AN ABSTRACT OF THE THESIS OF

Shannon T. Mejía for the degree of Master of Science in Human Development and Family Studies presented on November 1, 2011.
Title: Shaping Social Worlds: Exploring Relationship Regulation Processes in Older Adults' Daily Lives

Abstract approved:

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The social aspects of older adults lives are strongly linked to well-being outcomes.

Social relationships in older adulthood are rewarding, but also complex, and to

maintain a positive social environment, older adults must reconcile long relationships

histories, negotiate changing roles, and deal with increasing dependencies. Older

adults are known to be particularly effective at regulating their social environments

under these circumstances to maximize satisfaction, but some are more successful than

others. Older adults manage their social environments through processes of relationship

regulation, where individuals actively work towards social goals to customize their

social environments and close relationships to meet developmental and emotional needs.

Importantly, relationship regulation is embedded in older adults' social environments,

which are not only an outcome, but also the context that inspires, motivates, and hinders

efforts to change the social environment. Within the proximal social environment older

adults may experience support, hindrance, and satisfying contact with close social

partners. Although supportive social environments are related to health and well-being

in old age, and evidence suggests that older adults regulate their relationships, little is

known about how these goals are worked towards and achieved on a daily basis and

within the context of older adults' daily lives. The current study had two distinct aims: (a) to understand the *intraindividual* processes of regulating social goals within daily context of the social environment; and (b) to examine how *interindividual* differences predict between-person differences in social regulatory processes. Specifically, this study investigated the degree to which older adults depend on daily support and contact with a close social partner to make progress towards a meaningful social goal, and also the extent to which perceptions of social hindrance impede goal progress. On an interindividual level, this study examined how differences in the proximal social environment and goal orientation are linked to differences in social regulatory processes. Data from the Personal Understanding of Life and Social Experiences (PULSE) project, a 100-day, internet-based microlongitudinal study of 100 Oregon residents age 52 to 88 (M = 63.13, SD = 7.8), were used to explore processes of relationship regulation. At the beginning of the study, participants created a meaningful social goal, and mapped their social convoy. Participants then tracked their daily goal progress and feelings of social support, hindrance and satisfaction over a 100-day time period. Analysis was conducted using multilevel random coefficient models, and was structured to examine within person processes. Daily experiences of goal progress were positively related to social support and contact satisfaction, and negatively related with social hindrance. Importantly, these associations varied greatly between participants, in part as a function of convoy composition and goal orientations. The results from this study suggest that relationship regulation is (a) embedded in the social context of daily life; (b) differs based on the structure of the proximal social environment; (c) contingent on regulatory strategies selected by older adults to work towards their goals; and (d)

differentiated by mean tendencies. The linkages between support, hindrance and contact satisfaction with daily goal progress found in this study suggest that the process of working towards a social goal is dependent on older adults' daily social contexts. This has implications for populations with varying access to social support and exposure to social hindrance. Further, individual differences in social regulatory processes were only partially explained by convoy structure and goal orientation. Future research is needed to search for the mechanisms that drive these between person differences in social regulatory processes.

Shaping Social Worlds: Exploring Relationship Regulation Processes in
Older Adults' Daily Lives

by
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I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

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The social aspects of older adults' lives are strongly linked to health and well-being outcomes and, as such, efforts to shape and manage social resources may be one of the most successful strategies of adapting to changing needs in older adulthood (Lang & Heckhausen, 2006). Older adults with supportive and satisfying social relationships maintain more meaning in life (Krause, 2007), higher cognitive functioning (Blanchard-Fields, Horhota, & Mienaltowski, 2008), more positive health behaviors (Umberson & Montez, 2010), and report higher psychological well-being (Walen & Lachman, 2000). Yet these well-known outcomes do not address *how* individuals achieve and maintain a healthy social environment. This exploratory study addresses the processes by which healthy older adults regulate their social worlds.

Optimal aging is in many ways linked to an older adult's ability to leverage cultural and environmental resources to compensate for age-associated losses (P. Baltes & Lindenberger, 2006; Lerner, 2002), but for some, the social environment is unsatisfying, and individuals vary in their capacity to shape it (Rook, 2009). Lifespan theorists view individuals as active agents of their development who manage resources to meet their changing needs over time (Hooker, Hoppmann, & Siegler, 2010). From this perspective, social resources are viewed as malleable, and provide a life domain that individuals can leverage to maintain well-being as they age (Lang & Heckhausen, 2006). To this end, lifespan researchers argue that differences in the size and function of social networks across different life periods are the product of ongoing changes in goal motivations across the lifespan (Charles & Carstensen, 2010; Lang, 2001; Lang & Carstensen, 2002). Specifically, they theorize that older adults begin to prioritize

emotional closeness and well-being over novel and new acquaintances (Carstensen, Isaacowitz, & Charles, 1999). Following this argument, the structure and form of social networks in later life are the result of a lifetime of purposeful choices; smaller social networks in older adulthood may not represent isolation, but rather the outcome of efforts to meet changing needs. Therefore, if the social network is consistent with needs and desires, one can live alone with little contact, and still be happy and healthy (Lang, Staudinger, & Carstensen, 1998; Lansford, Sherman, & Antonucci, 1998).

In spite of the sunny portrait painted above, insomuch as social relationships support health and well-being, these relationships can also create feelings of ambivalence (Connidis & McMullin, 2002; Luescher & Pillemer, 1998), burden (Finch, Okun, Pool, & Ruehlman, 1999), and strain (DeLongis, Capreol, Holtzman, O'Brien, & Campbell, 2004). In older adulthood, individuals must reconcile long and complicated relationship histories, negotiate changing roles, and deal with increases in dependencies, each of which influences the quality and function of social relationships and the network as a whole (Antonucci, Langfahl, & Akiyama, 2006; Lang, Wagner, & Neyer, 2009). Additionally, although humans build social networks, they are also born into them, and these networks embody obligations or constraints that impede abilities to shape social environments. Differences such as race, gender, social position, life period, and historical era constrain or open opportunities to build meaningful relationships and networks of support (Antonucci, Fiori, Birditt, & Jackey, 2010; Lang & Heckhausen, 2006).

To the extent of their abilities, individuals navigate the complexities of their social worlds through relationship regulation. Individuals regulate relationships and

actively shape their social worlds by selecting social partners and general types of interactions, and also by influencing the tone of dyadic interactions (Lang, 2001). Although the ability to form and manage relationships is restricted by structural constraints, differences such as social position, resources, race and ethnicity, life period, age, and physical abilities do not necessarily preclude processes of relationship regulation (Lang & Heckhausen, 2006). Instead, evidence suggests that individuals work within biological and social constraints to regulate their social environments. One telling example is that frail older adults in nursing homes have been observed to increase their dependencies to receive more attention from nursing staff (M. M. Baltes & Wahl, 1992), and also establish reciprocity in relationships with both aides and kin by being agreeable and cooperative (Beel-Bates, Ingersoll-Dayton, & Nelson, 2007). In populations with fewer economic resources, individuals manage relationships to meet instrumental needs, such as exchanging favors, assisting with child care, and sharing resources (Edin & Lein, 1997; Fiori, Consedine, & Magai, 2008; C. L. Johnson, 1999; Stack, 1974).

The question is therefore not whether relationship regulation takes place, but rather *how* it happens, and the processes under which distinct circumstances are produced. The daily processes of relationship regulation are embedded in the proximal social environment of family and friend relationships, which is both the outcome of purposeful action and also the context that inspires, motivates, and co-regulates change (Antonucci et al., 2006). Although the effects of social support on variables of well-being are reviewed in several literatures (Akiyama, Antonucci, Takahashi, & Langfahl, 2003; Finch et al., 1999; House, Umberson, & Landis, 1988;

Umberson & Montez, 2010), how social partners support or hinder relationship regulation is all but absent from the literature.

Understanding how individuals regulate their social worlds requires an idiographic approach, one that examines how individuals fluctuate in their day-to-day environment (Nesselroade & Ram, 2004). Cross-sectional studies examine between-person differences in central tendencies. Longitudinal studies examine trajectories of change in central tendencies over time. Microlongitudinal studies, on the other hand, measure participants' daily experiences over a shorter amount of time, often ranging from 30 to 100 days. These studies examine differences in intraindividual variability, and the covariation of distinct processes (Bolger, Davis, & Rafaeli, 2003; Brose & Ram, in press; Sliwinski & Mogle, 2008). For example, microlongitudinal studies have examined how older adults manage their emotions (Carstensen et al., 2011), the co-occurrence of emotions in daily lives (Vansteelandt, Van Mechelen, & Nezlek, 2004), and the covariance of daily affect and stressful events (Sliwinski, Almeida, Smyth, & Stawski, 2009). Predictions based on theory hypothesize that older adults actively manage their proximal social environments (Lang, 2001; Lang et al., 2009), but relationship regulation has been examined only in terms of cross-sectional differences in social networks (Antonucci, Akiyama, & Takahashi, 2004; Lansford et al., 1998), social goals (Lang & Carstensen, 2002), longitudinal studies of between-person differences in trajectories (Shaw, Krause, Liang, & Bennett, 2007), and in response to negative interactions (Sorkin & Rook, 2006).

Health and well-being in older adulthood are tightly linked to positive and supportive social relationships. Therefore, relationship regulation, one of the

processes used to build and maintain a positive social environment, is essential in understanding differences in health and well-being in older adulthood. The current study explores *how* older adults regulate their social environments by examining daily progress towards a meaningful social goal, and the degree to which progress depends on the daily social environment. Specifically, this research aims to understand (a) how within-person social regulatory processes of support, hindrance, and contact satisfaction relate to older adults' daily social goal progress; and (b) how individual differences in the proximal social environment and in goal strategies predict differences in social goal progress and moderate social regulatory processes. The findings will add to our understanding of relationship regulation by specifying the degree to which older adults depend on their current social environment to shape their social worlds, and under what circumstances they are more likely to succeed.

Proximal and Distal Influences on Older Adults' Social Worlds

The proximal social environment is comprised of social relationships, the nature of interactions, and relationship responsibilities (Blieszner, 2006), which moves with individuals across the lifespan. As represented in Figure 1.1, older adults regulate relationships within their social environments, which are shaped by both distal and proximal forces that both open and constrain opportunities and constraints. On the one hand, the life course emphasizes the macroforces that shape human lives. This perspective highlights human development as a lifelong process, historical time and place, the timing of historical events, linked lives, and agency within structure (Dannefer & Settersten, 2010). The life course perspective highlights the influence of macroforces on the proximal social environment. For example, the meaning of

Figure 1.1 Conceptual Model of Proximal Social Change
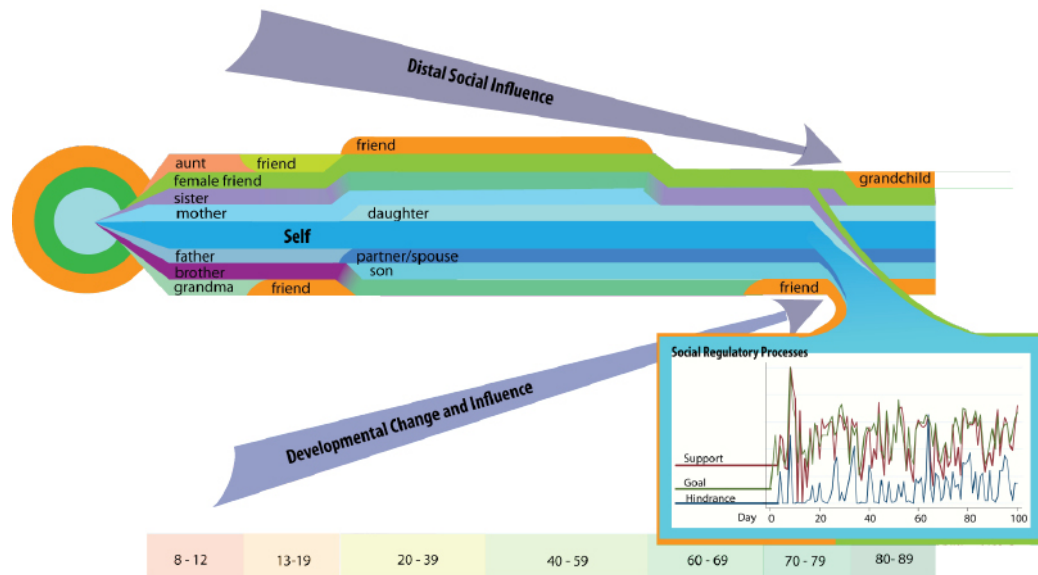
Figure 1.1 Conceptual model of proximal social change. Individuals are born into a social convoy (Khan & Antonucci, 1980), represented to the left by the three concentric circles. The convoy moves with the individual across the lifespan, and changes in both its form and function. These changes are in part shaped by macroinfluences of social position, social structure, and economic forces, and also shaped by lifespan changes in needs, abilities, and responsibilities. Relationship regulation, which is the focus of the current study, takes place within the context of social and developmental opportunities and constraints. Individuals shape their proximal social worlds to optimize their social resources.

grandparenthood has changed greatly over the last 100 years, and differs between subsets of the population. For some Americans, a general increase in resources among older adults has opened opportunities for active and engaging grandparenthood (Connidis, 2010). In other segments of the population, however, an absent welfare state coupled with a failing economy, has increased family interdependencies and burdened grandparents to support their children and grandchildren (Settersten, 2007). Therefore, although how grandparents choose to relate to their grandchildren appears agentic, life course scholars emphasize that choice is a patterned response to the greater social and economic climate.

Lifespan psychologists, on the other hand, emphasize processes of human development over time. Although lifespan psychologists acknowledge the cultural

context, they focus on aspects of the proximal environment, and specifically, how individuals shape it. Development is framed in this tradition as the ongoing management of gains and losses, which individuals actively regulate over the lifespan (P. Baltes & Lindenberger, 2006; Lerner, 2006). In this sense, lifespan psychology positions individuals as active agents of their own development (Lerner, 2002), who also regulate their social worlds (Lang, 2001). Through a process termed self-regulation (Bolkan & Hooker, 2012), individuals set goals, and work towards achieving them within their developmental contexts. Self-regulatory processes are intimately linked to shaping the individual's proximal social environment (Lang, Reschke, & Neyer, 2006). Lifespan psychologists also focus on the transactional nature of relationships, and study not only how the social world influences the individual, but also how individuals shape their social worlds (Lang & Heckhausen, 2006). As a result, the challenges of relationships may create new opportunities for personal growth and closeness (Fung, Yeung, Li, & Lang, 2009).

Individual Capacity to Shape Social Worlds

The current study focuses on the individual within the proximal social context, which although shaped by both social and developmental forces, is experienced by the individual in terms of close relationships. Within this environment, the individual expresses agency within the context of social and developmental opportunities and constraints (Brandtstädter & Rothermund, 2002; Elder & Johnson, 2003; Lang & Heckhausen, 2006). Specific to this research, within the proximal social environment, the individual regulates daily experiences, which affects not only development (Heckhausen, Wrosch, & Schulz, 2010), but also the nature of the social world

(Antonucci et al., 2006; Lang et al., 2006). Specifically, this study investigates *how* older adults regulate relationships by working towards a meaningful social goal within the context of their daily social lives. Building from the individual up, the current study begins with modeling within-person processes of working towards social goals, and ends with examining between-person differences in these processes.

Chapter 2: Literature Review

Older Adults and Their Social Environments

Interdependencies between humans and their social environments have long been of interest among scholars of sociology, psychology, and human development. Classic works on social integration and social interactions have tied these concepts to mental health (Durkheim, 1951), development (Vygotsky, 1978), and to the creation of identity, self, and meaning (Mead, 1934). The social environment also provides the platform for developing social resources, or social capital, which assist individuals in working towards and reaching aspirations across the life course (Bourdieu, 1985). Modern study of social relationships and aging examines how social exchanges and caregiving help or hinder older adults in maintaining their physical health in terms of mortality (House et al., 1988), disability (Mavandadi, Rook, & Newsom, 2007), and disease management (Gallant, Spitze, & Prohaska, 2007). Social relationships have also been studied in terms of their effect on mental health, such as positive and negative affect (Rook, 1984) depression (Davey & Eggebeen, 1998), and subjective well-being (Thomas, 2010). In these studies, social support is one of the key processes by which older adults' social networks facilitate well-being. Social support can be emotional, informational or instrumental (Schaefer, Coyne, & Lazarus, 1981). Instrumental support is a physical exchange, such as running errands, or providing care. Encouragement, listening, and comforting embody emotional support, and the exchange of knowledge and information comprises informational support.

