HOUSEHOLD DENSITY AND ACADEMIC STANDING AMONG COMMUNITY COLLEGE STUDENTS:

THE EFFECTS OF TIME ORIENTATION AND SPATIAL SELF-REGULATION

by

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Abstract

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The purpose of the study was to develop a multifactorial model tracing paths from housing affordances to academic outcomes in higher education. The study sought to connect two areas of psychological research: on one side, the adverse effects of environmental stressors and inadequate self-regulation upon life course prospects and, on the other, the affective, behavioral, and cognitive elements of purposive self-regulation used by college students toward long-term goal attainment.

The study design was cross-sectional and used self-reported survey data as well as official academic records for 490 student participants.

Three new measures were developed. The first, Housing Inadequacy, gave a subjective assessment of domestic environments by comparing availability of household features with their rated importance to individual students. The second, Perceived Housing Stress, was adapted from the Perceived Stress Scale (Cohen & Williamson, 1988), an existing validated measure of global appraised stress, to identify stressors specific to the home setting. The third, Spatial Self-Regulation, introduced a new construct with two components: the ability to recognize whether a setting is conducive to one's goals and the ability to engage or change that setting in order to move toward those goals. In the current study, the affective, behavioral, and cognitive aspects of Spatial Self-Regulation were measured both in home and campus settings.

Two existing measures were used. Temporal factors from the Zimbardo Time Perspectives Inventory (Zimbardo & Boyd, 1999) were hypothesized to attenuate or amplify adverse effects of Housing Inadequacy and Perceived Housing Stress in predicting academic motivations and strategies. These motivations and strategies were measured using components of the Motivated Strategies for

Learning Questionnaire (Pintrich, Smith, Garcia, and McKeachie, 1993), an instrument widely used in higher education assessment.

Structural equation modeling was used to refine, integrate, and confirm linkages among the above variables. A statistically significant model linked sub-factors for Housing Inadequacy, Perceived Housing Stress, Spatial Self-Regulation, and Time Orientation with Motivated Strategies for Learning. Since the model reliably predicted GPA, the study presented a new approach to explaining college student academic standing as an outcome of the interaction of person-level variables with environmental factors.

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CHAPTER 1. INTRODUCTION

The goal of this dissertation was to develop a plausible causal model linking housing factors to academic outcomes among community college students. The outcome variable of academic standing is understood as a step toward future success. If housing inadequacy and housing stress impede movement toward educational milestones, then they may impede young adults in other life domains as well. Housing stress is defined as arising from the constraints or inadequacies of the physical setting, from the resulting strains on interpersonal relations within the household, and from the interaction of these two sets of factors.

The research design was Empirical-Theoretical. Although there is extensive literature about stress and coping, educational outcomes, and the psychological and social effects of housing quality, the connections among these factors for community college students have not been studied. Hence an exploratory dissertation was indicated.

The main premise of the research design was that housing conditions affect academic performance by way of *perceived housing* stress. Perceived housing stress was hypothesized to arise from crowding and from the inadequacy of concrete affordances relative to a student's household needs. Perceived housing stress, in turn, was hypothesized to influence whether students reported a set of motivations and strategies associated with academic success.

Two person-level processes were proposed to mitigate or amplify the effect of both the home environment on perceived housing stress and of perceived housing stress on academic outcomes. Individual *future time orientation* was expected to reduce stress arising from household inadequacies, and to support academic efforts despite perceived housing stress. Individual *spatial self-regulation* was proposed to encourage engagement with the home environment in order to reduce perceived housing stress and with the campus environment in order to support academic motivations and strategies.

LITERATURE REVIEW

Person-level factors: Time orientation and self-regulation

Time orientation and affective self-regulation are person-level factors which are consistent for an individual across multiple life domains (Holodynski & Friedlmeier, 2006; Zimbardo & Boyd, 1999). Each factor may help to explain how a characteristic pattern of thoughts, beliefs, behaviors, and emotions arises in the context of home and non-home settings.

Time orientation.

A time orientation model developed by Zimbardo and Boyd (1999) states that cognitive biases influence how individuals reconstruct their past, assess the present, and anticipate their future. This time orientation originates in and continues to be shaped through personal experiences in multiple life domains. It is defined as an individual-differences variable that is stable through long-term developmental stages. Thus, a person may develop a habitual preference for a past, present, or future orientation which may have a positive or negative valence. The model's five resulting orientations are labeled as past-negative, past-positive, present-fatalistic, present-hedonistic, and future.[1] To the extent that individuals default to a characteristic orientation, they may idealize or disparage past experiences, misperceive the actual circumstances of current interactions, or redirect their focus to as-yet unrealized future goals. Of these temporal tendencies, studies in educational motivation suggest that a strong future time orientation is most conducive to the skill sets of task persistence and delayed gratification needed for school success (McInerney, 2004)

Self-regulation.

