).

While the current set of studies focuses on hierarchy as a compensatory external source of control, similar patterns of endorsement can be found for the endorsement of existing systems (i.e., system justification). For example, in a self-

report survey study, I measured environmental and personal relational mobility, as well as societal system justification and economic system justification. Similar to Study 3's low threat condition, I found that high personal-high environmental mobility participants were less likely to endorse both the existing societal and economic systems as compared to their low environmental mobility counterparts. On the other hand, low personal mobility participants showed similar levels of endorsement for both systems, regardless of the environment's relational mobility level.

In a separate study where participants were given a scenario describing a pay inequality that exists between older and younger employees within the same company, high personal relational mobility participants who were randomly assigned to a low mobility environment were less likely to blame the company for the inequality as compared to those randomly assigned to a high mobility environment. Contrastingly, the blame level for the company by low personal relational mobility participants did not differ across high and low mobility environments.

Together, these two additional studies provide evidence that system justification can be understood as a form of compensatory control. In other words, existing systems and the status quo provides order and structure to people, allowing them to be external sources of control. This fits with work by Jost and colleagues (2003) where they have argued how conservative ideology endorsement (i.e., support for existing system) is motivated by the need to deal with feelings of uncertainty and threat. Likewise, Friesen and colleagues (2014) theorize that it is the hierarchical structure, which is often present in the existing system and status quo, that may be the

reason why there are strong motivations to defend the existing systems by people. More than just the need to perceive one's social systems as legitimate (Jost & Banaji, 1994), it is likely the characteristic of being hierarchical that allows existing systems (e.g., governments; c.f. Kay et al., 2008) to act as external sources of control compensation.

Collectively, the current findings have several implications. First, they indicate the need to distinguish between environment relational mobility and personal relational mobility constructs. Although existing literature on relational mobility have mostly concentrated on environment relational mobility (e.g., research by Yuki and colleagues), the significant interactions found between personal and environment relational mobility on hierarchy endorsement indicate that individual variation in relational mobility within the same environment may lead to different outcomes. By subsuming the findings from the personal relational mobility construct under the environment relational mobility construct, nuances on how different levels of personal mobility individuals behave and think within the same environment is lost.

In the light of greater interest in socio-ecological research, and its goal in understanding how the social ecology defines the individual and vice versa (Oishi, 2014; Oishi & Graham, 2010), taking into account both the individual and environment levels of socio-ecological constructs is one way of working toward that goal. Thus, I hope this set of studies may serve to spur more research involving both environment and personal relational mobility and their effects on individuals.

Second, the research direction in studying the relationship between relational mobility and hierarchy via the perspective of compensatory control theory serves to

add new understanding regarding this negative relationship. Although the negative relationship between relational mobility, and hierarchy endorsement and hierarchy expectation is consistent, it is difficult to understand the why behind the relationship. Hierarchy has earned a bad reputation, as a tall hierarchical structure within groups is a usual predictor for low satisfaction and commitment toward groups (Anderson & Brown, 2010). Thus, most people would expect low relational mobility people to endorse hierarchy the least since they will be stuck within the hierarchical interpersonal group. However, compensatory control theory helps us understand why individuals within low relational mobility situations are actually the ones that have high endorsement for hierarchy as compared to individuals within high relational mobility situations.

Third, findings from Study 3 calls for the need to recognize how different sources of threat may exert influence on people with differing levels of priority. Based on the current findings, it seems that “more macro” threat variables may carry more weight in their influence on individuals because more people are exposed to the threat (e.g., relational mobility’s threat to personal control within social environment vs. system threat to personal control within society at large). Further research is required to see what happens when there is a moderate level of macro-level threat and observes how it may interact with relational mobility to influence the hierarchy endorsement of individuals.

Conclusion

To conclude, the current research serves as an impetus in examining experienced constraints accorded by relational mobility experienced at both the personal and environmental levels and the consequence of seeking and endorsing external sources of hierarchical control. Extending the work by Kay and Sullivan (2013) who studied the links between cultural and social structural factors and compensatory control, the present findings shed further light on how socio-ecological factors may play a role in threatening individuals' sense of personal control, resulting in greater endorsement of external sources of control (e.g., hierarchy) as a form of motivated compensation. Research in this area is important since the general shift in societal-level endorsement of beliefs and policies may be dependent on existing sense of control perceived by members of the society (e.g., economic threat and conversion rates in authoritarian churches; Sales, 1972).

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TABLE 1*Cluster means for K-means cluster analysis, with four clusters specified*

Final Cluster Centers				
	Cluster			
	1	2	3	4
Environmental Mobility Rating	4.30	4.57	3.76	3.49
Personal Mobility Rating	4.32	5.26	3.27	3.81

Number of cases for each cluster, with four clusters specified

Number of cases	
Cluster	1
	21
	2
	7
	3
	27
	4
	20
Valid	75
Missing	0

TABLE 2

Cluster means for K-means cluster analysis, with two clusters specified

Final Cluster Centers	Cluster	
	1	2
Environmental Mobility Rating	4.44	3.69
Personal Mobility Rating	4.64	3.62

Number of cases for each cluster, with two clusters specified

	Number of cases	
Cluster	1	29
	2	46
Valid		75
Missing		0

TABLE 3*Cluster means for K-means cluster analysis, with four clusters specified*

Final Cluster Centers

	Cluster			
	1	2	3	4
Environmental Mobility Rating	2.78	4.29	5.03	4.13
Personal Mobility Rating	2.75	3.68	5.04	4.56

Number of cases for each cluster, with four clusters specified

	Number of cases	
	1	5
Cluster	2	25
	3	25
	4	21
Valid		76
Missing		0

TABLE 4

Contrast comparisons of Personal Efficacy and Interpersonal Control sub-scales (pre-test) between high-personal, high-environment participants and the remaining three groups of participants. Groupings created via K-means cluster analysis.