The Two Sides of Social Support. Support, although positive in intent, is dependent on immediate circumstances and relationship histories (Blieszner, 2006; Bolger, Zuckerman, & Kessler, 2000; Newsom, 1999). Social support can be unwelcomed or overbearing, or can create feelings of incompetence (Gallant et al., 2007; Newsom, 1999). As much as close relationships foster positive feelings, they can also cause emotional pain, through either negative exchanges (Antonucci, Akiyama, & Lansford, 1998; Finch et al., 1999), or conflicting emotions and obligations (Fingerman, Pitzer, Lefkowitz, Birditt, & Mroczek, 2008). Although negative interactions are less common than positive, reaffirming interactions, they can be more damaging to psychological well-being (Ingersoll-Dayton, Morgan, & Antonucci, 1997). Furthermore, the closest relationships are often the most problematic (Fingerman, Hay, & Birditt, 2004), suggesting that there is a push and pull of positive and negative interactions that social partners must reconcile to remain close. Illustrating the complexity of these dynamics, the process of working through conflict may even bring social partners closer together over time (Fung et al., 2009). The presence of negative interactions within close social relationships suggests that developing the ability to actively regulate the social environment is necessary to maintain emotional well-being in older adulthood (Lang, 2001; Lang & Heckhausen, 2006; Lang et al., 2009).

In older adulthood, the general consensus, based on mostly cross-sectional evidence, is that older adults have smaller networks and decreased social contact relative to their younger counterparts (Antonucci et al., 2004; Cornwell, Laumann, & Schumm, 2008). Nevertheless, older adults maintain important social resources

(Martire, Schulz, Mittelmark, & Newsom, 1999), and are generally satisfied with their relationships (Lansford et al., 1998). Longitudinal studies of social relationships in older adulthood found that differences in social economic status, race, and gender explain some of the variance in individual trajectories (Shaw et al., 2007). It remains unclear, however, if change in the social convoy is age-related. Neugarten, Havighurst, and Tobin (1968) argued that in older adulthood, individuals prioritize maintaining their previous selves. In this sense, it is helpful to consider what age stands proxy for. In the case of social relationships, age represents longitudinal time spent together (Blieszner, 2006), adapting to changes in roles within situational contexts (Antonucci, Birditt, & Webster, 2010), and ongoing positive and negative social exchanges (Rook, 1997), which contribute to an individual's social world.

The Social Convoy- Context for Change

The social convoy (Kahn & Antonucci, 1980) models the development of social relationships and exchanges of social support across the lifespan, and represents the ever-changing proximal social environment in which older adults work towards their social goals. Within the social convoy, the social network is arranged in three concentric circles indicating varying degrees of closeness (see Appendix A). According to this model, humans are born into convoys of support that travel with them across the lifespan (see Figure 1.1). The convoy is characterized by both its structure, measured in terms of its size, density, complexity, homogeneity, as well as its function, which consists of relational processes of support, strain, and companionship. Personal characteristics such as age, gender, temperament, and

ability, shape the convoy, as do situational characteristics, such as resources, marital status, social position, and positive and negative life experiences (Antonucci, 1985).

Given that personal and situational characteristics change over time, the convoy changes in terms of both structure and function across the lifespan (see Figure 1.1). It changes structurally by growing, shrinking, or shifting in its composition of relationship types (Antonucci et al., 2004). The convoy also changes functionally as situational characteristics evolve (Antonucci, 1985). For example, the meaning of being a child changes across life the lifespan. It typically begins with dependency, develops into mutual adult status, and may transition into providing care to a parent. These transitions build on one another; for example, part of what a parent learns about parenting is derived from experience as a child (Qualls, 1999). In this sense, it is within the context of their social convoys that individuals change their social environments (Antonucci et al., 2006).

Patterns of convoy structure and function in older adulthood. Some convoys are better able to meet an individual's needs than others. In older adulthood, social convoys reflect histories of personal experiences and social exchanges (Antonucci, 2001; Blieszner, 2006). As a result, a network's efficacy is best understood in terms of patterns of structure and function, instead of a single variable, such as network size, which is generally not related to older adult's well-being or feelings of loneliness (Dykstra, 2009; Lansford et al., 1998). A person-centered approach to convoy analysis distinguishes patterns in characteristics such as size, relationship type, community engagement, contact frequency, contact satisfaction, and geographic proximity (Antonucci, Fiori, et al., 2010). Four robust patterns have been

identified in multiple cultures: (a) diverse, (b) family, (c) friends, and (d) restricted.

Where diverse networks have a balanced number of family and friends, family and

friend patterns are named for their respective intensities, and restricted patterns denote

individuals with few partners and low support (Fiori, Smith, & Antonucci, 2007;

Litwin & Shiovitz-Ezra, 2011).

      Friend intensive and family intensive convoys. One way that networks vary

is in the proportion of friend and family relationships (Blieszner, 2006; Fiori,

Antonucci, & Cortina, 2006). These differences are related to personal characteristics

such as personality (Lang et al., 1998), and also to lifespan differences (Moorman &

Greenfield, 2010). Relationships with friends and family hold distinct dynamics. On

the one hand, individuals are born into families, and roles and responsibilities are in

many ways socially defined (Connidis, 2010). Friendships, on the other hand, are

generally age peers, selected by choice, and easier than family ties to distance from

when necessary (Moorman & Greenfield, 2010). In terms of support, families provide

instrumental assistance, whereas friends exchange emotional support to one another

(Adams & Blieszner, 1995). Friendships, like kin relations, can also be conflicted.

Whereas family relationships are tied to filial obligations, friendships are more

strongly governed by the reciprocity norm, and often require time and resources to

maintain (C. L. Johnson & Troll, 1994). Nevertheless, because dissatisfying

friendships are dropped from the network, exchanges with friends are generally more

supportive of well-being than exchanges with family (Adams & Blieszner, 1995).

Self-Directed Change– Processes of Self-Regulation

Self-regulatory processes model how adults work towards changing their social environments. Self-regulation is broadly defined as the deliberate attempt to manage actions to facilitate positive adaptation (McClelland, Ponitz, Messersmith, & Tominey, 2010). Bolkan and Hooker (2012) describe self-regulation as an internal gyroscope, a set of skills that assists individuals to stay the course while shaping the changing self within a changing internal and external world. Self-regulation is addressed in relational developmental systems theories, social cognitive perspectives, and lifespan theories, all of which view development as an agentic process within an environmental context (McClelland et al., 2010). From these perspectives, individuals form and hold ideals of what they would like to achieve, or who they would like to become, and work towards their goals within the context of their daily lives.

Relationship Regulation. Relationship regulation is a self-regulatory process that manages the proximal social environment (Lang & Heckhausen, 2006). Individuals regulate relationships by selecting social partners, managing feelings of closeness, and monitoring levels of reciprocity (Lang et al., 2009). Relationship regulatory abilities seem to increase in older adulthood. Although the majority of network shrinkage in old age takes place due to death-related loss (Rook, 2009), evidence suggests that older adults purposefully drop peripheral members of their social networks to optimize social resources (Antonucci et al., 2004; Birditt, Jackey, & Antonucci, 2009; Lansford et al., 1998). In addition to dropping distant partners, older adults also become masters of regulating the nature of their social interactions by using passive strategies to navigate interpersonal problems (Blanchard-Fields,

Mienaltowski, & Seay, 2007), adjusting their communication strategies to their audiences (Hooker & McAdams, 2003), and regulating their reactions to disagreements (Birditt & Fingerman, 2005). Older adults also regulate experiences within their social worlds. Measured as a decrease in the range of emotional intensity (Charles & Piazza, 2007), longitudinal evidence suggests that older adults become better at regulating their emotions and less reactive to negative experiences (Carstensen et al., 2011).

In the social relationship literature, relationship regulation is conceptualized as an adaptive construct on the individual level, as opposed to a relationship process (Lang, 2001). In other words, relationship regulation is a developmental process within the individual that takes place across the lifespan. Individuals regulate their social environments by (a) influencing the aggregate of characteristics and qualities of social partners within the network, (b) managing the aggregate of dyadic relations, and (c) giving attention to everyday interactions (Lang, 2001). Theorhetically speaking, the process of relationship regulation underlies the cross-sectional evidence of age-related change in social networks. Through relationship regulation, older adults tend to be satisfied with their social convoys (Lansford et al., 1998) and relationships (Charles & Carstensen, 2010), strive to maintain peace in their relationships (Akiyama et al., 2003), and prefer agreeable everyday interactions (Birditt & Fingerman, 2003). Although relationship regulation forms the foundation of understanding older adults' capacity to adapt their social environments to their needs, the process is often explored in terms of response to negative reactions, and not daily progress towards social goals.

Within-Person Processes of Relationship Regulation

Relationship regulation involves setting and working towards social goals (Lang et al., 2006). Although self-regulatory processes have yet to be examined in the domain of relationship regulation, evidence suggests that regulation takes place within a daily social context (Antonucci et al., 2006; Fitzsimons & Finkel, 2010). To regulate relationships, individuals not only set and work towards social goals, but also *depend on* and *react to* perceptions of support, hindrance, and contact satisfaction from their social partners.

Social Goals. One of the processes that individuals use to direct their development is setting and working towards goals (Brandtstädter, 2009; Heckhausen et al., 2010; Hooker, 1999). Within the lifespan framework, goals represent intended and self-directed action towards meeting competing demands of socially defined ideals and personal dreams. Goals in the social domain represent intentional action to customize the social environment to support developmental and emotional needs (Lang et al., 2006). Social goals, which are central to self-regulation and the experience of emotions (Lang & Carstensen, 2002), guide the creation and regulation of an individual's social environment (Lang, 2001). Given that social partners influence development by providing feedback, reinforcing a sense of self, and supporting emotional well-being (Carstensen, 1991), by affecting social relationships, social goals are developmental.

The degree to which social relationships meet emotional, instrumental, and developmental needs varies across the lifespan as individuals shift in and out of new roles, responsibilities, and role-specific expectations (Antonucci, 1985; Lang et al.,

2006). Social goals enable older adults to adjust their proximal social environment in light of these lifespan changes. By setting and working towards social goals, individuals are able to create continuity in the face of change that is outside of their control. Notably, these adaptations are not always supportive of overall well-being (Heckhausen et al., 2010), such as frail older adults' tendencies to increase their dependencies in order to gain more attention from caregivers (M. M. Baltes & Wahl, 1992).

Social goal strategies. As humans have wide potential, but are bound to a limited amount of time, goal hierarchies and structures vary depending on the individual's life period (Ebner, Freund, & Baltes, 2006; Hooker, 1999). In older adulthood, goal priorities tend to shift from achievement to maintenance (Neugarten et al., 1968), and in the face of change, maintaining identity and the sense of self is more important to older adults than developing new identities (Neugarten et al., 1968; Whitbourne, 1986). For example, in the face of a role change such as retirement, older adults tend to place high priority at maintaining sense of self (Price, 2003). Additionally, in the face of biological losses that often accompany age, maintaining requires more effort, dedication, and innovation than earlier in life (P. Baltes & Lindenberger, 2006). Therefore, older adults are more likely to select a maintenance goal as a strategy to regulate their relationships. Further, maintenance orientation has been positively related to well-being among older adults (Ebner et al., 2006).

Proposed Nomenclature for Social Regulatory Processes. Theory suggests that relationship regulation is embedded in the social context, and support, hindrance, and contact satisfaction are recognized facets of the daily social environment (Finch et

al., 1999). The association between daily goal progress and daily experiences of support, hindrance, and contact satisfaction reflects the degree to which the social environments either can facilitate or impede individuals' efforts to work towards social goals. Because few studies have examined daily social goal progress, the following nomenclature is guided by previous studies of social interactions and well-being: (a) support dependency, (b) hindrance reactivity, and (c) contact satisfaction dependency. *Support dependency* is the degree to which daily experiences of support covary with goal progress, and represents the need for support to meet daily goals. *Hindrance reactivity* is the extent to which daily experiences of social hindrance are associated with lower goal progress, and implies vulnerability to hindrance in the daily social environment. Hindrance reactivity runs parallel to emotional reactivity (Rook, 2003), but implies a reaction linked to action instead of emotion. *Contact satisfaction dependency* is the degree to which social goal progress covaries with satisfying social contact, and represents dependency on contact with close social partners to make goal progress.

Social Support Processes and Social Support Dependency. Support dependency reflects the extent to which daily perceptions of support are required to make social goal progress. Even though relationship regulation is conceptualized as taking place within the context of daily life (Lang, 2001), it has not been studied, to my knowledge, in relation to daily perceptions of social support. Based on evidence on the association between daily support and experiences of well-being (DeLongis et al., 2004) and relationship quality (Rafaeli, Cranford, Green, Shrout, & Bolger, 2008) however, I expect older adults to depend on support to work towards their social goals.

This expectation is also consistent with the social convoy model, which predicts that relationships, founded through exchanges of support, travel with individuals across the lifespan (Kahn & Antonucci, 1980). Therefore, it is likely *with* the support of social partners that individuals fine-tune their social environments across their lifespans. Importantly, the flip side of support dependency exposes potential vulnerability in the absence of daily support, which is especially salient in older adulthood where shrinking networks (van Tilburg, 1998) and changing social needs (Charles & Carstensen, 2010) require relationship regulation to maintain a functional social convoy (Lang, 2001). If older adults depend on support to compensate for loss, support dependency has implications for older adults who lack supportive relationships.

Social Hindrance Processes and Hindrance Reactivity. Social partners not only provide support, but can also hinder goal progress (Ruehlman & Wolchik, 1988). Social hindrance lies under the umbrella of negative social exchanges (Finch et al., 1999), but is specific to goal-directed behavior. Individuals perceive social hindrance when a social partner, or the social environment in general either intentionally or unintentionally, impedes goal progress (Rafaeli et al., 2008). Hindrance may occur through social tensions, interpersonal criticism, or social obligations that constrain efforts to work towards a goal (Ruehlman & Wolchik, 1988). Although hindrance is conceptualized in terms of goal-related behavior, it is rarely studied in relation to daily goal progress. Previous studies of hindrance processes consistently find daily hindrance experiences to be negatively associated to goal and well-being outcomes. For example, adults with fibromyalgia made less interpersonal goal progress on days

when they felt more hindered by pain and fatigue (Affleck et al., 1998). In the emotional domain, daily experiences of hindrance were related to negative relationship feelings on that day (Rafaeli et al., 2008). Hindrance reactivity is especially salient in the social goal domain because aspects of the social environment may be resistant to change. For example, to the degree that relationships require maintenance (Blieszner, 2006; Lang et al., 2009), close social partners may resent efforts to reach out make new friends, and social obligations may interfere with attempts to change the social environment. Further, if the purpose of social goals is to optimize the social environment (Lang, 2001), social goals are likely aimed at directly or indirectly reducing hindrance. The degree to which hindrance constrains goal progress is therefore directly relevant to the process of relationship regulation.

Processes of Daily Contact Satisfaction and Satisfaction Dependency.
Within the social convoy framework, the closest social partners are those whom individuals cannot live without. In addition to support and hindrance, social partners also provide companionship (Rook, 1987) and confidence (Connidis & Davies, 1990). Contact satisfaction dependency represents the degree to which, beyond expressions of support and hindrance, older adults depend on satisfying contact with close social partners to make goal progress. Exploring contact satisfaction dependency will open a window into the functions of close social partners beyond support. Given that the convoy model suggests the closest social partners are also the most supportive, daily contact satisfaction should overall be positively related to daily goal progress. Nevertheless, because close relationships are also the most conflicted (Fingerman et al., 2004), and close social partners are not necessarily contacted daily (Moorman &

Greenfield, 2010), contact satisfaction dependency likely varies as a function of the proximal social environment.

The Current Study

Although supportive social environments are related to health and well-being in old age, and evidence suggests that older adults regulate their relationships, little is known about the daily circumstances under which older adults are more or less successful. The current research aims to fill the gap in the literature on social regulatory processes by exploring how older adults work towards regulating their social environment on a daily basis. This study will draw upon lifespan developmental perspectives and the social convoy model to begin to map out *how* individuals strive towards their social goals within the context of daily social life.