Self-regulation has been the focus of considerable study within cognitive, clinical, developmental, and social psychology with recent input from neuroscience. Various theoretical perspectives overlap in their definition of self-regulation as a set of mental processes that enable intrapersonal awareness of, as well as control over the interpersonal expression of, one's own emotions. In adults, self-regulation enables realistic assessment of threat and orientation of cognitive

[1] The Zimbardo and Boyd model (1999) did not partition future time orientation into positive and negative valences. The factor structure of the published scale is described in the Measures section of Chapter 2.

ability toward problem-solving (Aspinwall & Taylor, 1997; Diamond & Aspinwall, 2003). Self-regulation entails both cognition and affect and thus includes conscious as well as non-conscious processes (Gross, 1999). Two sets of theories of self-regulation are most relevant for the proposed dissertation: a) those which emphasize the rational aspects of cognition and b) those based in models of emotion. These disparate theoretical streams have converged recently in part because of new findings on the interrelatedness of the underlying neural processes (Davidson, Jackson, and Kalin, 2000; Ochsner & Gross, 2008; Teasdale, 1999). The rational aspects of cognition are evident in the deliberate mental steps that college students must take to manage their academic tasks. However, a premise of the current research is that housing stressors manifest themselves in non-conscious affective processes, the perceptual and behavioral effects of which may interfere with the responsibilities of being a student.

Early models of stress and coping were part of a cognitive tradition which assumed that stressors are perceived rationally and that responses to those stressors are also arrived at rationally. Those earlier models posited a linear connection between *primary appraisal*, identifying an external threat or challenge, and *secondary appraisal,* assessing and utilizing various intrapersonal and environmental resources (Lazarus, 1991). Thus, the process of coping has been defined as the utilization of a changing set of thoughts and actions in an effort to manage personal stress (Lazarus & Folkman, 1984).

This model of stress and coping was incomplete for several reasons. One was its assumption of a direct connection between primary and secondary appraisal, i.e., between perceiving stressors and taking action in response. A linear model may be suited to understanding stress arising from discrete events or crises, but it is less useful for conceptualizing coping responses for chronic or more diffuse everyday stressors (Gottlieb, 1997; Kohn, 1996). Instead, everyday stressors and coping processes are more accurately described in a process model that is iterative and recursive within varying temporal and ecological levels (Lewis & Granic, 1999). For example, in home settings, household members have a history of interaction with each other, and the household itself exists within a network of other social and environmental conditions (Brown, Werner, and Altman, 2006). For community college students residing with their families, the demands of school work compete with the affective and practical demands of the home. Students experience the effects of domestic stressors in the present, yet these

demands are based in a complex set of longtime relationships rooted in a particular domestic space. Therefore, the day to day actions that students do or don't take in meeting their immediate academic obligations must be assessed in that broader temporal and spatial context.

Another set of criticisms of the cognitive model of stress and coping pertains to its distinction between *problem-focused* and *emotion-focused* coping. The construct of *problem-focused* coping includes active engagement and outcome-oriented behaviors while *emotion-focused* coping includes distancing and avoidance. To the extent that a problem-focused approach is more strategic and targeted, it is more likely to act on the stressor than is the emotion-focused approach. Yet, as construed, many instances of coping include aspects of both processes (Lazarus & Folkman, 1984). The simultaneous presence in this model of seemingly distinct responses may have been due to over-reliance on self-report checklists of narrowly-defined, pre-specified thoughts and behaviors that did not accurately describe how individuals perceive and manage stress (Coyne & Gottlieb, 1996). Rather (as will be covered below in the relationship between self-regulation and perceived housing stress), seeking emotional support from others can be an adaptive coping response. Later research within the cognitive perspective of stress and coping did examine individual processes from a more holistic perspective. For example, Aspinwall and Taylor's (1997) model of proactive coping gave greater weight to affective influences and also expanded the temporal frame to include earlier steps of resource accumulation and recognition of potential stressors. In related work, cognitive processes have been defined to include affective self-awareness, optimism, perceived control, and personal awareness of the potential for change in oneself and in the environment (Bandura, 1982; Barrett, Gross, Christensen, and Benvenuto, 2001; Catanzaro & Mearns, 1999).