Interpersonal Control (Pre-test)

	<u>Group A</u>	<u>Group B</u>
Comparison 1 ($p < .001$)	High-personal, High-environmental relational mobility ($M = 5.33, SD = 1.18$)	Low-personal, High-environmental relational mobility ($M = 3.82, SD = .94$)
Comparison 2 ($p < .001$)	High-personal, High-environmental relational mobility ($M = 5.33, SD = 1.18$)	Low-personal, Low-environmental relational mobility ($M = 3.08, SD = 1.42$)
Comparison 3 ($p = .07$)	High-personal, High-environmental relational mobility ($M = 5.33, SD = 1.18$)	High-personal, Low-environmental relational mobility ($M = 4.73, SD = .89$)

Personal Efficacy (Pre-test)

	<u>Group A</u>	<u>Group B</u>
Comparison 1 ($p = .002$)	High-personal, High-environmental relational mobility ($M = 5.93, SD = .53$)	Low-personal, High-environmental relational mobility ($M = 5.22, SD = .73$)
Comparison 2 ($p < .001$)	High-personal, High-environmental relational mobility ($M = 5.93, SD = .53$)	Low-personal, Low-environmental relational mobility ($M = 4.58, SD = .78$)

Comparison 3 ($p = .02$)	High-personal, High- environmental relational mobility ($M = 5.93, SD = .53$)	High-personal, Low- environmental relational mobility ($M = 5.39, SD = .81$)
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TABLE 5

Contrast comparisons of Personal Efficacy and Interpersonal Control sub-scales (pre-test) between high-personal, low-environment participants and the remaining two groups of participants (excluding high-personal, high-environment group). Groupings created via K-means cluster analysis.

Interpersonal Control (Pre-test)

	<u>Group A</u>	<u>Group B</u>
Comparison 1 ($p = .004$)	High-personal, Low-environmental relational mobility ($M = 4.73, SD = .89$)	Low-personal, High-environmental relational mobility ($M = 3.82, SD = .94$)
Comparison 2 ($p < .001$)	High-personal, Low-environmental relational mobility ($M = 4.73, SD = .89$)	Low-personal, Low-environmental relational mobility ($M = 3.08, SD = 1.42$)

Personal Efficacy (Pre-test)

	<u>Group A</u>	<u>Group B</u>
Comparison 1 ($p = .33$)	High-personal, Low-environmental relational mobility ($M = 5.39, SD = .81$)	Low-personal, High-environmental relational mobility ($M = 5.22, SD = .73$)
Comparison 2 ($p = .005$)	High-personal, Low-environmental relational mobility ($M = 5.39, SD = .81$)	Low-personal, Low-environmental relational mobility ($M = 4.58, SD = .78$)

FIGURE 1

Personal relational mobility as experienced by individual forms proximal immediate environment of the individual. White figure is the referent person.