First, lifespan developmental theories suggest that older adults actively regulate their social environments (Heckhausen & Schulz, 1995; Heckhausen et al., 2010; Lang & Heckhausen, 2006), but research on this topic addresses differences between people, instead of processes within persons. Second, the social convoy proposes that the social environment is both the outcome and context of regulatory endeavors (Antonucci et al., 2006), but research has not yet addressed how the proximal social environment affects daily social regulatory processes. Finally, in terms of goal orientation, lifespan theories of development predict that older adults prefer and fare better when working towards maintenance goals (Ebner et al., 2006), yet these strategies have yet to be explored in terms of goal achievement processes. To address within-person theory on a within-person level, this study explores how daily social regulatory processes of social support, hindrance, and contact satisfaction

relate to older adults' daily goal progress. The proposed research has two aims: (a) to understand the *intraindividual* processes of regulating social goals within the daily context of the social environment, and (b) to examine how *interindividual* differences in convoy composition and goal orientation predict between-person differences in social regulatory processes. Understanding the interdependencies between older adults and their daily social environments is important because optimal adult development is contingent on older adults' abilities to successfully adapt their social worlds.

Research Questions. This study has two research questions (see Figure 2.1 for expected linkages):

1. How do the daily social regulatory processes of social support, social hindrance, and
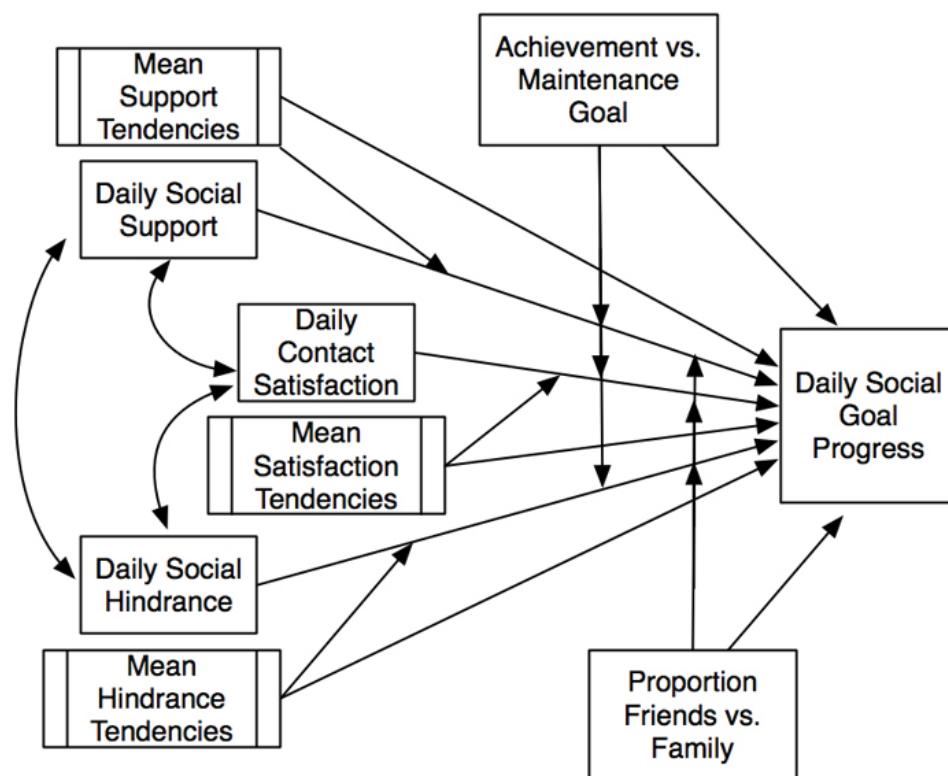
Figure 2.1 Conceptual model of anticipated linkages.

social contact satisfaction relate to daily social goal progress? Although this research is exploratory, based on the literature of relationship regulation (Lang, 2001; Lang et al., 2009), social relationships (Shaw et al., 2007), and social support (Finch et al., 1999), I expect that within-person variation in daily social support will positively covary with daily goal progress, and that daily social hindrance will negatively covary with daily goal progress. Given that the closest social partners are theorized to be the most supportive (Kahn & Antonucci, 1980), I expect that variation in contact satisfaction will also positively co-vary with daily goal progress, independent of social support. Further, given the known between-person differences in reactivity to negative interactions (Rook, 2003), the challenges associated with receiving support (Gleason, Iida, Shrout, & Bolger, 2008), and distinct relationship patterns (Fiori et al., 2007), I expect the associations between social regulatory processes and social goal progress to vary between participants.

2. Do individual differences in (a) achievement versus maintenance goal strategy and (b) convoy composition predict daily goal progress and moderate social regulatory processes? (a) Based on the literature of older adulthood and the preference for maintenance goals over achievement goals (Bolkan & Hooker, 2012; Ebner et al., 2006; Neugarten et al., 1968; Whitbourne, 1986), I expect participants with maintenance social goals to report higher daily goal progress than participants with achievement goals. In addition, because I expect social goal progress to be embedded in the daily environment, I also anticipate that social regulatory processes will differ as a function of goal orientation. Specifically, given that achievement goals are negatively related to well-being (Ebner et al., 2006), I expect that participants with

achievement rather than maintenance goals will be more dependent on social support and contact satisfaction, and more reactive to daily experiences of social hindrance. (b) As convoy structure reflects differences in relationship regulatory lifespan trajectories, and family and friends are distinct in terms of relationship quality and support, I expect that participants with more friends in their network will report higher daily goal progress in general, and that social regulatory processes will differ as a function of the proportion of friends in the participants' social convoys. Specifically, because those with a higher proportion of friends may be more likely to be single (Moorman & Greenfield, 2010) and familiar with extending their social circles, I expect that participants with a higher proportion of friends in their network will be less dependent on support than those with family members. Given that friendships require investments of time and resources to maintain (C. L. Johnson & Troll, 1994), and are governed by the norm of reciprocity (Lang et al., 2009), I expect those with a higher proportion of friends to be more reactive to hindrance. In terms of contact satisfaction, because family relationships are complex in older adulthood (Fingerman et al., 2004; Silverstein & Giarrusso, 2010), I expect those with a higher proportion of family members will be more dependent on contact satisfaction to make daily progress towards their social goals.

Chapter 3: Method

Study Design

This research used data from the Personal Understanding of Life and Social Experiences (PULSE) Project (Hooker, 2009). This study was a pilot project designed to examine intraindividual processes in health and social goals and interindividual differences in those processes. The PULSE project included measurements of internal and external aspects of daily life over a 100-day period. Conceptually, each individual is an *n*-of-one study, and every individual is a replication of the study. This approach is known in the literature as a multivariate replicated single-subject repeated measures (MRSSRM) design (Nesselroade, 1990; Nesselroade & Ram, 2004). This design allows for the examination of daily progress towards a social goal in relation to social regulatory processes of support, hindrance, and contact satisfaction. The MRSSRM method highlights how distinct processes covary in the context of daily life (Nesselroade & Ram, 2004). The current study builds from the individual up to examine how older adults regulate their social environments, and allows insight into how social goal progress varies within the daily context of social support, hindrance, and contact satisfaction.

Another advantage of this approach is that the MRSSRM design has higher external validity than an approach that measures people on one day or a small sample of days (Hooker et al., 2010). Daily measurements are outside of an experimental lab and grounded in the daily environment of the older adult's life, which allows participants' responses to reflect the context of the day. In the case of this study, daily goal progress

was measured concurrently with social support, social hindrance, and contact satisfaction to capture qualities of the immediate social environment. A MRSSRM design allows investigation into the daily interplay of these constructs (Ram, Conroy, Hyde, & Molloy, in press). Traditionally, the positive and negative aspects of social relationships have been measured asymmetrically, and cross-sectionally, where support was prospective and hindrance retrospective (Rook, 1997), which influences the relationships among support, hindrance, and well-being (Finch et al., 1999). With a MRSSRM design, support, hindrance, contact satisfaction, and daily goal progress are measured in the same temporal space, which allows for a more accurate representation of the relationship between these constructs.

Daily measurements are also less susceptible to error from participant recall and aggregation of experiences. Self-reports are sometimes problematic because they require participants to engage in a complex cognitive process (Schwarz, in press). In older populations, evidence suggests that developmental changes create positive bias on reconstructed events (Charles & Carstensen, 2010). In the context of social relationships, older adults are known to remember social interactions in a positive light (Charles & Carstensen, 2008). Therefore, research that ties ratings of social interactions closer in time to the actual interactions could be beneficial for the valid measurement of self-regulation, especially among older adults.

Sample

The PULSE project is the first known microlongitudinal study of older adults to be completed entirely via the internet. In the PULSE study, 105 Oregon residents age 52 to 88 ($M = 63.13$, $SD = 7.8$) were recruited from the LIFE Registry. The LIFE

registry is a list of individuals over the age of 50 who reside in Oregon and have indicated interest in participating in aging research. The life registry has 484 members, who range in age from 52 – 94 ($M = 65.78$), and mostly women (75%). Upon recruitment into the LIFE registry, members are informed they will receive notification of upcoming aging research. LIFE registry members elect to receive communication by either mail or e-mail, and most (93%) choose e-mail notifications. To recruit for the PULSE study, an e-mail describing the internet-based study was sent to 450 LIFE registry members, who then followed a link embedded within the e-mail to learn more about the study and sign up to participate. Members were informed that they would receive $10 compensation for completing the initial survey, and an additional $50 for completing 80% of the daily surveys.

The resulting sample (22% of the LIFE registry) was mostly White (97%), women (88%), well educated (77% have a bachelor's degree or higher), and healthy (93% reported good or excellent health). The majority of the participants were married (73%), 14% were widowed, 11% divorced or separated, 5% single, and 2% indicated other. The sample varied in degrees of employment: 47% were retired, 46% part or full time employed, and nearly 8% were unemployed. One of the goals of the PULSE project was to explore different temporal frames for data collection. Therefore, 25% of the sample was randomly assigned to a *burst group*, which divided daily measurement into four 7-day bursts during the 100-day time period. A Hotelling Trace multivariate test of means found no significant demographic differences between the two groups ($T^2 = .05$, F (1,2) $= .76$, $p > .05$).
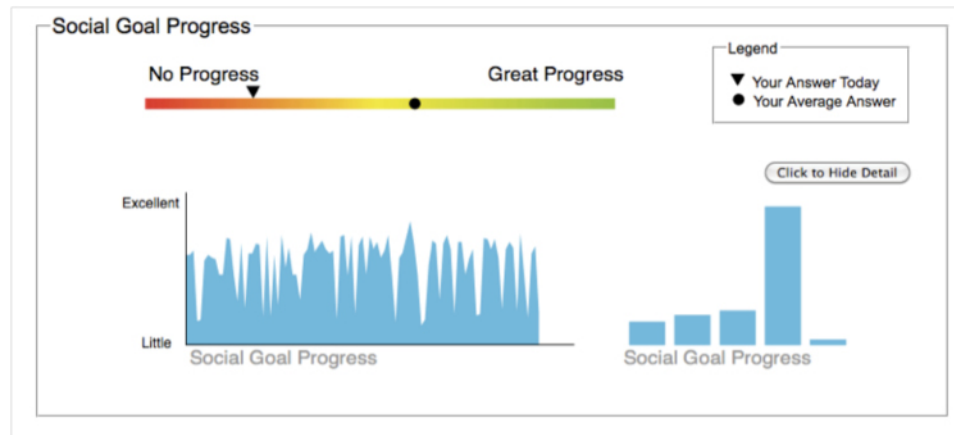
Figure 3.1 Personalized visualization of PULSE responses.

Procedure

The PULSE project had two distinct components: (a) an initial survey, and (b) a series of individually tailored daily surveys. In the initial survey, participants provided information on demographic and social variables, and set a meaningful social goal to work towards during the study's duration. In the daily questionnaire, participants indicated how much progress they made towards their social goal, how much support they received towards their social goal, and how much their social network hindered their ability to make progress that day. The participants also indicated, whom, of the five closest social partners named in the initial survey, they interacted with each day, and their satisfaction with each social exchange. To reliably follow goal progress and track interactions with closest social partners indicated in the initial survey, data from the initial survey populated the daily surveys. Participants received a daily email reminder with a link to their daily questionnaires, which expired at 2:00 am on the following day. In an effort to increase compliance, following daily surveys, participants were directed to a personal feedback portal, which displayed their responses for that day, and personal averages on social goal progress, optimism, mood, and contact

satisfaction. Participants could interact with the portal to see longitudinal trends of their daily responses (see Figure 3.1).

Initial Survey Measures

  Meaningful social goal. Participants chose one meaningful goal in the domain of social relations with family or friends that they expected to be working on over the next four months (Little, 2006). In a text box the participants described the goal in as much detail as possible, including why it was important to them. The participants also provided a few representative cue words that would populate the daily survey and remind participants of the specific goals they were working towards (See Table 3.1 for a representation of social goals, importance statements, cue words, and goal orientation). Researchers reviewed the social goal words, and followed up with participants by e-mail to clarify goals and cue words as needed.

  Goal orientation. After describing social goals and their importance, participants indicated whether their goals were directed at achievement or maintenance. Maintenance and achievement goals were described as follows: "Would you say that this goal is one of initial achievement (you need to work towards it) or one of continuing achievement or maintenance (you have achieved your goal but want to work to maintain it)?"

  Social convoy composition. The social convoy measure (Antonucci, 1986) was used to measure the proportion of friends and family in the participants' convoys. Participants reported close social partners within three concentric circles (see Appendix A), including their first names and relationships. Social partners with whom they could not live without were listed in the innermost circle, important social partners in the

Table 3.1

Summary of PULSE Participants' Social Goals, Importance Statements, Cue Words, and Achievement vs. Maintenance Goal Orientation.

Goal	Importance	Cue Words	Achieve Maintain
Become closer to my spouse, and work through awkward moments.	We have grown a bit apart, and I want to be closer	Close to my wife	Achieve
Reach out and make more friends	I am too comfortable being alone, and it's time to make friends	Make new friends	Achieve
Appreciate the friends and family that I have.	They are important to me	Appreciate loved ones	Maintain
Listen more and be nice to people	I am often critical, and I want people in my life	Kind listening	Achieve
Find a better balance between work commitments and spending time with friends and family	I love my work, but it's easy for me to get lost in it. Friends and family are important	Work life balance	Maintain
Become closer to my new daughter in law	She is important to my son, and I want to be in their life	My new daughter	Achieve
Stay connected with distant friends and family	Even though we live far apart, they are important to me	Stay connected	Maintain
More fun spontaneous time with my husband	He likes to be social, and now that we're both retired, we've got a lot of time on our hands	Fun times and date night	Achieve
Be supportive to my family	Family is important, and I want them to know they can count on me	Support family	Maintain
Make a new friend	I would really like to have a best friend. I miss that	New friend	Achieve
Keep up with my active friends	I love running with them, it's exercise and social	Running buddies	Maintain
Be more socially engaged, reach out, and meet new people	I need to get outside of my comfort zone, reach out and visit the senior center	Be more social	Achieve
Keep in touch with my siblings	They are important to me, I do not want to grow apart	Brother and sister	Maintain
Be social, but honor my personal limits.	It's so easy for me to get ahead of myself	Social within boundaries	Maintain
Keep my mood positive, no matter how challenging the situation	I really like being positive. It's an important part of who I am	Bright spirits daily	Maintain
Join a social group that's based on my interests	Meet others who have the same interests!	Social club	Achieve

Note: The above statements are derived from PULSE participants goals, and although representative of the dominant themes, these are not direct quotations.

middle circle, and social partners with whom they felt close in the outer circle. Before activating the daily sessions, researchers reviewed the names and relationships of the participants' listed social partners to assure they were alive and human, and followed up with participants by email as necessary. To calculate the proportion of friends in the social convoy, relationships were coded as either friend or family. Spouses, life partners, significant others, siblings, siblings in law, children, children in laws, and grandchildren were coded as family. Friends, coworkers, bosses, professional colleagues, and godchildren were coded as friends. The total number of friends was divided by the total number of social partners in the convoy, and multiplied by 100 to scale the proportion from 1 to 100.