The other stream of research on self-regulation that is useful for this dissertation has focused on the role of affect and emotion. The measures used here, whether the newly introduced scales or the existing validated ones, each entail items that elicit reports of perceived anxiety and satisfaction. The hypothesized models tested here also assume that affect and emotion consciously and unconsciously influence students' everyday choices and decisions, which, in turn, influence their academic performance. Earlier studies in this area often referenced physiological reactions to stress (Gross, 1999). More recent work integrates current findings from neuroscience which suggest that many

mental processes occur outside of conscious awareness (Ochsner & Gross, 2008). Research recognition of non-cognitive processes has allowed for models of self-regulation that rely on multiple layered systems within the mind for perception of stressors as well as for formulating responses to them (Davidson, Jackson, & Kalin, 2000; Izard, 1993; LeDoux, 1996; Teasdale, 1999; Zajonc, 1984). In these models, affect results both from fleeting emotions and from mood states of longer duration and is registered internally through awareness of physiological changes and interpersonally through perception of facial and other nonverbal cues. Older homeostatic models of self-regulation suggested that affect functions as a corrective internal signal toward goal attainment (Carver & Scheier, 1990). Other models posit affect as a catalyst for revising goals and motivations (Lewis & Granic, 1999).

Findings that are most relevant to the educational outcomes examined in this dissertation have to do with the effects of exhausting or threatening settings and interactions on a person's ability to self-regulate. Such settings and interactions may interfere with academic learning because they narrow one's attention to contextual cues so that less extreme stimuli are not noticed (Mandler, 1992), impair short-term memory and impede long-term memory formation for non-emotional details (Gross & John, 2003), and decrease the likelihood of conscious awareness of one's own perceptions of threat (Ochsner & Gross, 2008). Thus, the sort of purposeful focus needed in an academic domain may be compromised by one's experiences in other exhausting or threatening domains (Evans & Schamberg, 2009). From a lifespan perspective, while maturation is associated with improved self-regulation, various factors may compromise its development in childhood and adolescence and lead instead to over-perception of threat and a tendency to manage distress through maladaptive avoidance and withdrawal (Compas, Connor, Osowiecki, & Welch, 1997; Evans & Schamberg, 2009; Holodynski & Friedlmeier, 2006; Luecken, Appelhans, Kraft, & Brown, 2006).

Linkages between household density and perceived stress

For much of the 20th century, an extensive sociological and epidemiological literature has linked household crowding to various types of deviance and disease at the community level (Edwards, Booth, & Edwards, 1982; Fuller, Edwards, Vorakitphokstorn, & Sermsri, 1994). In the psychological literature as well, early studies of household crowding emphasized pathological outcomes rather than

the more common sub-clinical decrements in daily personal functioning (Gove, Hughes, & Galle, 1979). Yet some recent studies have shifted focus to the more subtle effects of crowding as a chronic stressor (Evans & Stecker, 2004). Another important shift in the literature is the recognition that household density and subjective crowding are distinct constructs—the former is based on an empirically-obtained ratio while the latter may vary within and across domestic settings (Edwards et al., 1994). Thus, two homes of equal density may be reported by their respective inhabitants to be more or less crowded based on variations in overall household composition and individual household role.

Space itself is a factor in the distinction between objective and subjective crowding. Residence size is an obvious factor, yet the configuration of the space also influences perceived crowding. For example, partitions convey a sense of separation and depth affording a buffer from unwanted stimuli and intrusion (Evans, Lepore, & Schroeder, 1996). The configuration then interacts with the inhabitants' social roles and activities so that the intrinsic physical properties of the living space enable or obstruct satisfaction of personal and group needs according to the perceived salience of those properties (Archea, 1977). As well, from a life-course perspective, the valence and use-value of various spatial attributes vary both among and within household members according to their changing demands and expectations over time (Pruchno, Dempsey, & Carder, 1993; Saegert, 1985).

In an "adequate" home setting, the household enclosure acts both as a holding space and as a protective barrier for the family group. Interior partitions also afford separate zones for individual use. These physical attributes block excess stimuli from neighbors (Hartig, Johansson, & Kylin, 2003; McCarthy & Saegert, 1978) and also allow householders to retreat from each other (Pedersen, 1999; Proshansky, Ittelson, & Rivlin, 1970; Pruchno et al., 1993). At the same time, an adequate residence affords proximity among its inhabitants and so promotes sharing of material resources and emotional support (Ahrentzen, 2003; Hemmens & Hoch, 1996; Mitchell, 1998). An adequate residence also serves as a gathering space into which to invite extra-familial network members from outside (Wells & Harris, 2007).