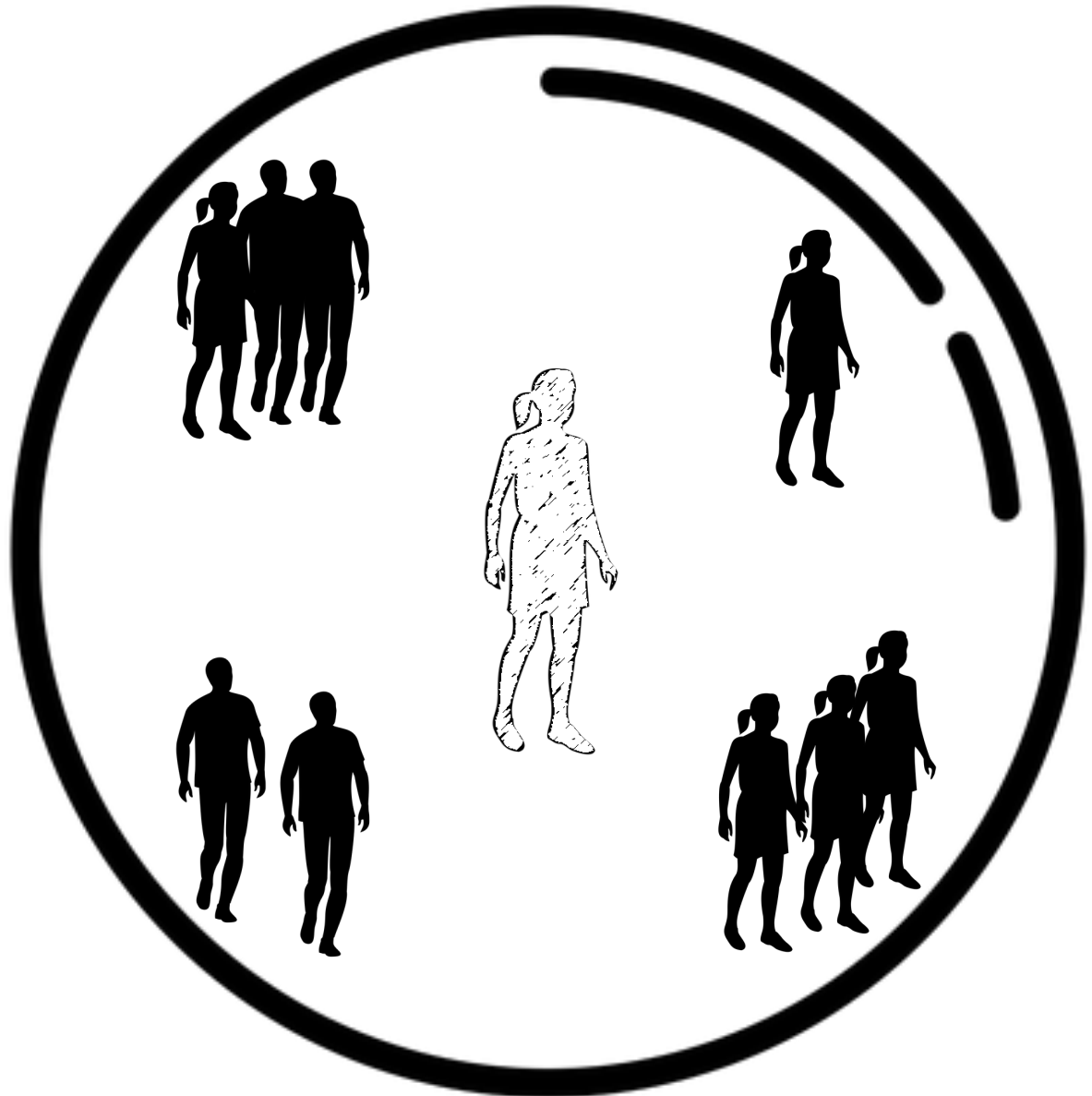


FIGURE 2

Environmental relational mobility as perceived by individual forms distal immediate environment of the individual. White figure is the referent person.

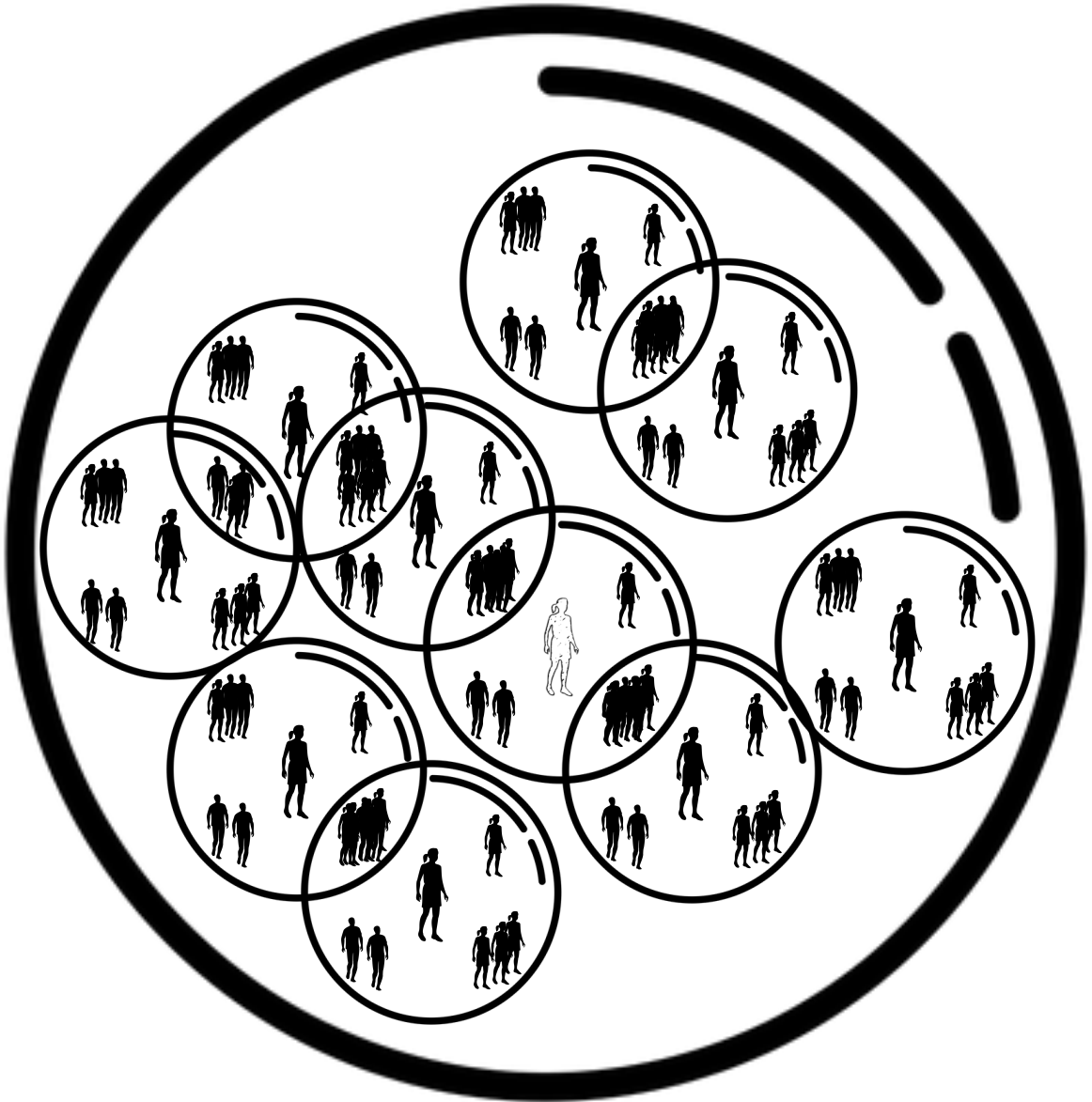


FIGURE 3

Two-way interaction between cluster membership and hierarchy endorsement on personal sense of control.