Daily Measures Social Regulatory Processes

Measures of daily goal progress and social regulatory processes are continuous variables, and were measured on a sliding scale between 0 and 100. This strategy was applied to maximize measurement sensitivity to between-day variations. The rating scales did not include numbers visible to the participant, in order to encourage assessing each day independently, as opposed to continuously selecting a specific number (Brose & Ram, in press; Freyd, 1923; Hooker, 1991).

Daily social goal progress. The participants' daily efforts to change their social environments were measured using daily social goal progress from the PULSE study. Each day, for 100 days, participants indicated their social goal progress. The daily social goal question was automatically populated with the short (approx. 3-word) social goal cue collected in the initial survey. An example goal prompt is as follows: Rate your progress towards your goal of "*make new friends*". Participants then

2. Rate your progress towards your goal of make more friends

No Progress | Much Progress

    2.1. Did you receive any practical or emotional assistance towards your social goal today?

    Not at all | Very much

    2.2. Did anyone in your social network create tension, arguments, or time constraints that impeded progress towards you social goal today?

    Not at all | Very much
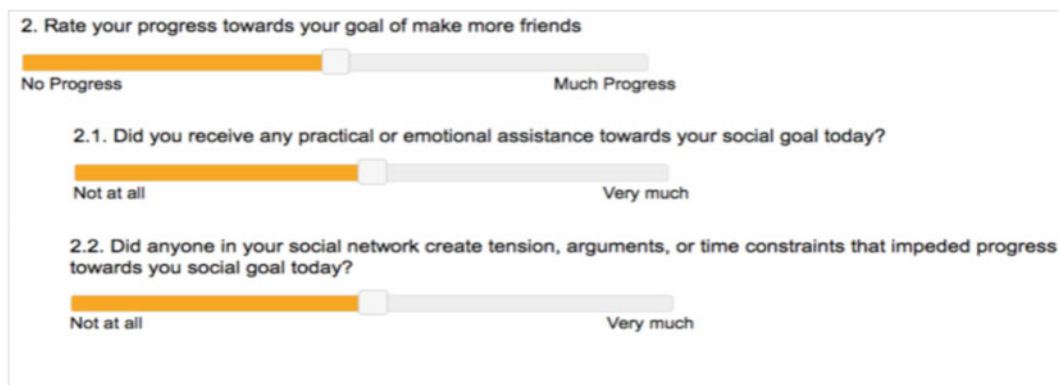
Figure 3.2 Daily measures of goal progress, support, and hindrance.

indicated their progress on a slider between *no progress*, (0) and *much progress* (100)

(see Figure 3.2).   See Table 3.1 for a summary of social goals and corresponding

cues.

       Daily social support. Perceptions of support from the proximal social

environment were measured using the daily social support variable (adapted from

Rafaeli et al., 2008) from the PULSE study. In each session over the 100-day time

period, participants indicated how much practical or emotional assistance they received

from their social network that assisted progress towards the social goal that day, by

responding to the question, "Did you receive any practical or emotional assistance

towards your social goal today?" Participants responded by moving a slider between

no support (0) and *much support* (100) (see Figure 3.2)

       Daily social hindrance. The degree to which the social environment hindered

daily social goal progress was measured using the social hindrance measure (adapted

from Rafaeli et al., 2008) from the PULSE study. In each session over the 100-day time

period, participants indicated whether their social network hindered goal progress by

responding to the question, "Did anyone in your social network create tension,

arguments, or time constraints that impeded progress towards you social goal today?"

14. Please indicate who you interacted with today

Manuel ⦿ Yes   ○ No

How did you contact Manuel?

☐ In person
☐ By phone
☐ Social Media
☐ Email/Text
☐ Other

How satisfied were you with this interaction?

Unsatisfied   Satisfied

Lydia   ○ Yes   ⦿ No

Bill   ○ Yes   ⦿ No

Jessica   ○ Yes   ⦿ No

Ellen   ○ Yes   ⦿ No

Figure 3.3 Daily measure of social interaction and contact satisfaction

Participants responded by moving a slider between *not at all* (0) and *very much* (100) (see Figure 3.2).

Daily contact satisfaction. The PULSE study's contact satisfaction measure (adapted from Rook, 1987), was used to measure daily contact satisfaction. This measure was populated with the names of the participants' five closest social partners, as indicated in the social convoy measure. The majority of participants (61%) had an inner circle smaller than five, and therefore a social partner or partners from the middle circle were included in the daily questionnaire. In the daily questionnaire, participants checked boxes next to the participants they had interacted with that day. For each partner participants interacted with, they reported their satisfaction with the interactions on a continuous sliding scale ranging from *not satisfied* (0) to *very satisfied* (100) (see Figure 3.3). Daily contact satisfaction was calculated by summing the number of social partners contacted on a given day, summing the total satisfaction on a given day, and

then dividing the total daily satisfaction by the total number of interactions (total satisfaction / total contact = daily contact satisfaction). To allow the model to represent goal progress on days with and without interactions with close relationships, days where *none of the listed social partners were contacted* were coded as zero.

Covariates

Age and gender were included as covariates because of their known relationships to self-regulatory processes (Birditt & Fingerman, 2003; Hennecke & Freund, 2010) and social relationships (Akiyama et al., 2003). A dummy variable indicating membership in the burst group was included to examine differences between groups and the effects of exposure time (28 days vs. 100 days) on differences in daily goal progress and social regulatory processes.

Analytic Plan

Data were analyzed using a multilevel random coefficient model (Bolger et al., 2003; Nezlek, in press), which fits the research conceptually and methodologically. Conceptually, processes are nested within persons, and methodologically, observations are nested within persons. The multilevel random coefficient model also allows for examining social regulatory processes on a within- and between-person level, and allows social regulatory processes to vary between individuals by estimating an intercept and slope for each participant. In order to study within-person processes, data were rendered time structured by controlling for time trends (Ram & Gerstorf, 2009), and variables were parsed into within and between-person components (Bolger et al., 2003).

Time Structured Data. To examine within-person social regulatory processes, the data were processed to control for variation as a function of time. Separating out signal from noise is one of the challenges of repeated measure study designs. On a day-to-day basis, variation has many influences. Part of day-to-day variation reflects cyclical time trends, or a general time trend over the course of the study (Ram, Brose, & Molenaar, in press). As such, linear, quadratic, and cubic functions of time were included in the model. To control for individual trajectories of growth or decline across the study period, the linear time trend was modeled as a random coefficient. Controlling for these trends allowed the model to better represent how daily variations in within-person social regulatory processes is related to variation in daily goal progress.

Parsing Out Within- and Between-Person Variances. Variation has both within-person and between-person elements. Within-person variation is the amount individuals vary from their personal tendencies. Within-person variation is time variant and varies above and below the participant's mean. Between-person variation refers to individual differences in process tendencies. Consistent with methods applying multilevel models to examine within-person processes, daily support, hindrance, and contact satisfaction were person centered so that variation was relative to the norm for each individual (Bolger et al., 2003). The participants' mean scores of daily support, hindrance, and contact satisfaction were also calculated to represent personal tendencies of social regulatory processes. Including between-person social regulatory tendencies controlled for differences in mean tendencies.

Modeling within-person social regulatory processes. Within-person social regulatory processes were examined by constructing a series of multilevel models.

Analysis was conducted using the xtmixed command in Stata (Rabe-Hesketh &

Skrondal, 2008).[1] In order to build a model that represented within-person processes,

the effects of covariates on daily goal progress and on within-person social processes

were carefully examined. Before building the full analysis model, each social

regulatory process was examined in relation to time and the covariates of age, gender,

and group membership. Individual within-person processes were measured using the

following equation (1):

Equation (1)

$$y_{ij} = \beta_{0j} + \beta_{1j}(Day_{ij}) + \beta_{2j}(Day^2_{ij}) + \beta_{3j}(Day^3_{ij}) + \beta_{4j}(SocialRegulatoryProcess_{ij}) + e_{ij}$$

Where Y_{ij} represents the social goal progress score for person j at day i. β_{0j} represents

participant j's constant. Parameters β_{1j}, β_{2j}, and β_{3j} model and control for linear,

quadratic, and cubic time trends (Ram, Brose, et al., in press), and e_{ij} models the residual

for person j at day i.   Between-person differences in within-person processes were

measured with the following equation (2).

Equation (2)

$$\beta_{0j} = \Upsilon_{00} + \Upsilon_{01}(Age_j) + \Upsilon_{02}(Gender_j) + \Upsilon_{03}(Group_j) + \Upsilon_{04}(\overline{Social\,\mathrm{Re}\,gulatory\,\mathrm{Pr}\,ocess_j})$$

$$+ \zeta_{0j},$$

$$\beta_{1i} = \Upsilon_{10} + \zeta_{1j},$$

$$\beta_{2i} = \Upsilon_{20},$$

$$\beta_{3i} = \Upsilon_{30},$$

$$\beta_{4j} = \Upsilon_{40} + \Upsilon_{41}(Age_j) + \Upsilon_{42}(Gender_j) + \Upsilon_{43}(Group_j) + \Upsilon_{44}(\overline{Social\,\mathrm{Re}\,gulatory\,\mathrm{Pr}\,ocess_j})$$

$$+ \zeta_{4j}$$

---

[1] Results were also replicated to the third decimal point in both Mplus and HLM.

The β_{0j} equation shows that the intercept for person j is modeled by between-person differences in Age (β_{01}), Gender (β_{02}), Group (β_{03}), and mean tendencies of the social regulatory process (β_{04}). Parameter ζ_{0j} represents the variation of person j from the mean intercept. The β_{4j} equation allows the social regulatory process to be moderated by the covariates. Parameters $\zeta_{1j \text{ and }} \zeta_{4j}$ represent specific person j's variation from the mean coefficients of time (β_{1i}) and social regulatory process (β_{4j}).

After carefully examining each within-person social processes in relation to time, and the covariates of gender, age, and group membership, the full model was built to examine the association of within-person processes of support, hindrance, and contact satisfaction with daily social goal progress. Models were estimated using maximum estimation likelihood to facilitate model comparison using the log likelihood test (Rabe-Hesketh & Skrondal, 2008).

Model building began with the unconditional model (Hox, 2010; Rabe-Hesketh & Skrondal, 2008), which estimated within and between-person variance of social goal progress, and provided a baseline for model comparison. Covariates and time were then added to the model. Consistent with empirical and theoretical evidence, support was added first to the model, and hindrance and satisfaction were added sequentially to examine their unique contributions to explaining variation in social goal progress. Hindrance, as support's theoretical counterpart was added second, and contact satisfaction was added third to examine its contribution independent of support and hindrance processes. The full process model was calculated as follows in equations (3) and (4).

Equation (3)

$$y_{ij} = \beta_{0j} + \beta_{1j}\left(Day_{ij}\right) + \beta_{2j}\left(Day^2_{ij}\right) + \beta_{3j}\left(Day^3_{ij}\right) + \beta_{4j}\left(SupportWithin_{ij}\right) + \beta_{5j}\left(HindranceWithin_{ij}\right) +$$
$$\beta_{6j}\left(ContactSatisWithin_{ij}\right) + e_{ij}$$

Where y_{ij} represents social goal progress for person j at day i. Parameters β_{1j}, β_{2j}, β_{3j}

model linear, quadratic, and cubic time, and β_{4j}, β_{5j}, and β_{6j} model the daily effects of

within-person social processes. Specifically, these parameters are the critical values,

and estimate whether variation in support, hindrance, and satisfaction corresponds with

variation in daily social goal progress. The within-person residual of person j at day i is

represented by the term e_{ij}. The between-person model was built as follows in equation

(4):

Equation (4)

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(Age_j) + \gamma_{02}(Gender_j) + \gamma_{03}(Group_j) + \gamma(\overline{Support}_j) + \gamma_{05}(\overline{Hindrance}_j) +$$
$$\gamma_{06}(\overline{ContactSatis}_j) + \zeta_{0j}$$

$$\beta_{1j} = \gamma_{10} + \zeta_{1j}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40} + y_{41}(\overline{Support}_j) + \zeta_{4j}$$

$$\beta_{5j} = \gamma_{50} + y_{51}(\overline{Hindrance}_j) + \zeta_{5j}$$

$$\beta_{6j} = \gamma_{60} + y_{61}(\overline{ContactSatis}_j) + \zeta_{6j}$$

In equation (4), the random intercept β_{0j} includes the fixed effects for between-

person differences in age, gender, group, and mean level tendencies of social regulatory

processes. Including the mean-level tendencies allowed the comparison of within and

between-level variances side-by-side. The equations for parameters β_{4j}, β_{5j}, and β_{6j}, the

social regulatory processes, include interaction terms with mean level tendencies of the respective processes. These interactions allowed a social process to vary as a function of the persons mean tendency for the respective process. Time, support, hindrance, and contact satisfaction included between person error term ζ, which allowed these coefficients to vary between individuals.

Between-person differences in social regulatory processes. To address the second research question, the exploration of social convoy composition and goal orientation as predictors of between-person differences in goal progress and social regulatory processes, a second series of models was created. The first model included the social composition variable as both a direct effect and moderator of within-person social processes. The second model included goal orientation (achievement vs. maintenance) as both a direct effect and moderator of within-person social processes. In the process level (Equation 5) all social regulatory processes were included.

Equation (5)

$$y_{ij} = \beta_{0j} + \beta_{1j}\left(Day_{ij}\right) + \beta_{2j}\left(Day^2_{ij}\right) + \beta_{3j}\left(Day^3_{ij}\right) + \beta_{4j}\left(SupportWithin_{ij}\right) + \beta_{5j}\left(HindranceWithin_{ij}\right) + \beta_{6j}\left(ContactSatisWithin_{ij}\right) + e_{ij}$$

Separate between-person models were created for convoy composition and goal orientation as follows in equation (6).

Equation (6)

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(Age_j) + \gamma_{02}(Gender_j) + \gamma_{03}(Group_j) + \gamma(\overline{Support}_j) + \gamma_{05}(\overline{Hindrance}_j) +$$
$$\gamma_{06}(\overline{ContactSatis}_j) + \gamma_{07}(Friends_j) + \zeta_{0j}$$

$$\beta_{1j} = \gamma_{10} + \zeta_{1j}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40} + y_{41}(\overline{Support}_j) + (Friends_j) + \zeta_{4j}$$

$$\beta_{5j} = \gamma_{50} + y_{51}(\overline{Hindrance}_j) + (Friends_j) + \zeta_{5j}$$

$$\beta_{6j} = \gamma_{60} + y_{61}(\overline{ContactSatis}_j) + (Friends_j) + \zeta_{6j}$$

The critical values for this model are the fixed effects and interaction terms. Beyond examining these direct and indirect effects, this model, when viewed in comparison to the process model from equations (3) and (4), examines whether differences in convoy structure and goal orientation explain a significant portion of the between-person variance in within-person social regulatory processes.

Chapter 4: Results

Attrition and Compliance Analysis

Attrition. From the original sample of 105 participants who completed the initial survey, six dropped out of the study. Of these six, five specifically requested to be removed from the study, and one was removed before analysis because only five sessions were completed. The six who dropped out were not significantly different from participants in terms of education, employment status, marital status, and total convoy size ($T^2 = .04$, $F(7,97) = .52$, $p < .05$.) All of those who dropped out of the study were women.

Compliance. Participants varied in the number of sessions completed, which is accommodated for by multilevel analysis (Hox, 2010). Nevertheless, over the 100-day study period, distinct missingness patterns emerged. Participants in the daily group completed on average 86 sessions ($SD = 16.17$, range $= 21 - 100$). Participants in the burst group completed an average of 22 sessions ($SD = 4.45$, range $= 13 - 28$). K cluster means analysis was used to examine patterns of missingness in the daily group, and three compliance patterns were identified. Multinomial analysis showed the groups to be statistically similar in terms of age, health, gender, employment status, and marital status. Between the two most compliant groups, however, those with higher education were more likely to be a member of the most compliant group ($OR = 1.67$, $z(64) = 2.00$, $p < .05$). See Appendix B for a full description of the compliance analysis.

Table 4.1

Within Person Correlations for Social Regulatory Processes

Variable	ICC	iSD	(sd)	1	2	3
1. Social Goal	.50	18.01	(8.03)			
2. Support	.55	19.60	(8.05)	.57		
3. Hindrance	.50	14.04	(8.63)	-.16	-.10	
4. Contact Satisfaction	.39	18.02	(10.88)	.15	.14	-.18

Note. ICC = intraclass correlation and represents the proportion of variance explained by group measurement. iSD = individual standard deviation, and represents the standard deviation of social regulatory processes across the duration of the study.