In contrast, a high density home environment forces family members to maneuver through and negotiate limited shared space. The resulting cognitive and sensory overload may damage the quality of household relationships causing members to perceive each other as sources of daily stress (Lepore,

Evans, & Palsane, 1991). One behavioral adaptation to such stress is withdrawal; this response alleviates the overload but also entails affective distancing. Thus one indirect result of social withdrawal may be further stress due to a loss of social support from within the home (Evans, Palsane, Lepore, & Martin, 1989; Evans, Rhee, Forbes, Allen, & Lepore, 2000b; McCarthy & Saegert, 1978; Repetti, 1992; Repetti & Wood, 1997).

It is important to note that variation is to be expected when examining the interaction of built settings and individual needs—students will be found for whom high density does not lead to social withdrawal. Where enough cohesion exists, householders may construct a joint narrative of mutual support (Boss, 1982) so that, despite occasional conflicts or the inadequacy of the living space, individual members may develop positive expectancies (Catanzaro & Mearns, 1999) that sustain perceptions of cooperation and mutual goodwill.

Extended family households constitute one important model of housing adaptation (Koebel & Murray, 1999; Morris & Winter, 1975; Priemus, 1986). Such home sharing may be the preferred domestic model within many cultural groups (Angel & Tienda, 1982; Glick & Hook, 2002). Others who do not consider home sharing to be the norm may still see it as a desirable option at certain life transitions.[2] One variant of extended households involves recent immigrants who are taken in by kin or, in some cases, fictive kin or compatriots. Thus, expenses and other tangible resources may be pooled and other intangible forms of support may be more readily available (Angel & Tienda, 1982; Glick & Hook, 2002). In such arrangements, objective density may not have the expected effects on perceived crowding and perceived housing adequacy. Some may appraise their current housing as a transient condition as they work toward a better lifestyle while others may continue to self-identify with the settlement patterns of their community of origin rather than with their current residence (Feldman, 1996). Intergenerational households are another variant in which crowding is accepted for the sake of access to shared resources (Marin & Vacha, 1994). For intergenerational families, proximity affords child care and peer companionship, attenuates the demands of housekeeping, and pools a range of other tangible and intangible goods.

[2] Community college students, the focus of this dissertation, are one such group (Shields, 2004).

However, in households where there is less cohesion or mutual support, it may be that some adult members would prefer to live elsewhere but are blocked by financial or other constraints (Koebel & Murray, 1999; Saegert & Evans, 2003). In some cases, external economic barriers to home-leaving may have an attrition effect (DeMarco & Berzin, 2008; Gallo, Bogart, Vranceanu, & Matthews, 2005; South & Crowder, 1998; Spencer, Kalil, Larsen, Spieker, & Gilchrist, 2002) with the least-adaptive members remaining. This pattern may be reinforced in poorer households in which older teens and young adults do not typically experience a transitional semi-autonomous stage, such as being away at college or in the military, which may be more normative in middle-income households (Goldscheider & Goldscheider, 1989). Without these lower-stakes opportunities to develop independent living skills, such youth may be less prepared to depart from the parental household. Other kin who leave unsuccessfully and then return may have exhausted extra-familial social capital (Wright et al., 1998) or acquired maladaptive coping skills while away, especially following multiple moves (Stokols, Shumaker, & Martinez, 1983). If the return is to a home "of last resort," prior frictions may resume (Cooney & Mortimer, 1999; Gordon, Chase-Ladsdale, & Matjasko, 1997). In intergenerational households, early childbearing may lead to role conflict (Spencer et al., 2002). An imbalance in the number of dependent household members of any age may lead to role strain and a sense burden for caretakers (Pruchno et al., 1993).