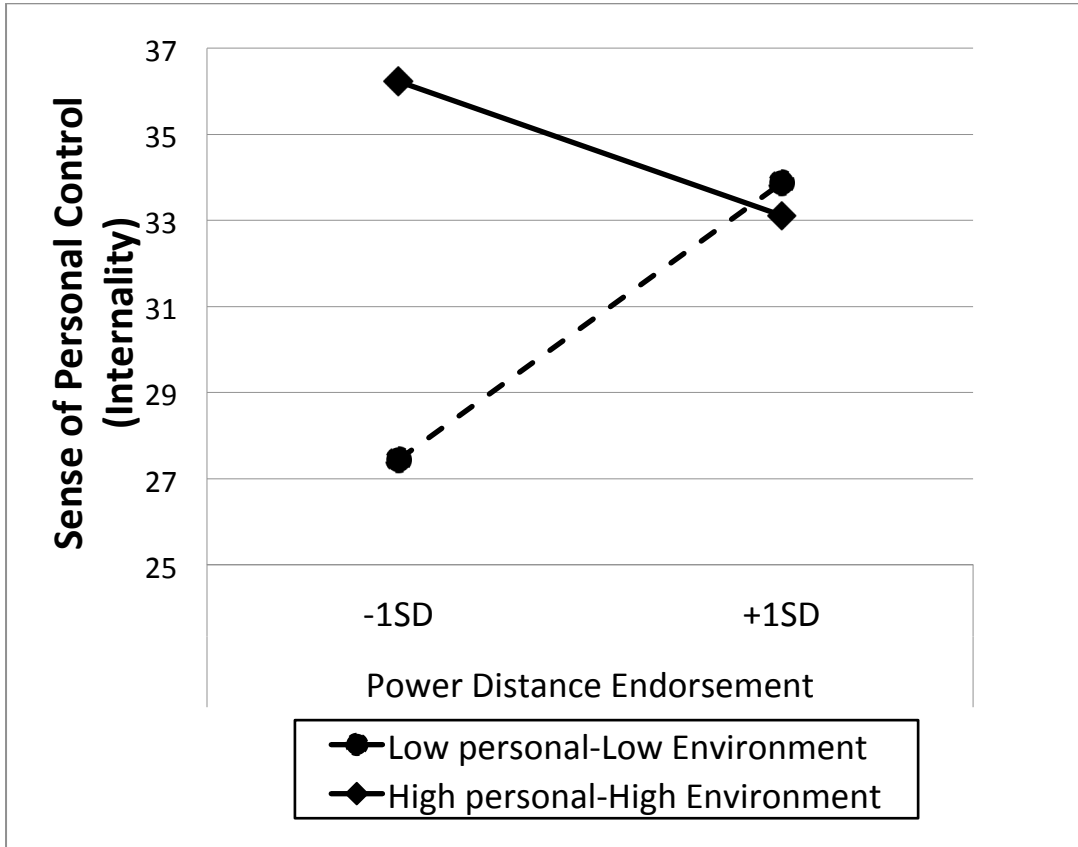


FIGURE 4

Means for Personal Efficacy and Interpersonal Control sub-scales (pre-test) across four groups of participants. Groupings were created via K-means cluster analysis.

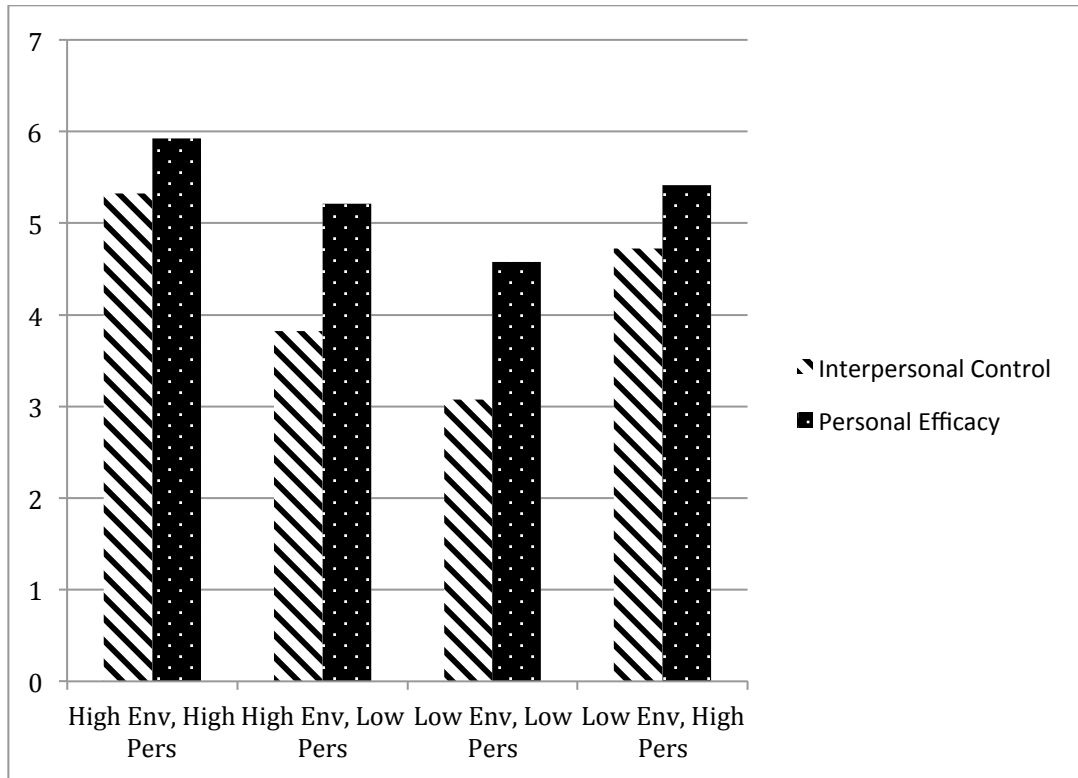


FIGURE 5

Three-way interaction between environmental mobility, individual mobility, hierarchy engagement manipulation on change in personal control