Daily Variation in Within-Person Social Regulatory Processes

To begin analysis, each social regulatory process was modeled unconditionally, which quantified the proportion of variance that was between and within participants for each process. The resulting intraclass correlation (ICC) for daily social goal progress was 50%, which indicates that the within-person variance and between-person variance was equally divided. The proportions of the within-person variance for the social regulatory processes (1 – ICC) were 45%, 50%, and 61% for social support, social hindrance, and contact satisfaction, respectively. See Table 4.1 for a correlation matrix of within-person processes. Interestingly, the results show that although related, support, hindrance, and contact satisfaction are distinct measures on the within-person level.

Before building the full model, each social regulatory process was analyzed in detail with time, covariates, and each social regulatory process's respective mean level tendency. The analysis showed that age, gender, and group membership neither predicted differences in goal progress, nor moderated the social regulatory processes. The pre-estimation models identified quadratic and cubic temporal trends, and also

Table 4.2

Pre-Estimation Models of Covariates on Goal Progress and Social Regulatory Processes

Parameters	Support β	(SE)	Hindrance β	(SE)	Satisfaction β	(SE)
			Fixed Effects			
Intercept	64.73***	(1.67)	65.55***	(2.28)	65.42***	(2.15)
Day x 10	-0.10	(.20)	-0.003	(.03)	-.07	(.26)
Day^2 x 10	-0.01***	(.00)	-0.02***	(.00)	-.01***	(.00)
Day^3 x 10	-0.00***	(.00)	-0.00***	(.00)	-.00***	(.00)
Age	0.05	(.18)	0.12	(.25)	.24	(.24)
Gender	-1.10	(4.41)	-8.56	(6.03)	-6.82	(5.74)
Group	-2.81	(3.44)	-2.70	(4.98)	-2.21	(4.58)
Process WP	0.50***	(.03)	-0.13***	(.03)	.21***	(.11)
Process BP	0.58***	(.06)	-0.21	(.13)	.39***	(.11)
Process WPXBP	0.002*	(.00)	-0.01**	(.00)	.001***	(.000)
ProcessXAge	-0.01	(.00)	0.01	(.00)	-.00	(.00)
ProcessXGender	0.09	(.08)	0.17	(.09)	.10	(.07)
ProcessXGroup	-0.02	(.07)	0.08	(.07)	.12	(.07)
			Random Effects (Sd)			
Process	0.25***	(.27)	0.20***	(.02)	.16***	(.02)
Day	0.12***	(.12)	0.16***	(.01)	.16***	(.01)
Residual Between	14.44***	(.95)	19.35***	(1.40)	18.35***	(1.33)
Residual Within	14.66***	(.13)	18.60***	(.16)	18.52***	(.16)
Deviance	58,410.1		61,676.3		61,644.9	

Note: WP = within-person; BP = between person. Day, Day^2 and Day^3 are multiplied by 10 to increase parameter visibility. Age, Group, Gender, Day, and Process Between are grand mean centered. Model fit comparisons tested using change in log likelihood (Δ -2*LL) (Rabe-Hesketh & Skrondal, 2008).
* $p < .05$. ** $p < .01$. *** $p < .001$.

interactions between social regulatory processes and their respective mean level tendencies, all of which were carried over to the estimation models. The covariates did not have a significant direct or moderating effect on daily goal progress (see Table 4.2). To be consistent with theories on self-regulation and social relationships, direct effects of gender and age were also carried over to the estimation models. After confirming that the covariates did not interact with the social regulatory processes, the

Table 4.3

Multilevel Random Coefficient Models of Social Regulatory Processes Support, Hindrance, and Contact Satisfaction on Daily Social Goal Progress.

Parameter	Model 0		Model 1		Model 2		Model 3	
	Fixed effects							
	β	(SE)	β	(SE)	β	(SE)	β	(SE)
Intercept	62.88***	(2.03)	64.07***	(1.49)	64.11***	(1.42)	64.04***	(1.42)
Support WP			4.94***	(0.29)	4.82***	(0.29)	4.73***	(0.29)
Support BP			5.91***	(0.59)	6.02***	(0.52)	5.78***	(0.52)
Sup WPxBP			0.02	(0.01)	0.01	(0.01)	0.01	(0.01)
Hin WP					-0.68***	(0.21)	-0.47*	(0.22)
Hin BP					-2.35***	(0.72)	-1.94**	(0.74)
Hin WPxBP					-0.04**	(0.01)	-0.04***	(0.01)
Satis WP							0.86***	(0.15)
Satis BP							1.11	(0.63)
Sat WPxBP							0.01*	(0.00)
	Random effects (SD)							
Intercept	19.95***	(1.44)	14.58***	(1.07)	14.06***	(0.90)	13.84***	(1.01)
Support			0.27***	(0.02)	0.26***	(0.02)	0.26***	(0.02)
Hindrance					0.15***	(0.02)	0.15***	(0.02)
Satisfaction							0.09***	(0.02)
Residual	19.90***	(0.17)	14.66***	(0.13)	14.41***	(0.12)	14.28***	(0.12)
R^2 Within			0.47		0.48		0.49	
R^2 Between			0.45		0.50		0.52	
-2*LL	62429.36		58673.96		58214.65		58135.24	
Δ -2*LL			$\chi^2(11) = 3756^{***}$		$\chi^2(4) = 459^{***}$		$\chi^2(4) = 79^{***}$	

Note. WP = within-person; BP = between-person. Between-person parameters are grand mean centered. Within-person parameters are person-centered. Support, hindrance, satisfaction, and interaction terms are x 10 to indicate a 10 point increase on the 0 – 100 scales. Random effects are reported as standard deviations. Model fit comparisons tested using change in log likelihood (Δ -2*LL) (Rabe-Hesketh & Skrondal, 2008). Models include fixed effects for covariates Day, Day^2, Day^3, Gender, Age, and Group, and random coefficient for Day; effects are consistent with Table 1
* *p* < .05. ** *p* < .01. *** *p* <.001.

model for social goal progress was built step by step, adding support processes,

followed by hindrance processes, and ending with satisfaction processes. See Table

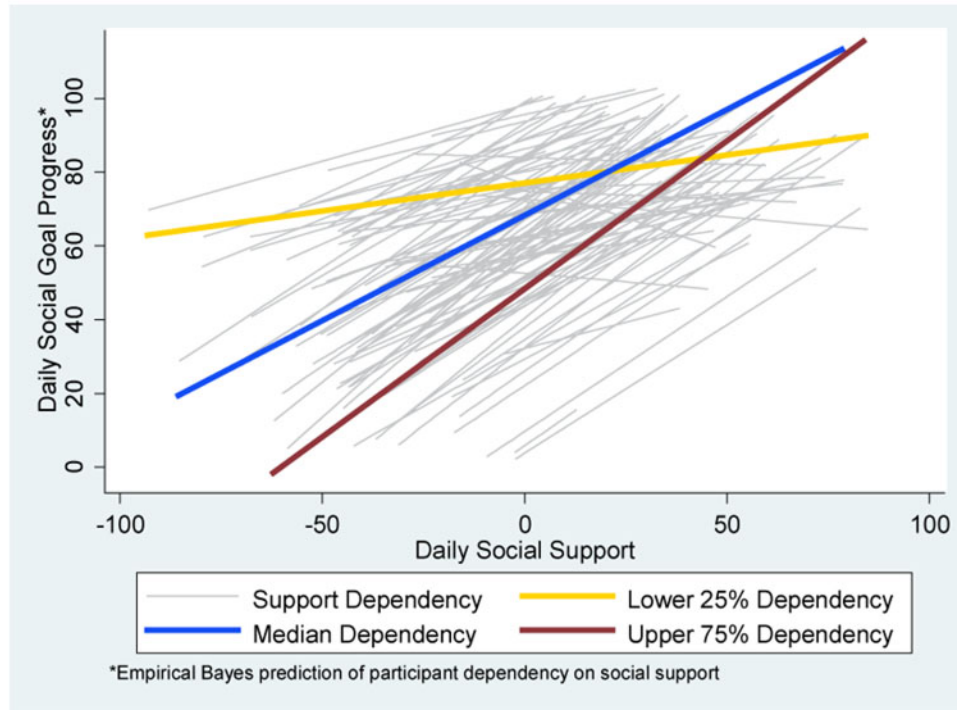4.3 for a detailed view of these results.

Figure 4.1 Between-person variation in social support dependency.
Empirical Bayes prediction of participant-specific relationships between daily
social support on daily social goal progress. Fitted lines represent the lower,
median, and upper quartiles of support dependency within the study sample.

Social support processes. Consistent with my expectations, the main effects
of social support significantly predicted goal progress on both the between and within-
person level. Between people, those who in general received more support during the
study period tended to also report higher daily goal progress (fixed effect estimate x10
= 5.91, SE = .59, p < .001). Within people, days where participants received social
support were related to higher goal progress on that day (fixed effect estimate x10 =
4.94, SE = .29, p < .001). These results show that, in general, within-person processes
of social support reflect between person-processes. As shown in Figure 4.1, however,
participants varied greatly in the degree to which daily support was positively related
to daily goal progress. Importantly, adding a random support coefficient significantly
improved model fit ($\chi^2(2)$ = 755.38, p < .001). In this sample, participants varied from
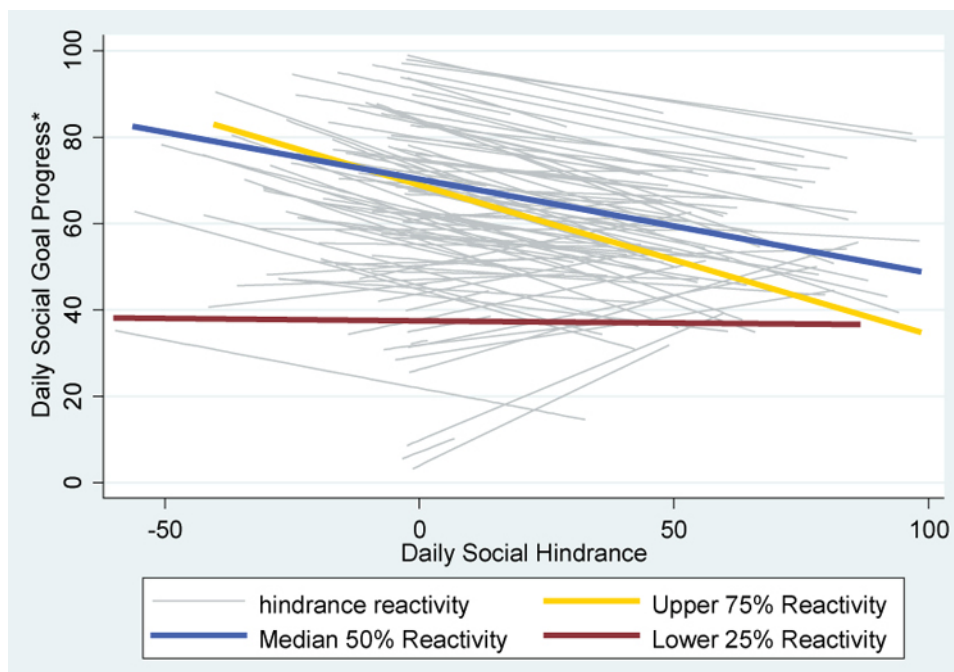
Figure 4.2 Between-person variation in hindrance reactivity.
Empirical Bayes prediction of participant-specific relationships between daily
social hindrance on daily social goal progress. Fitted lines represent the lower,
median, and upper quartiles of hindrance reactivity within the study sample.

the fixed within-person support effect by a standard deviation of .27 (SE = .02).

Accordingly, 95% of the plausible participant-specific slopes of support dependency

fell between -.04 and .98. As seen in Figure 4.1, although for the majority in this

sample, support was positively related to goal progress, for others the association was

negligible. In summary, this analysis of support shows that not only do people who in

general experience more support make more goal progress, but also participants make

less goal progress on days when they do not receive support. This relationship varies

significantly across the sample, however, suggesting that some participants are more

dependent on support than others.

Social hindrance processes. As expected, daily social hindrance was

negatively associated with daily goal progress. Between people, participants who

experienced more hindrance in general during the course of the study tended to
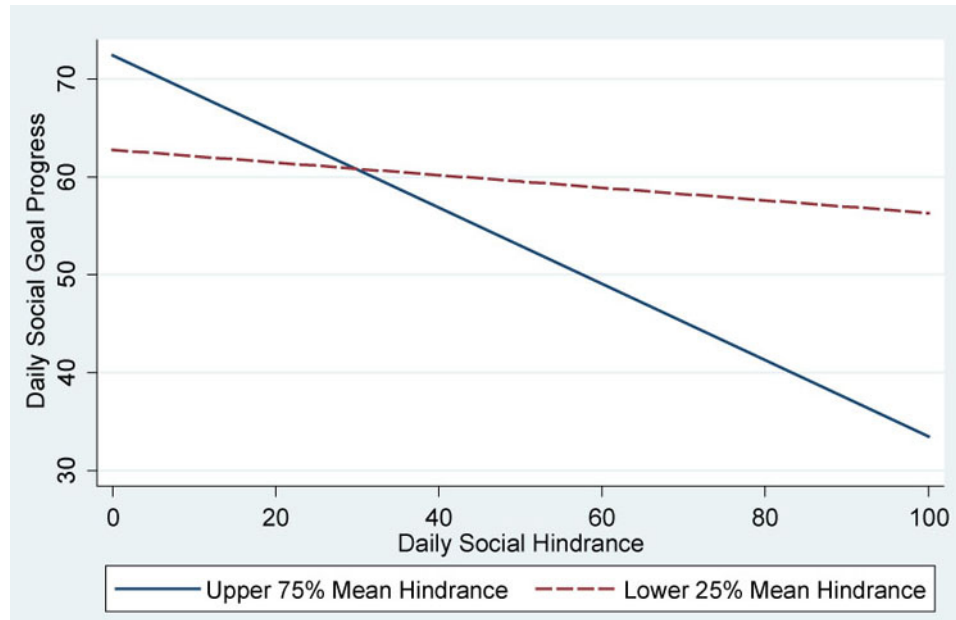
Figure 4.3 Moderating effect of mean level hindrance tendencies.
Empirical Bayes prediction of within-person association of daily hindrance on goal progress as a function of mean level tendencies of hindrance exposure.

reported lower social goal progress (fixed effect x10 = -2.35, SE = .72, $p < .001$).

Hindrance was also significant on the within-person level. On days that participants experienced social hindrance, they also tended to report lower social goal progress (fixed effect x10 = -.68, SE = .21, $p < .001$). Similar to results with support dependency, the hindrance reactivity varied significantly between participants ($\chi^2(2) = 98.23$, $p < .001$). In this sample, participants varied from the fixed daily social hindrance effect by a standard deviation of .15 (SE = .02). As such, 95% of the participants' estimated daily hindrance coefficients fell between -.35 and .23 (see Figure 4.2). Just as Fung and colleagues (Fung et al., 2009) found conflict to draw social partners closer, for some participants in this study, hindrance was related to an increase in social goal progress. Perhaps for some older adults, experiences of hindrance increases resolve to regulate relationships by working towards a social goal. Additionally, although mean tendencies were not included in the current study's initial
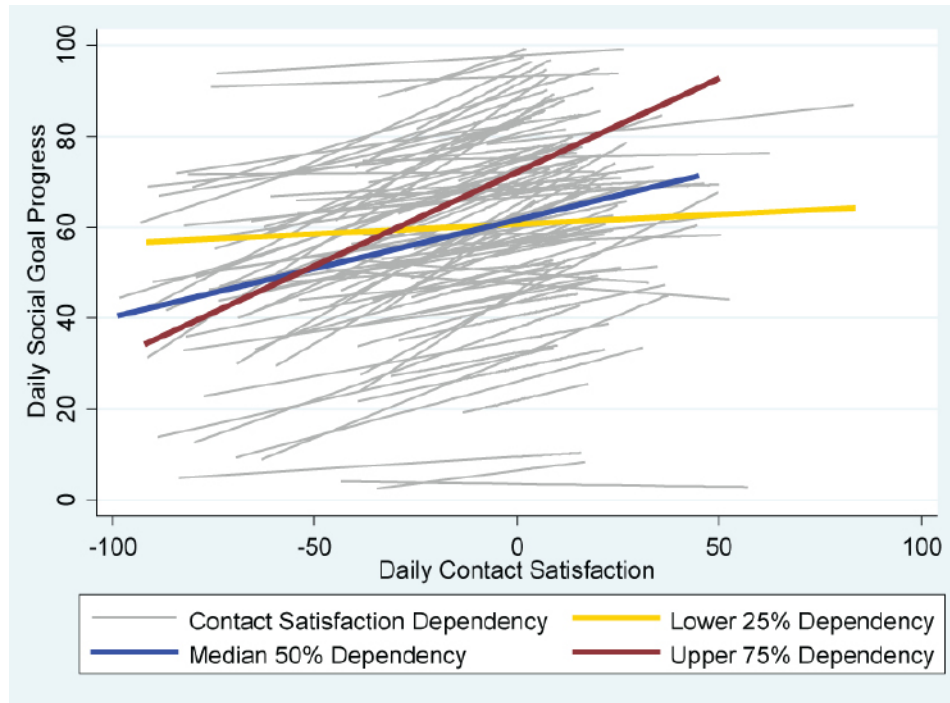
Figure 4.4 Between-person variation in contact satisfaction dependency. Empirical Bayes prediction of participant-specific associations between daily social contact satisfaction on daily social goal progress. Fitted lines represent the lower, median, and upper quartiles of contact satisfaction dependency with the study sample.

expectations, between-person differences in hindrance tendencies moderated how day-to-day variations in hindrance related to daily goal progress (fixed effect x10 = -.04, SE = .01, $p < .01$). As shown in Figure 4.3, those who experienced more hindrance on average were also more reactive to hindrance than those who experienced less hindrance on average. In summary, these results indicate that the daily the experience of hindrance may interfere with that day's goal progress. This effect varies significantly between participants, however, partially as a function of mean hindrance tendencies.

Contact satisfaction processes. Independent of measures of social support and social hindrance, contact satisfaction significantly improved model fit ($\chi^2(4) = 79$, $p < .001$) and was significantly related to daily goal progress. Days where participants

Table 4.4

Correlation Matrix and Descriptive Statistics of Between-Person Characteristics

Variable	1	2	3	4	5	6	7	8	9
1. Social Goal									
2. Support	.69								
3. Hindrance	.20	.01							
4. Satisfaction	.36	.26	-.34						
5. Age	.04	.02	-.01	-.15					
6. Female	.14	-.18	.05	-.09	.00				
7. Friends	.27	.11	-.20	.04	.09	-.02			
8. Achieve Goal	-.37	-.19	.08	-.26	-.01	-.05	-.12		
9. Group	-.12	-.05	.28	-.18	.17	-.01	.01	.10	
M	62.83	49.73	16.18	74.80	63.29	.87	51.93	.57	.23
SD	20.11	24.10	16.06	17.73	7.93		21.97		

Note. Female (1 = Female, 0 = Male), Achieve (1 = Achieve, 0 = Maintain), and Group (1 = Burst, 0 = Daily).

reported satisfying contact with a close social partner were significantly related to an increase in social goal progress on that day (fixed effect x10 = .86, SE = .15, $p < .001$). Whereas support and hindrance were significant on both within and between-person levels, however, contact satisfaction was significant only on the within-person level. In other words, between-person differences in individual tendency to be satisfied with interactions were not related to differences in goal progress. As with daily support, and daily hindrance, allowing the effect of daily contact satisfaction to vary between participants significantly improved model fit ($\chi^2(2) = 28, p < .001$). The random coefficient model estimated variation from the fixed contact satisfaction effect by a standard deviation of .09 (SE = .02). As such, the plausible effects for 95% of this sample fell between -.09 and .19 (see Figure 4.4). These findings suggest that experiencing a satisfying interaction with a close social partner, independent of experiences of support and hindrance, is connected to the process of working towards

Table 4.5

Random Multilevel Coefficient Model of Between-Person Differences in Social Regulatory Processes as a Function of Convoy Structure and Goal Orientation.

Parameters	Model 3 β	(SE)	Model 4 β	(SE)	Model 5 β	(SE)
			Fixed Effects			
Intercept	64.04***	(1.42)	64.06***	(1.38)	64.04***	(8.38)
Sup (WP)	4.73***	(0.29)	4.71***	(0.29)	4.73***	(0.29)
Sup (BP)	5.78***	(0.52)	5.68***	(0.50)	5.56***	(0.05)
Sup WPxBP	0.01	(0.01)	0.01	(0.01)	0.01	(0.01)
Hin (WP)	-0.47*	(0.22)	-0.46*	(0.20)	-0.45*	(0.21)
Hin (BP)	-1.94**	(0.75)	-1.59*	(0.73)	-1.89**	(0.72)
Hin WPxBP	-0.04***	(0.01)	-0.04***	(0.01)	0.04***	(0.01)
Satis (WP)	0.86***	(0.15)	0.93***	(0.14)	0.86***	(0.15)
Satis (BP)	1.10	(0.63)	1.17	(0.62)	0.87	(0.63)
Sat WPxBP	0.01*	(0.00)	0.01*	(0.00)	0.01	(0.00)
Friends			1.56**	(0.63)		
FndsXSup			0.00	(0.01)		
FndsXHin			-0.04***	(0.01)		
FndsXSatis			-0.03***	(0.01)		
Achieve					-8.93***	(2.69)
AchieveXSupport					1.21*	(0.56)
AchieveXHindrance					0.83*	(0.41)
AchieveXSatisfaction					0.12	(0.30)
			Random Effects			
Intercept	13.84***	(1.01)	13.41***	(0.98)	13.19***	(0.01)
Support	0.26***	(0.02)	0.26***	(0.01)	0.26***	(0.02)
Hindrance	0.15***	(0.02)	0.13***	(0.02)	0.15***	(0.02)
Satisfaction	0.09***	(0.02)	0.07***	(0.02)	0.09***	(0.01)
Residual	14.28***	(0.12)	14.28***	(0.12)	14.28***	(0.12)
R^2 Within	0.49		0.49		.49	
R^2 Between	0.52		0.55		.56	
-2*LL	58,135.24		58,107.19		58,124.28	
Δ -2*LL			$\chi^2(4) = 28$***		$\chi^2(4) = 11$*	

Note. WP = within person; BP = between person. Between-person parameters are grand mean centered. Within-person parameters are person-centered. Support, Hindrance, Satisfaction, Friend effects and interaction terms are x 10 to indicate a 10 point increase on the 0 – 100 scales. Random effects are reported as standard deviations. Model fit comparisons tested using change in log likelihood (Δ -2*LL) (Rabe-Hesketh & Skrondal, 2008). Models include fixed effects for covariates Day, Day2, Day3, Gender, Age, and Group, and random coefficient for Day; effects are consistent with Table 4.1.
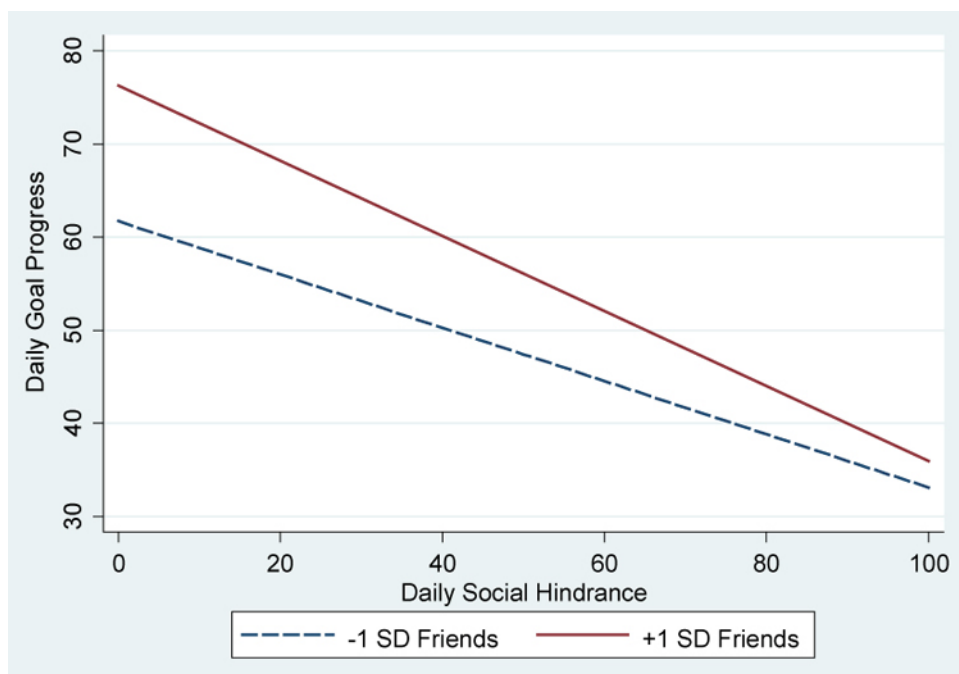* $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 4.5 Hindrance reactivity as a function of proportion of friends in convoy. Empirical Bayes prediction of the association between within-person daily social hindrance on daily goal progress as a function of the proportion of friends in the social convoy.

a social goal. Nevertheless, the strength of this connection varies significantly

between participants.

In summary, the analysis of within-person social regulatory processes found

that indeed, daily social support, hindrance, and contact satisfaction significantly

covary with daily goal progress in the expected directions. Importantly, the strength

of these associations vary greatly between persons, suggesting that the degree to which

older adults depend on or react to daily social experiences while working towards

social goals is contingent on variables that have yet to be indentified.

Between-Person Differences in Within-person Social Regulatory Processes

The previous analysis identified social regulatory processes of support,

hindrance, and contact satisfaction to vary greatly between participants. The

following section identifies to what degree these differences can be explained by
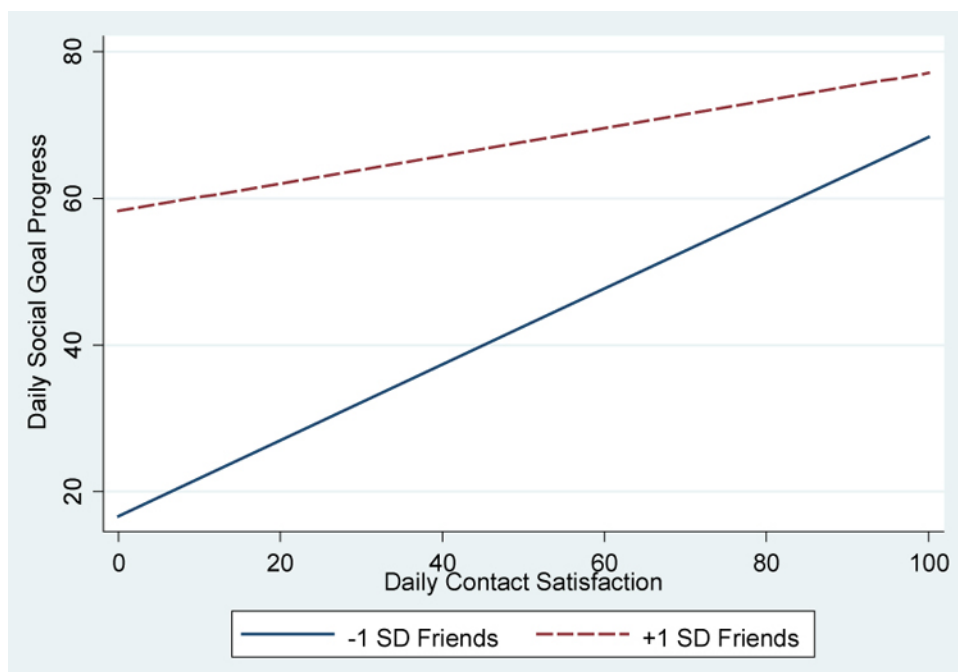
Figure 4.6 Contact dependency as a funciton of proportion of friends in convoy. Empirical Bayes prediction of the association between within-person daily contact satisfaction on daily goal progress as a function of the proportion of friends in the social convoy.

differences in older adults' convoy structure and goal orientation. A summary of the proportion of friends in the convoy and goal orientation is displayed in Table 4.4. Models were compared to the full within-person process model (Model 3 in Table 4.5) to confirm that adding these terms significantly improved model fit. See Table 4.5 for a detailed view of these analyses.

Proportion of friends in Convoy. Including the proportion of friends in the participants' convoys as a direct effect and as a moderator of the within-person social regulatory processes significantly improved model fit ($\chi^2 (4) = 28, p < .001$). Those with a higher proportion of friends in their convoy were more likely to make higher goal progress in general (fixed effect x10 = 1.56, SE = .63, $p < .01$). The proportion of friends in the social convoy also moderated the effect of daily hindrance (fixed effect x10 = -.04, SE = .01, $p < .001$) and daily satisfaction (fixed effect x10 = -.03, SE = .01,
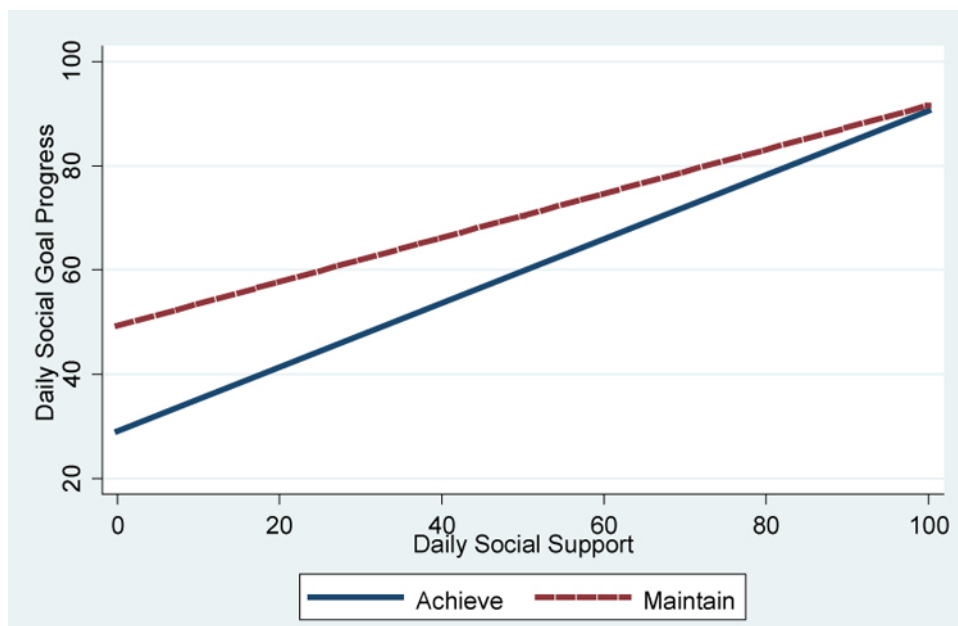
Figure 4.7 Support dependency as a function of goal orientation.
Empirical Bayes prediction of the association between within-person daily social support on daily goal progress as a function of goal orientation.

$p < .001$) on daily goal progress. According to this model, those with a higher

proportion of friends in their networks are more reactive to daily hindrance on daily

goal progress than those with a higher proportion of family in their convoys (see

Figure 4.6). In terms of contact satisfaction, those with a higher proportion of friends

in their network were less dependent on contact satisfaction to achieve their social

goals than those with a higher proportion of family in their convoys (see Figure 4.6).

These findings suggest that structural aspects of older adults' proximal social

environment both directly and indirectly predict differences in how older adults work

towards their social goals. Individuals differ in how reactive they are to daily

hindrance, and how dependent they are on contact satisfaction in part as a function of

the proportion of friends and family in their convoys.