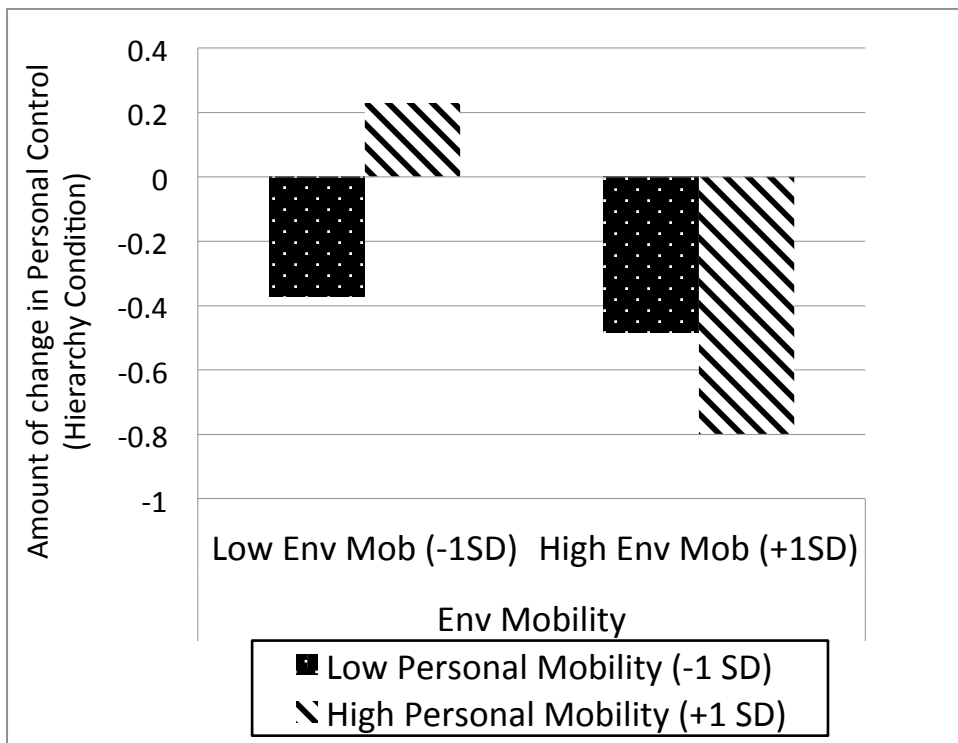
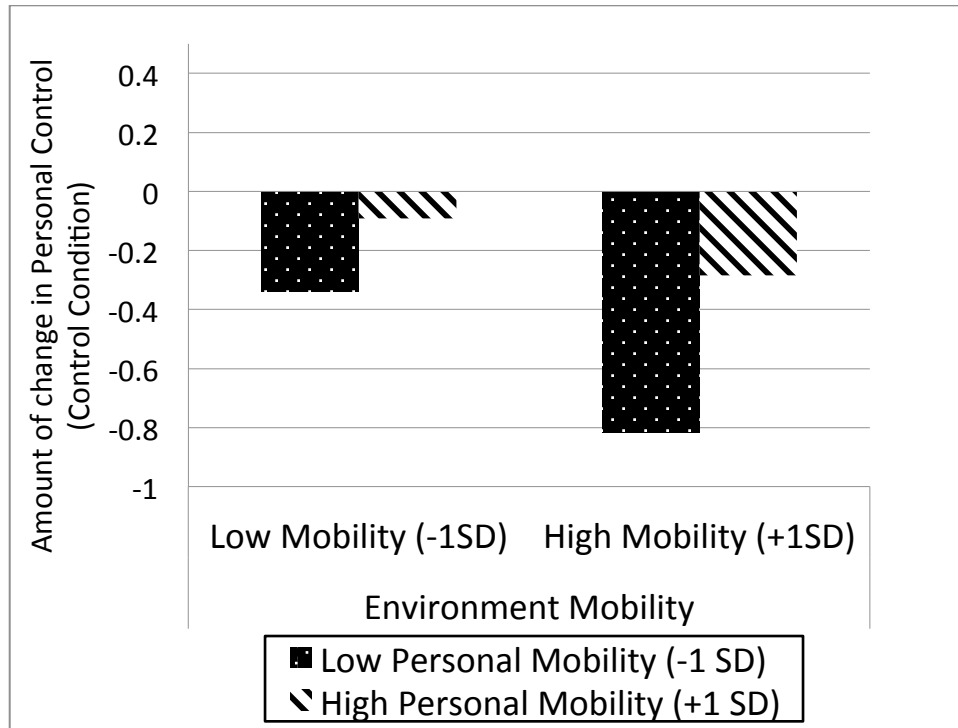
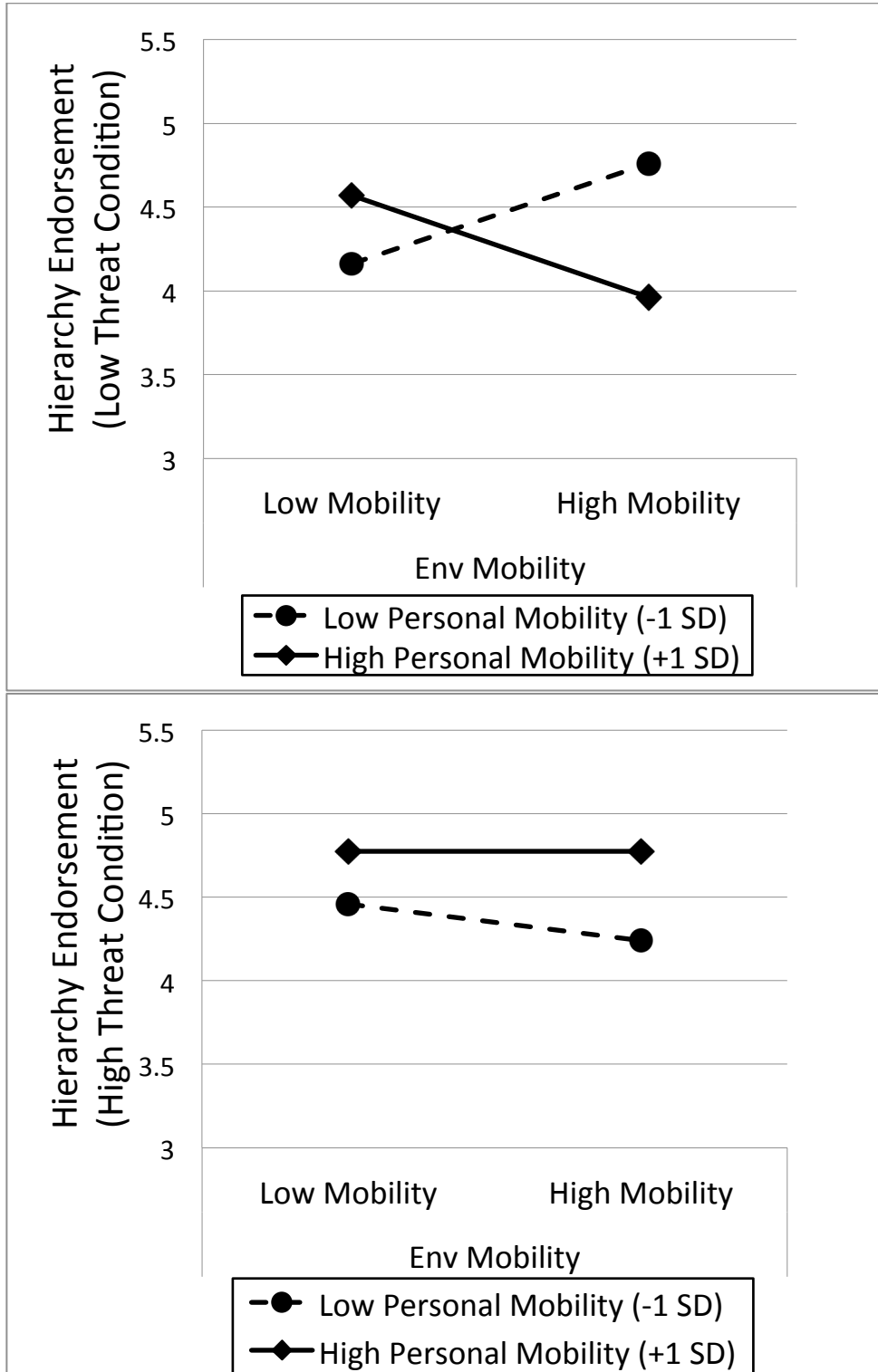