Goal Orientations. Importantly, the participants' goal orientations also

predicted general goal progress, and moderated social regulatory processes. Adding
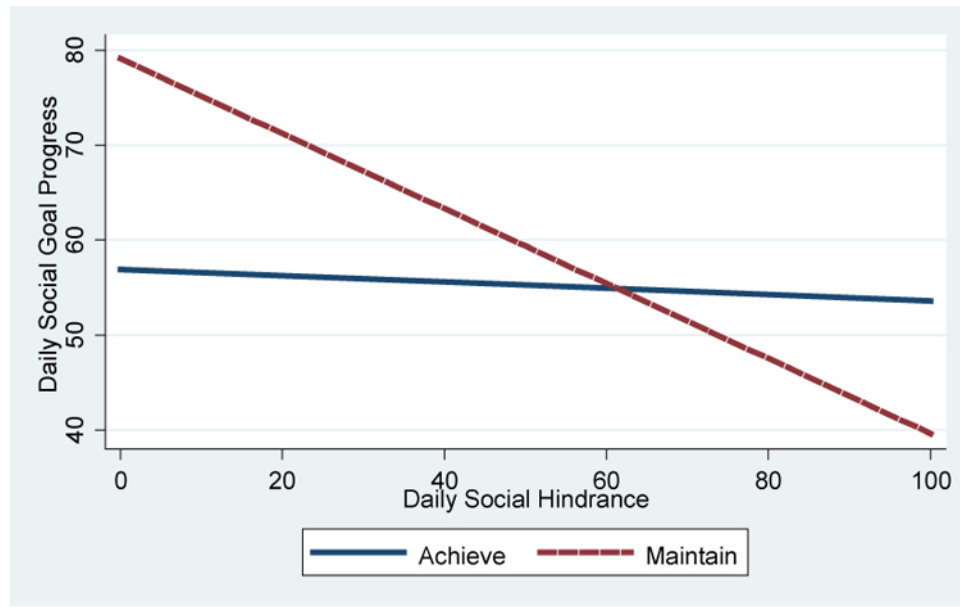
Figure 4.8 Hindrance reactivity as a function of goal orientation.
Empirical Bayes prediction of the association between within-person daily social
hindrance on daily goal progress as a function of goal orientation.

the direct and moderating effects of goal orientation significantly improved model fit

($\chi^2(4) = 11, p < .05$). Participants with an achievement goal reported lower social goal

progress in general than those with a maintenance goal (fixed effect = -8.93, SE =

2.69, $p < .001$). Participants' goal strategies also moderated the relationship between

social support (fixed effect = .12, SE = .05, $p < .05$) and social hindrance (fixed effect

= .08, SE = .04, $p < .05$). As shown in Figure 4.7, participants with an achievement

goal were more dependent on daily experiences of social support to make progress

towards their social goal. Interestingly, as shown in Figure 4.8, those with an

achievement goal were also less reactive to daily instances of social hindrance. These

findings suggest that differences in achievement versus maintenance goals both

directly and indirectly influence older adults daily goal progress. Not only do those

with an achievement goal make less progress, but they are also more dependent on

daily experiences of support to reach their social goal, and also less reactive to

hindrance than those with a maintenance oriented social goal. In summary, between-person differences in proportion of friends and family in the convoy, and goal orientation, account for significant between-person differences in social regulatory processes.

Chapter 5: Discussion

To my knowledge, this is the first study to connect support, hindrance, and contact satisfaction to older adults' daily efforts to regulate their relationships. By measuring older adults every day over a 100 day time period, I was able to examine daily goal progress and experiences of support, hindrance, and contact satisfaction simultaneously, and focus on the linkages between these social regulatory processes and daily goal progress. The study's design also allowed for exploration of general social regulatory tendencies and also participants' variations from these tendencies. First, I examined processes of relationship regulation by exploring older adults' daily progress towards a meaningful social goal. Specifically, I was interested in how much participants depended on support and contact satisfaction to make goal progress, and how reactive they were to daily experiences of hindrance. Then, I evaluated whether differences in convoy structure and goal orientation moderated social regulatory processes and affected daily goal progress.

Overall, my expectations were supported. I found daily experiences of goal progress to be positively related to social support and contact satisfaction, and negatively related to social hindrance. Importantly, these associations varied greatly between participants, in part as a function of convoy composition and goal orientation. My findings suggest that relationship regulation is (a) embedded in the social context of daily life; (b) differs based on the structure of the proximal social environment; (c) contingent on regulatory strategies selected by older adults to work towards their goals; and (d) differentiated by mean tendencies, which has implications for populations that experience more hindrance.

Daily Social Context Matters

Lang and colleagues (Lang, 2001; Lang et al., 2009) proposed that individuals regulate their social relationships in part by setting and working towards social goals. Although relationship regulation represents the means by which older adults optimize their social environments to accommodate changing circumstances, the process is largely understudied. Similarly, studies of the proximal social context are largely absent from the relationship regulation literature. The findings from this study, which found significant linkages of support, hindrance, and contact satisfaction with daily goal progress, suggest that the process of working towards a social goal is deeply embedded in the social context of older adults' daily lives.

Given the potential of social support to buffer against stress (Cobb, 1976) and protect against mortality (House, Robbins, & Metzner, 1982), researchers have assumed support to be essential for well-being in older adulthood (House et al., 1988). The findings from the current study suggest that older adults depend on daily experiences of support to make progress towards their social goals. In this sense, support from the proximal social environment facilitates the relationship regulation that promotes well-being and health in older adulthood. The flip side of this dependency, however, is that on days without support, older adults made considerably less goal progress. The need for support to successfully work towards a social goal may partially explain why some older adults have difficulty compensating for disruptions to their social networks (Rook, 2009). Importantly, although on average daily social support was strongly associated with daily goal progress, support dependency varied greatly between participants, and was the most variable of the three

social regulatory processes examined in this study. Future research should consider under what circumstances individuals depend on support to achieve their goals, what types of goals require more support than others, and what types of people require more or less support.

In this study, daily hindrance and support were examined concurrently in relation to daily goal progress. Although daily hindrance was negatively related to daily goal progress, the effect was small, compared to support dependency, goal progress was largely unaffected by daily experiences of hindrance. This finding is contrary to my expectations based on the literature of hindrance and support processes on emotional outcomes (Brunstein, Dangelmayer, & Schultheiss, 1996; DeLongis et al., 2004; Rafaeli et al., 2008), which found hindrance to have a stronger association than support. The literature on emotional regulation suggests that older adults are more successful than their younger counterparts are less reactive to negative experiences (Carstensen et al., 2011; Charles & Carstensen, 2008). Perhaps the relatively low hindrance reactivity in this sample reflects age-related increases in emotional regulation. Alternatively, in the domain of social goal progress, older adults may be more sensitive to hindrance in the emotional domain than in the domain of social goal progress. Importantly, hindrance varied significantly in this sample. Some participants were more reactive to hindrance, and for some, hindrance was positively related to goal progress. The wide variability suggests that some older adults are more susceptible to experiences of hindrance in their daily environment than others. Additionally, for some older adults, hindrance may increase resolve to work towards a

social goal, just as conflict has been found to draw some social partners closer (Fung et al., 2009).

       Differences in mean level tendencies explained some of this variation. Although not included in my expected outcomes, participants who experienced more hindrance in general had higher hindrance reactivity in terms of progress towards daily goals. These findings suggest that the general quality of the social environment is related to between-person differences in social regulatory processes. Further, according to this study, older adults do not become immunized to hindrance, but rather become more vulnerable with increased exposures, which is consistent with findings regarding emotional reactivity (Rook, 2003). Therefore, consistent with perspectives of cumulative disadvantage (Dannefer, 2003), older adults with higher exposure to hindrance also tend to have higher hindrance reactivity. Further research is needed to understand how older adults adjust to these circumstances.

       Daily contact satisfaction was included in this model to examine the degree to which participants depended on satisfying contact with a close social partner for reasons beyond support. The findings are consistent with the convoy model (Kahn & Antonucci, 1980), which proposed that the closest social partners are engaged in efforts to achieve desired outcomes (Antonucci et al., 2006). Participants in this study were dependent on satisfying contact with their closest social partners to make progress towards their social goals, independent of support. Although the main tendencies were consistent with cross-sectional research on relationship quality (Birditt & Antonucci, 2007; Fiori et al., 2007), the variation within the sample suggests that more work is needed in this area. For some participants, contact

satisfaction, independent of social support and hindrance, was positively related to goal progress, and for others the association was actually negative. Contact satisfaction may represent companionship (Rook, 1987; Rook & Ituarte, 1999), or perhaps another aspect of close relationships that is yet to be identified. Further research is needed to understand what close social partners provide beyond support, and why these functions are more important to some older adults than to others.

If working towards a meaningful social goal is linked to daily experiences of support, hindrance, and contact satisfaction, as these findings suggest, then older adults' abilities to optimize their social environments may also be enhanced or constrained by daily experiences within the social environment. As such, older adults do not regulate their relationships in isolation, and the role of social exchanges in this process deserves further attention. Importantly, processes operate within structure (Elder & Johnson, 2003; Hooker & McAdams, 2003), and two important structural variables were examined in this study. The following sections examine how individual differences in convoy composition and goal orientation affect social regulatory processes and goal progress.

The Proximal Social Environment Contextualizes Social Regulatory Processes

The social convoy changes with individuals across their lifespans (Kahn & Antonucci, 1980), and is noted for its heterogeneity in older adulthood (Adams & Blieszner, 1995; Litwin, 2011). One difference, reflecting both individual preferences (Lang & Carstensen, 2002) and lifespan trajectories (Antonucci, Fiori, et al., 2010; Moorman & Greenfield, 2010), is the convoy's proportion of friend and family relationships. If the social convoy is both the outcome and context for change

(Antonucci et al., 2006), then differences in convoy structure should predict differences in goal progress. Consistent with these expectations, social convoy composition was related to differences in goal progress. Specifically, those with a higher proportion of friends made more progress towards their social goals.

This finding may reflect a *friend advantage*. Friends are known to provide more emotional support than family members (Adams & Blieszner, 1995), and emotional support is likely most applicable to social goal progress. Alternatively, this finding could reflect differences in individual characteristics, where older adults with a higher proportion of friends in their convoy are also likely to make better progress towards a social goal. Post hoc analysis found no association between age, gender, or health on the proportion of friends in the network. Never married participants, however, had a higher proportion of friends in their convoys than those who were married ($F(7,90) = 2.21$, B $= 33$, $p < .01$). Single adults generally have more friends and are more socially engaged than their married counterparts (Moorman & Greenfield, 2010; Wenger, Dykstra, Melkas, & Knipscheer, 2007); perhaps maintaining these friendships requires the ability to skillfully set and work towards social goals.

Moderating Hindrance Reactivity. Those with a higher proportion of friends in their convoys were also more reactive to daily hindrance in relation to goal progress. Although this finding may seem unexpected, especially in light of cross-sectional literature that suggests friends provide more emotional support than family members, (Adams & Blieszner, 1995; Moorman & Greenfield, 2010), friendships require resources to maintain (C. L. Johnson & Troll, 1994). To the extent that

friendships are more strongly governed by the reciprocity norm than family relationships (C. L. Johnson & Troll, 1994; Lang et al., 2009), requests from friends may be more difficult to ignore. Additionally, if friendships are less conflicted than family relationships (Adams & Blieszner, 1995), perhaps spending time with friends distracts from engaging in efforts to resolve conflicted family relationships, or in meeting new people. Given the operationalization of hindrance as network tensions, arguments or time constraints, these data do not provide information as to the precise nature of hindrance that was experienced. Importantly, and also a limitation of the current study, the data do not specify from whom hindrance was perceived. It is possible that in networks with more friends and fewer family members, tension and arguments with family members are especially stressful. Nevertheless, these findings warrant further investigation into the complexities of relationships among friendships.

Moderating Contact Dependency. Consistent with my prediction, those with a higher proportion of family members in their convoys were more dependent on contact satisfaction to make daily goal progress. Family relationships are both enduring and filled with complex emotions (Fingerman et al., 2004; Silverstein & Giarrusso, 2010). Closeness regulation is necessary to work through ambivalent feelings and circumstances (Lang et al., 2009) and facilitates becoming closer in the face of negative interactions (Fung et al., 2009). Therefore, it is not surprising that participants with a higher proportion of family ties, which may be more conflicted than friendships, depended more strongly on satisfying contact to make progress towards their goals.

In summary, the composition of friends and family in one's convoy predicts differences in relationship regulation. In this study, those with a higher proportion of friends are more susceptible to hindrance, and those with a higher proportion of family depended more on satisfying contact from close social partners to make goal progress. These findings suggest that the structure of the current social environment shapes social regulatory processes, which can support or constrain social goal progress. Additionally, the salience of contact dependency among participants with a high proportion of family members suggests that maintaining closeness is an important aspect of daily social goal progress.

Social Regulatory Processes and Goal Orientation

Older adults place a high priority on maintaining the self, especially in the face of age-related loss (Bolkan & Hooker, 2012; Neugarten et al., 1968). Working towards an achievement goal requires acting beyond maintenance to create something new. In older adulthood, where much energy is directed towards maintenance, achievement goals are often less preferable (Ebner et al., 2006). In this sample of relatively healthy young-old adults, 57% selected an achievement goal. Nevertheless, although the sample showed an achievement preference, consistent with the literature, those with an achievement goal made lower goal progress in general.

Moderating Support Dependency. Consistent with my expectations, older adults with an achievement goal were more dependent on daily support to make progress towards their social goals than participants with a maintenance goal. Building on the notion of social relationships as both outcome and context (Antonucci et al., 2006), this finding illustrates a process by which the future social environment is

also linked to the current. If older adults are more dependent on support to achieve something new, the desired outcome is moderated by actions of the current social network. For example, a divorced father's ability to come closer to an estranged daughter may be contingent on support from his second wife (Schmeeckle, 2007). The moderating effect of goal orientation on support dependency also has implications for older adults with network gaps (Rook, 2009). Therefore, if older adults attempt to compensate for inadequacies in their networks by working towards social goals (Heckhausen et al., 2010), those with less social support will have more difficulty achieving their desired outcomes. In this study, having an achievement goal was negatively correlated with mean support tendencies (r = -.19), suggesting that individuals with an achievement goal are not only more dependent on support, but also receive less support in general. Therefore, just as distal social forces may open or constrain opportunities to adapt to the social environment (Dannefer & Settersten, 2010), so may the proximal environment of close social relationships. Over time, this process would widen existing differences, and contribute to the large individual differences seen in older adults' convoys later in life.

Moderating Hindrance Reactivity. I expected that those working towards achievement goals would not only make lower goal progress in general, but also be more reactive to hindrance in their daily lives. Instead, contrary to my expectations, participants with an achievement goal were less reactive to hindrance than those with a maintenance goal. Although this study did not examine age-related differences, the findings are consistent with self-regulation in older adulthood, where empirical evidence suggests that older adults are better than their younger counterparts at

working towards meaningful goals (Bolkan & Hooker, 2012). If such tendencies carry over to relationship regulation, perhaps achievement endeavors activate regulatory processes in ways that facilitate ignoring daily hindrances and staying on task (Hennecke & Freund, 2010). Future research should investigate if older adults working towards achievement goals in other domains are also less reactive to hindrance from their social environments.

In summary, this study suggests that achievement and maintenance goal orientations affect older adults' goal progress and social regulatory processes. Older adults compensate for gaps in their networks by making new friends or reactivating relationships (Rook, 2009). The process of compensating for loss requires working towards an achievement oriented goal. The findings from this study suggest that such compensation strategies may be more difficult for older adults, and are also sensitive to the social environment.

Social Regulatory Processes Across Goal Domains

By examining older adults' daily social regulatory processes, this research has explored one of the strategies older adults use to shape their social environments. These findings confirm that older adults work towards social goals in the context of social support and hindrance, and that these effects vary between people, partly as a function of the proximal social environment and goal orientation. Evidence suggests that other regulatory processes are also embedded in the social context. Not only do social networks provide support, but they also model healthy (or unhealthy behaviors), provide access to resources, and offer opportunities for social engagement (Berkman, Glass, Brissette, & Seeman, 2000). Social partners often have common health

behaviors (Tucker, 2002), and disease management is regulated by not only the patient, but also by close family members (Gallant et al., 2007). Therefore, to the degree that older adults are able to optimize their social environments through processes of relationship regulation, they may also benefit from the health and well-being associated with a more positive and supportive social environment. Indeed, if regulatory processes in other goal domains are also embedded in the social context, then an individual's ability to work towards a goal and create a supportive social environment may also facilitate regulation in other goal domains.

Social Regulatory Processes in the Greater Population

Social regulatory processes take place within a developmental and social context (Lang & Heckhausen, 2006), and this sample represents a narrow subset of the older adult population. Nevertheless, even in this fairly homogenous sample, I found considerable variability in the social regulatory processes, which was explained in part by differences in the social convoy and in goal orientation. The presence of such variability suggests that a monolithic pattern of social regulatory processes cannot be, and perhaps should not be, applied across all older adults. Instead, this study suggests that dependencies on support and contact satisfaction, and reactivity to hindrance are relative to the proximal social environment and the nature of the desired goal. Social regulatory processes represent individuals' attempts to maintain control of their social worlds (Elder & Johnson, 2003; Heckhausen & Schulz, 1995). Given the range of variation in processes identified in this sample, it follows that in a broader sample of older adults and subgroups, additional regulatory tendencies would be identified.

Given that efforts to control the social environment have been observed in populations of frail elders (M. M. Baltes & Wahl, 1992; Beel-Bates et al., 2007) and among individuals of diverse socioeconomic status (Edin & Lein, 1997; Fiori et al., 2008; Stack, 1974), I expect that relationship regulation takes place across subsets of the population, as individuals work to maintain control over their environments (Heckhausen & Schulz, 1995). What I expect to differ is the qualitative nature of goals, which represent distinct strategies to facilitate control. For example, Margaret Baltes's (1992) sample of frail elders relinquished control of their physical abilities to ensure consistent and predictable social attention. Similarly, Carol Stack (1974) found individuals to consider everyone kin, even though sharing resources often foreclosed opportunities to rise out of their financial circumstances. These strategies seem counterintuitive, but vulnerable populations cannot be compared to the dominant norm, because they operate under a distinct set of circumstances (Lareau, 2002).

In this sample, those who experienced more hindrance in general were more reactive to hindrance on a daily basis. This finding suggests that vulnerable populations, which likely have a higher exposure to hindrance (Krause & Shaw, 2000), would also have a stronger reaction to daily experiences of hindrance. Importantly, this study focused on perceived aspects of the social environment. It is also possible that in vulnerable populations, hindering and supportive aspects of the environment are not recognized, which might cause failures to be falsely attributed inwardly.

Limitations and Directions for Future Research

The results from this study should be viewed within the context of its limitations, which also provide an opportunity to identify areas for future research. First, although data were collected on a daily basis, the relationships identified in this study are correlational. Therefore, although significant linkages were identified between social regulatory processes and goal progress, causal directions cannot be established. Further, this study did not link social regulatory processes to a well-being variable. It is not apparent if those who came closer to accomplishing their goals experienced a positive change in well-being. If theory links regulatory processes to development, then nationally representative longitudinal studies would benefit from bursts of microlongitudinal measurement (Hooker et al., 2010; Ram, Conroy, et al., in press). Such a strategy would link social regulatory processes to longitudinal change in the social environment and well-being over time.

Notably absent from this study are gender and age effects, which speak to the limitation of the sample to power demographic differences. Men are known to form friendships and maintain relationships in ways that differ from women (Adams & Veno, 2006). Gender effects, however, were not present in this study. This is most likely because the male subsample was not large enough to power a statistical test of gender differences. Similarly, although the age of participants ranged from 52 – 88, the sample was mostly young-old, leaving little age-variability to explain differences in social regulatory processes. Future research should examine a broader population to allow for a full representation of social regulatory processes.

On a methodological note, observation changes outcomes, and by considering social regulatory processes on a day-to-day basis, participants likely became more observant of their daily lives. This issue is consistent in studies that use intensive self-report measurements (Kitterod, 2001). I was able to test the effect of test exposure on goal progress and social regulatory processes by including a variable that distinguished those who participated in 4 seven-day bursts of measurement with those who participated daily. Group membership was not significantly related to daily goal progress, nor did it moderate social regulatory processes. These findings suggest that test exposure alone did not change goal progress or social regulatory processes in a statistically significant way. Nevertheless, the participants in the burst measurement group were also likely to become more self-observant than those not being measured at all.

Also missing from this research is a measure of goal salience. Although an improvement on studies where goals are chosen for participants, who are asked to indicate the salience of each goal (Brunstein et al., 1996; Lang & Carstensen, 2002), the current study lacked data regarding the importance of social goals in relation to their overall goal hierarchies. In the PULSE project, participants created their own goals. Although participants were directed to create a meaningful goal, and state the goal's importance, the social goal domain may have been more salient for some participants than for others.

Chapter 6: Conclusion

This study explored daily processes of relationship regulation to understand how older adults shape their social environments by working towards meaningful social goals, and found social goal progress to be dependent on daily experiences of support, hindrance, and contact satisfaction. The nature of these processes reflects what we would expect from the literature on between-person differences in support, hindrance, and emotional well-being. Importantly, this study also found great individual differences in social regulatory processes, which were only partially explained by differences in convoy structure and goal orientation. This pattern of findings suggests a need to search for the mechanisms that drive these between-person differences in social regulatory processes.

Relationship regulation, a facet of self-regulation, is the process by which older adults shape their social environments to meet their needs. Self-regulation, and its sociological counterpart agency (Settersten, 2009), both take place within structure. Individuals work within developmental and social constraints to maintain control over their lives (Elder & Johnson, 2003). But at the same time, structure, be it of personal characteristics (Hooker & McAdams, 2003) or of the larger society (Dannefer & Settersten, 2010), is formed in part by a series of within-person processes. Therefore, this study, which had a microlongitudinal focus, studied a process that theoretically shapes not only the individual (Hooker & McAdams, 2003), but potentially society as well (Riley, 1987). Importantly, as this study showed, these processes are embedded in the daily social context, and older adults to some extent depend on one another to shape their social worlds.

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Appendices

Appendix A

Social Convoy Measure

Imagine that this diagram represents your social contacts. Identify social partners that you cannot live without in the innermost circle (yellow) by writing their first names and last initials and also include their relationship to you (e.g., son, spouse, friend, etc.) Next, identify social partners to whom you feel close within the inner circle (green). Again, list their first names and last initials and also include their relationship to you (e.g., friend, employee, etc.) Finally, identify social partners to whom you feel not quite that close, within the outermost circle (blue) by writing their first names and last initials and also their relationship to you (e.g., neighbor, etc.)

 Each ring of the circle can be empty, full, or anywhere in between.

In each ring of the circle list your social partners in order of closeness. Include all the social partners currently significant in your life. You will be answering questions in your daily PULSE survey about the 5 social partners closest to you.
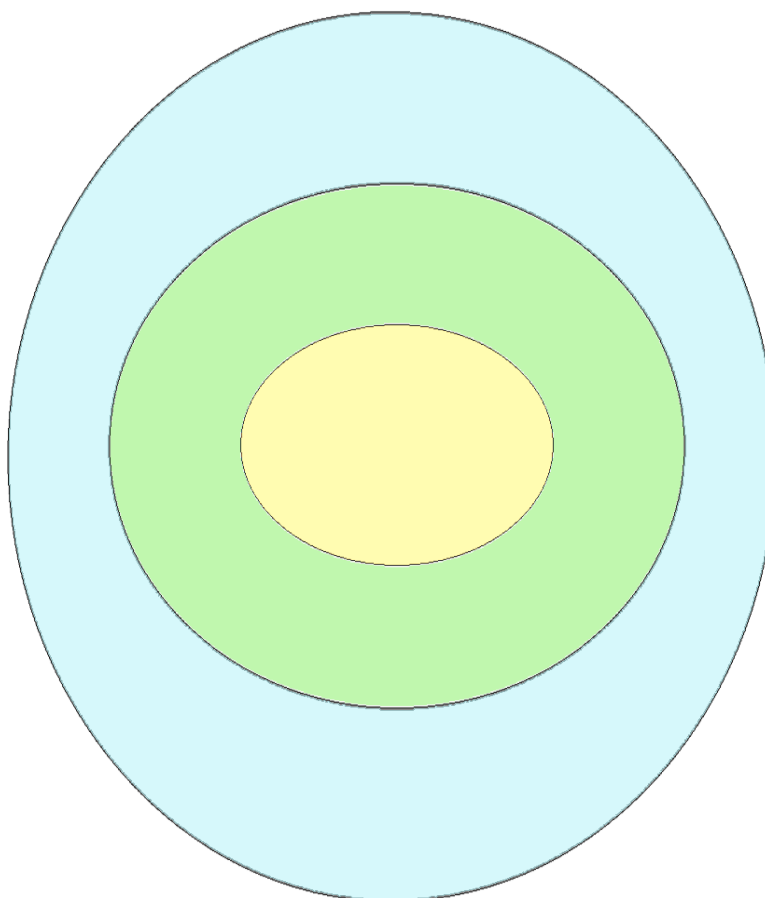
Appendix B

Compliance Analysis: Patterns of Missingness

Participants in the daily group completed on average 86 sessions ($SD = 16.17$, range $= 21 – 100$). Participants in the burst group completed an average of 22 sessions ($SD = 4.45$, range $= 13 – 28$). To analyze patterns of missingness among the participants, I graphed a binary variable that was coded 1 for each session that expired for each participant during the course of the study. From these graphs, three categories of missingness were apparent: a) those who participated intermittently and dropped off early b) those who participated fairly regularly throughout the study, and c) those who participated consistently throughout the study. I used a K cluster analysis to sort the data participants into three categories based on an assessment of means. The burst group, who by design completed four seven-day bursts of measure during the 100-day time period was placed in a distinct group. The burst group ($n = 23$) missed an average of 5 sessions (Range $= 0 – 15$, $SD = 4.45$) during the 100-day period. Missing group 1 ($n = 6$) missed an average of 61 sessions (Range $= 46 – 79$, $SD = 11.9$). Missing group 2 ($n = 15$) missed an average of 26 sessions (Range $= 13 – 45$, $SD = 8.86$). Missing group 3 missed on average 6 sessions (Range $= 0 – 18$, $SD = 4.17$). I used a multinomial regression to test group membership against measures of age, education, health, gender, employment status, marital status, total convoy size, and proportion of friends in the convoy. The analysis showed the groups to be statistically similar, except that missing group 3 was distinct from missing group 2 in terms of education, where the odds of group 3 membership increased by 73% for each unit increase in education ($b = .55$, $z(92) = 2.09$, $p < .05$). In other words, in the two

groups who participated most frequently, those with higher levels of education were more likely to complete a higher number of sessions, with a more consistent pattern of participation.
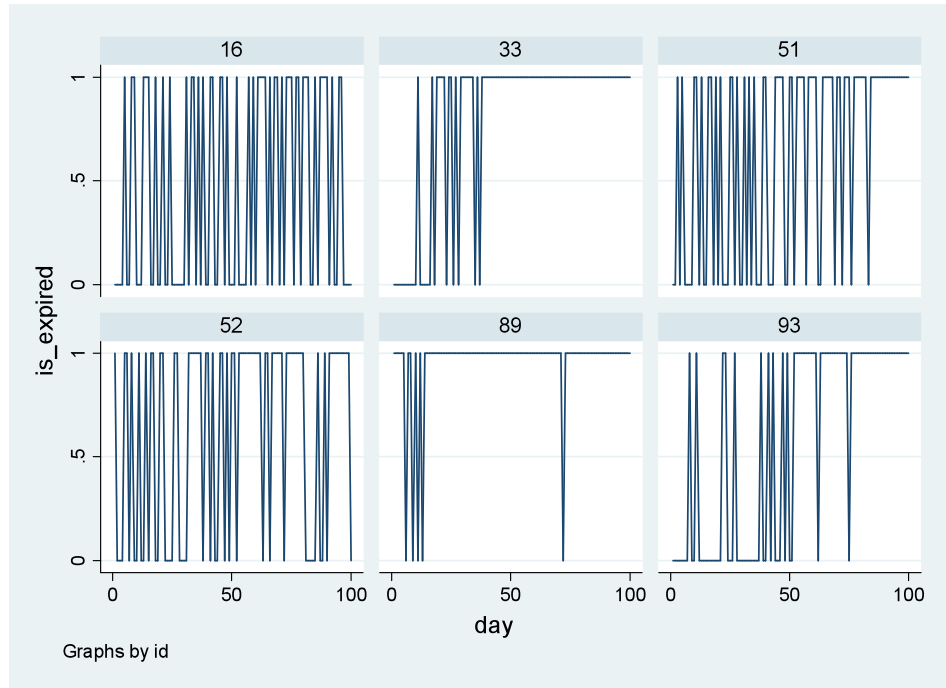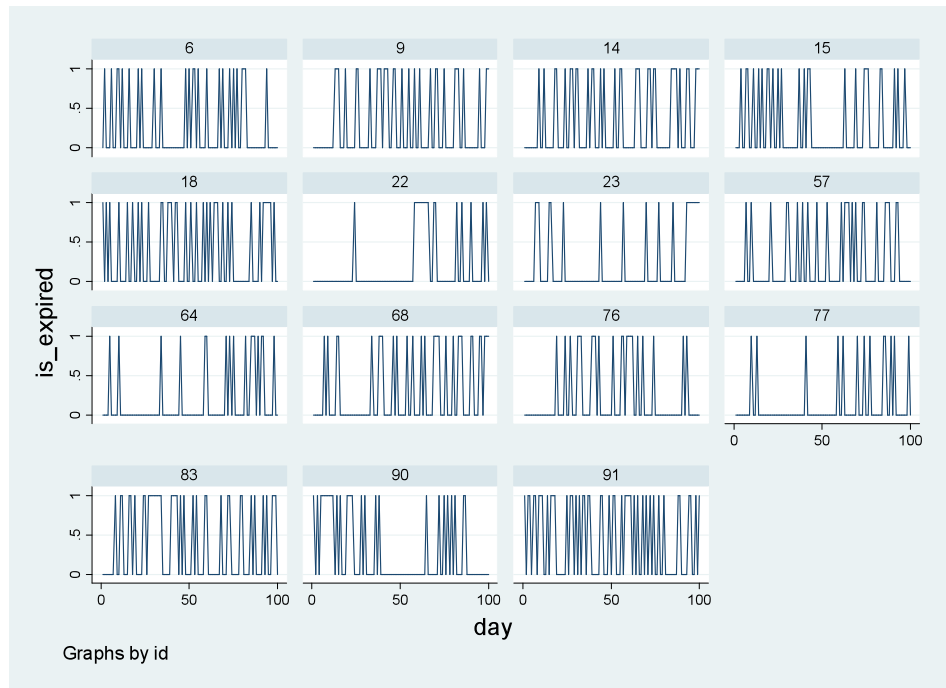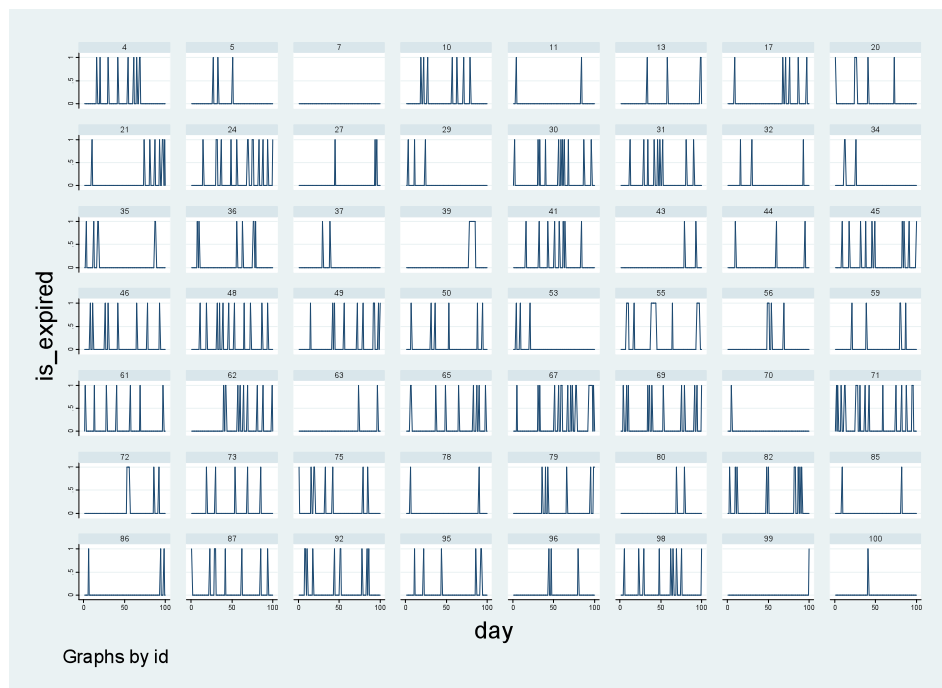

Figure B.1 Missing group 1

Figure B.2 Missing group 2

Figure C.3 Missing group 3