FIGURE 6

Three-way interaction between Level of Threat (manipulated), Environment Mobility (manipulated) and Individual Mobility (measured) on hierarchy endorsement.



APPENDIX A

Relational Mobility Scale

How much does each of the following statements accurately describe the people in the immediate society (your school, workplace, town, neighborhood, etc.) in which you live? Please indicate how true you feel each statement to be for the people around you by indicating your answer according to this scale.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

1. They have many chances to get to know other people.	1	2	3	4	5	6
2. It is common for these people to have a conversation with someone they have never met before.	1	2	3	4	5	6
3. They can choose who they interact with.	1	2	3	4	5	6
4. There are few opportunities for these people to form new friendships.	1	2	3	4	5	6
5. It is uncommon for these people to have a conversation with people they have never met before.	1	2	3	4	5	6
6. If they did not like their current groups, they would leave for better ones.	1	2	3	4	5	6
7. It is often the case that they cannot freely choose who they associate with.	1	2	3	4	5	6
8. It is easy for them to meet new people.	1	2	3	4	5	6
9. Even if these people were not completely satisfied with the group they belonged to, they would usually stay with it anyway.	1	2	3	4	5	6
10. These people are able to choose the groups and organizations they belong to.	1	2	3	4	5	6
11. Even if these people were not satisfied with their current relationships, they would often have no choice but to stay with them.	1	2	3	4	5	6
12. Even though they might rather leave, these people often have no choice but to stay in groups they don't like.	1	2	3	4	5	6

APPENDIX B

Personal Relational Mobility Scale

*How much does each of the following statements accurately describe you in the immediate society (your school, workplace, town, neighborhood, etc.) in which you live? Please indicate how true you feel each statement to be for **you** by indicating your answer according to this scale.*

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6

1. I have many chances to get to know other people.	1	2	3	4	5	6
2. It is common for me to have a conversation with someone I have never met before.	1	2	3	4	5	6
3. I can choose who I interact with.	1	2	3	4	5	6
4. There are few opportunities for me to form new friendships.	1	2	3	4	5	6
5. It is uncommon for me to have a conversation with people I have never met before.	1	2	3	4	5	6
6. If I did not like my current groups, I would leave for better ones.	1	2	3	4	5	6
7. It is often the case that I cannot freely choose who I associate with.	1	2	3	4	5	6
8. It is easy for me to meet new people.	1	2	3	4	5	6
9. Even if I were not completely satisfied with the group I belonged to, I would usually stay with it anyway.	1	2	3	4	5	6
10. I am able to choose the groups and organizations I belong to.	1	2	3	4	5	6
11. Even if I were not satisfied with my current relationships, I would often have no choice but to stay with them.	1	2	3	4	5	6
12. Even though I might rather leave, I often have no choice but to stay in groups I don't like.	1	2	3	4	5	6

APPENDIX C

Internality, Powerful Others, and Chance Scale

For the following statements, indicate whether they are true to you by indicating on the given scale.

Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
-3	-2	-1	+1	+2	+3

1. Whether or not I get to be a leader depends mostly on my ability.	-3	-2	-1	+1	+2	+3
2. To a great extent my life is controlled by accidental happenings.	-3	-2	-1	+1	+2	+3
3. I feel like what happens in my life is mostly determined by powerful people.	-3	-2	-1	+1	+2	+3
4. Whether or not I get into a car accident depends mostly on how good a driver I am.	-3	-2	-1	+1	+2	+3
5. When I make plans. I am almost certain to make them work.	-3	-2	-1	+1	+2	+3
6. Often there is no chance of protecting my personal interests from bad luck happenings.	-3	-2	-1	+1	+2	+3
7. When I get what I want, it's usually because I'm lucky.	-3	-2	-1	+1	+2	+3
8. Although I might have good ability, I will not be given leadership responsibility without appealing to those in positions of power.	-3	-2	-1	+1	+2	+3
9. How many friends I have depends on how nice a person I am.	-3	-2	-1	+1	+2	+3
10. I have often found that what is going to happen will happen.	-3	-2	-1	+1	+2	+3
11. My life is chiefly controlled by powerful others.	-3	-2	-1	+1	+2	+3
12. Whether or not I get into a car accident is mostly a matter of luck.	-3	-2	-1	+1	+2	+3

13. People like myself have very little chance of protecting our personal interests when they conflict with those of strong pressure groups.	-3	-2	-1	+1	+2	+3
14. It's not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune.	-3	-2	-1	+1	+2	+3
15. Getting what I want requires pleasing those people above me.	-3	-2	-1	+1	+2	+3
16. Whether or not I get to be a leader depends on whether I'm lucky enough to be in the right place at the right time.	-3	-2	-1	+1	+2	+3
17. If important people were to decide they didn't like me, I probably wouldn't make many friends.	-3	-2	-1	+1	+2	+3
18. I can pretty much determine what will happen in my life.	-3	-2	-1	+1	+2	+3
19. I am usually able to protect my personal interests.	-3	-2	-1	+1	+2	+3
20. Whether or not I get into a car accident depends mostly on the other driver.	-3	-2	-1	+1	+2	+3
21. When I get what I want, it's usually because I worked hard for it.	-3	-2	-1	+1	+2	+3
22. In order to have my plans work, I make sure that they fit in with the desires of people who have power over me.	-3	-2	-1	+1	+2	+3
23. My life is determined by my own actions.	-3	-2	-1	+1	+2	+3
24. It's chiefly a matter of fate whether or not I have a few friends or many friends.	-3	-2	-1	+1	+2	+3

APPENDIX D

Power Differential Scale

For the following questions, please indicate your answers according to this scale:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	2	3	4	5

1. In most situations, managers should make decisions without consulting their subordinates.	1	2	3	4	5
2. In work related matters, managers have a right to expect obedience from their subordinates.	1	2	3	4	5
3. Employees who often question authority sometimes keep their managers from being effective.	1	2	3	4	5
4. Once a decision of a top-level executive is made, people working for the company should not question it.	1	2	3	4	5
5. Employees should not express disagreements with their managers.	1	2	3	4	5
6. Managers should be able to make the right decision without consulting others.	1	2	3	4	5
7. Managers who let their employees participate in decision making, lose power.	1	2	3	4	5
8. A company's rules should not be broken – not even when the employee thinks it is in the company's best interest.	1	2	3	4	5

APPENDIX E

Spheres of Control Scale (Pre-test)

For the following statements, indicate whether they are true to you by indicating on the given scale.

Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

1. I prefer games involving some luck over games requiring pure skill.	1	2	3	4	5	6	7
2. I have no trouble making and keeping friends.	1	2	3	4	5	6	7
3. It is difficult for people to have much control over the things politicians do in office.	1	2	3	4	5	6	7
4. Even when I'm feeling self-confident about most things, I still seem to lack the ability to control social situations	1	2	3	4	5	6	7
5. Bad economic conditions are caused by world events that are beyond our control.	1	2	3	4	5	6	7
6. Once I make plans, I am almost certain to make them work.	1	2	3	4	5	6	7
7. I can usually establish a close personal relationship with someone I feel attractive.	1	2	3	4	5	6	7
8. My major accomplishments are entirely due to my hard work and ability.	1	2	3	4	5	6	7
9. I can learn almost anything if I set my mind to it.	1	2	3	4	5	6	7
10. I'm not good at guiding the course of a conversation with several others.	1	2	3	4	5	6	7
11. I can usually achieve what I want if I work hard for it.	1	2	3	4	5	6	7
12. By taking an active part in political and social affairs, we, the people, can control world events.	1	2	3	4	5	6	7
13. The average citizen can have an influence on government decisions.	1	2	3	4	5	6	7
14. With enough effort we can wipe out political corruption.	1	2	3	4	5	6	7
15. When being interviewed, I can usually steer the interviewer toward the topics I want to talk about and away from those I wish to avoid.	1	2	3	4	5	6	7

APPENDIX F

Spheres of Control Scale (Post-test)

For the following statements, indicate whether they are true to you by indicating on the given scale.

Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree	
1	2	3	4	5	6	7	
1. Almost anything is possible for me if I really want it.	1	2	3	4	5	6	7
2. If there's someone I want to meet I can usually arrange it.	1	2	3	4	5	6	7
3. When I look at it carefully I realize it is impossible to have any really important influence over what big businesses do.	1	2	3	4	5	6	7
4. If I need help in carrying off a plan of mine, it's usually difficult to get others to help.	1	2	3	4	5	6	7
5. I prefer to concentrate my energy on other things rather than on solving the world's problems.	1	2	3	4	5	6	7
6. Bad luck has sometimes prevented me from achieving things.	1	2	3	4	5	6	7
7. In attempting to smooth over a disagreement, I usually make it worse.	1	2	3	4	5	6	7
8. I find it pointless to keep working on something that's too difficult for me.	1	2	3	4	5	6	7
9. Most of what happens in my career is beyond my control.	1	2	3	4	5	6	7
10. I often find it hard to get my point of view across to others.	1	2	3	4	5	6	7
11. I usually do not set goals because I have a hard time following through on them.	1	2	3	4	5	6	7
12. One of the major reasons we have wars is because people don't take enough interest in politics.	1	2	3	4	5	6	7
13. There is nothing we, as consumers, can do to keep the cost of living from going higher.	1	2	3	4	5	6	7
14. In the long run we, the voters, are responsible for bad government on a national as well as a local level.	1	2	3	4	5	6	7
15. I find it easy to play an important part in most group situations.	1	2	3	4	5	6	7

APPENDIX G

Study 2 Scenario Manipulation Task

[HIERARCHY CONDITION]

One of our interests is the extent to which the endorsement of hierarchy affects the performance of hiking expeditions. Hierarchical groups value and support rank-order differences among group members. Thus, hierarchical groups emphasize norms and values specifying that some group members have higher rank than others.

Now imagine that you are part of a team with a hierarchical culture that is on a hiking trail. The hike has taken longer than you thought and you are still several miles from the next campsite. You notice that it is getting dark and you will need light for the rest of the trip. As part of the group, you work together with your team mates to ensure there is enough light for the team. In the process, you and your team mates are very effective in creating a solution for the problem. There is a good flow of information among all the group members during the discussion, and at the end the team is very successful in creating a solution.

In the space below, describe how you work together with your team mates to create a solution to ensure there is enough light for the team.

To what extent do you agree your group had a hierarchical relationship structure?
(*manipulation check*)

Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

[CONTROL CONDITION]

Imagine that you are part of a team that is on a hiking trail. The hike has taken longer than you thought and you are still several miles from the next campsite. You notice that it is getting dark and you will need light for the rest of the trip. As part of the group, you work together with your team mates to ensure there is enough light for the team. In the process, you and your team mates are very effective in creating a solution for the problem. There is a good flow of information among all the group members during the discussion, and at the end the team is very successful in creating a solution.

In the space below, describe how you work together with your team mates to create a solution to ensure there is enough light for the team.

To what extent do you agree your group had a hierarchical relationship structure?
(*manipulation check*)

Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

APPENDIX H

Study 3 Scenario Manipulation Task

[HIGH SYSTEM THREAT CONDITION]

Below is a description of the present Singapore, based on a sociological study conducted on Singaporeans.

These days, many people in Singapore feel disappointed with the nation's condition. Many citizens feel that the country has reached a low point in terms of social, economic, and political factors. People do not feel as safe and secure as they used to, and there is a sense of uncertainty regarding the country's future. It seems that many countries in the world are enjoying better social, economic, and political conditions than Singapore. More and more Singaporeans express a willingness to leave Singapore and emigrate to other nations.

Based on the sociological findings, Singaporeans feel that Singapore is currently facing a high level of threat. What kind of threats do you think Singapore is facing right now? Please list down as many threats that you think Singapore is currently facing right now.

[LOW SYSTEM THREAT CONDITION]

Below is a description of the present Singapore, based on a sociological study conducted on Singaporeans.

These days, despite the difficulties the nation is facing, many people in Singapore feel safer and more secure relative to the past. Many citizens feel that the country is relatively stable in terms of social, economic, and security factors. There is a sense of optimism regarding Singapore's future and an understanding that this is the only place where Singaporeans can feel secure. It seems that compared with many countries in the world the social, economic and political conditions in Singapore are relatively good. Very few Singaporeans express a willingness to leave Singapore and emigrate to other nations.

Based on the sociological findings, Singaporeans feel that Singapore is currently facing a low level of threat. What kind of advantages or strengths do you think Singapore has right now? Please list down as many advantages/strengths that you think Singapore currently has.

[LOW ENVIRONMENT MOBILITY]

Because of policy changes, people who wish to move out of Singapore will find it increasingly difficult to do so in the coming years. Thus, even if the number of Singaporeans wishing to leave and settle elsewhere remains constant, we should expect a significant slowdown over the next few years in terms of those who actually are able to do so.

The sociological study also found that Singaporeans feel that it is generally difficult to move out of Singapore, even if they wish to do so. Please provide three detailed examples from your own life showing that it is difficult for Singaporeans to move out to another country.

[HIGH ENVIRONMENT MOBILITY]

Because of policy changes, people who wish to move out of Singapore will find it increasingly easy to do so, in the coming years. Thus, even if the number of Singaporeans wishing to leave and settle elsewhere remains constant, we should expect a significant increase over the next few years in terms of those who actually are able to do so.

The sociological study also found that Singaporeans feel that it is generally easy to move out of Singapore, if they wish to do so. Please provide three detailed examples from your own life showing that it is easy for Singaporeans to move out to another country.

APPENDIX I

Cultural Perspective Questionnaire – Hierarchy sub-scale

For the following questions, please indicate your answers according to this scale:

Strongly disagree	Disagree somewhat	Disagree a little	Neither agree nor disagree	Agree a little	Agree somewhat	Strongly agree	
1	2	3	4	5	6	7	
1. People at higher levels should make significant decisions for people below them.							
1	2	3	4	5	6	7	
2. People at lower levels in a group or organization should carry out the decisions of people at higher levels.							
1	2	3	4	5	6	7	
3. People at higher levels of an organization must look after those below them.							
1	2	3	4	5	6	7	
4. Organizations work best with clear and formal hierarchies.							
1	2	3	4	5	6	7	
5. People at lower levels in an organization should not expect to have much power.							
1	2	3	4	5	6	7	
6. The hierarchy of groups in a society should remain consistent over time.							
1	2	3	4	5	6	7	
7. People at higher levels should expect to have more privileges than those at lower levels.							
1	2	3	4	5	6	7	