The stressors originating in a home setting—the constraints or inadequacies of the physical setting, the interpersonal exchanges within the household, and the interaction between spatial and interpersonal factors—conform to the *daily hassles* model defined by Lazarus and Folkman (1984). In contrast to an earlier historical model which focused on the role of major life events (Dohrenwend, 1974; Holmes & Rahe, 1967), the daily hassles model states that chronic, low-level annoyances and conflicts adversely affect both physical and psychological well-being in a cumulative and insidious manner. Yet the identification and measurement of household stressors is complicated by their interactive effects (Gottlieb, 1997) and also because individuals themselves constantly act upon those same stressors in ways that attenuate or exacerbate their effects (Brown et al., 2006; Lazarus, 1991; Lewis & Granic, 1999). As well, because the home is the core environment in most people's lives, household stressors may potentiate sensitivity to stressors in other ecological domains (Gómez-Jacinto

& Hombrados-Mendieta, 2002). External stressors may, in turn, have reciprocal effects within the home (Repetti & Wood, 1997).

The role of time orientation in the linkage between household density and perceived stress.

As discussed earlier, crowded or otherwise stressful home settings may entail excessive stimuli which result in sensory overload and, in some cases, perceived threat. These stressors may originate from the physical inadequacies of the space, from other inhabitants of the home, or from the interaction of these two sets of factors. Thus, stressful domestic environments force individuals to reallocate their cognitive resources to manage immediate demands. As a result, living in such a household may constrain one's ability to reflect realistically about past experiences and to engage in constructive thought about the immediate future. Existing research on the harmful effects of inadequate housing has emphasized spatial and interpersonal stressors, but a temporal dimension may be involved as well. The existing literature on crowding and other housing stressors, however, has not yet explored the temporal aspect of individual experience of the home environment.

The Zimbardo and Boyd model of time orientation (1999) described earlier may be useful for understanding differences in individual responses to the physical and interpersonal aspects of home settings. This temporal model may provide one possible factor in an exploration of why crowding and poor housing quality have a stronger or milder effect for certain individuals

Memory is one point of intersection between temporal orientation and household transactions (Brown et al., 2006). Therefore, a negative orientation toward past experiences may also be maladaptive within a home setting. Visual and spatial attributes of the domestic space form a large part of one's encoded recollections of daily events and the emotions associated with them. Being present within the home setting entails being reminded of those earlier events and emotions; to the extent that stronger emotional memories are more enduring, (Parrott & Spackman, 2000), a tendency to ruminate over disruptive memories, whether recent or distant, may interfere with household interactions in the present (Baumeister, Bratslavsky, Finkenauer, Vohs, 2001). This "past-negative" orientation has a strong direct correlation with aggression, depression, and trait anxiety and a strong inverse correlation with emotional stability, impulse control, and self-esteem (Zimbardo & Boyd, 1999).

Some forms of present-time orientation may be dysfunctional within the domestic space as well. As will be discussed in the following section linking perceived stress to self-regulation, home settings that are severely inadequate or challenging may force inhabitants to concentrate their cognitive and affective resources on day-to-day survival. These stressors may interact with individuals' "present-fatalistic" or "present-hedonistic" time orientations in ways that exacerbate tendencies toward aggression, depression, novelty-seeking and poor ego control and away from tendencies toward conscientiousness, impulse control, and consideration of future consequences. As well, individuals with a "present-fatalistic" orientation may experience greater trait anxiety and less energy and openness while those with a "present-hedonistic" orientation may experience more energy and more sensation-seeking (Zimbardo & Boyd, 1999). Again, these tendencies also affect other household members because there is a greater likelihood of interpersonal volatility and of depletion of tangible and intangible resources within the shared living space.

In contrast, individuals with a strong future orientation may rely on ego control, conscientiousness, and preference for consistency and, as a result, be less affected by current crowding and housing inadequacy. (Whether their time orientation precedes these attributes or arises from these attributes is beyond the scope of this discussion.) As summarized earlier in the discussion of self-regulation, many behaviors characterized as forms of proactive coping (Aspinwall & Taylor, 1997) are consistent with the personal attributes typical of a future time orientation (Zimbardo & Boyd, 1999). Proactive coping entails preventive measures of resource accumulation and recognition of potential stressors and also includes elicitation and use of feedback at the close of an instance of coping (Aspinwall & Taylor, 1997). Thus, learning takes place which adds to one's intrapersonal resources available for future coping episodes.

Traits associated with future time orientation (such as ego control, conscientiousness, and preference for consistency) are also implicit in the process of academic attainment. Purposeful movement toward an educational degree entails deferral of other forms of immediate gratification in the belief that a significant future accomplishment will result. As discussed below, recent research has linked individual future time orientation to academic achievement (Horstmanshof & Zimitat, 2007; Phan, 2009).

The role of self-regulation in the linkage between household density and perceived stress.

Differences in individual ranges and repertoires of self-regulation ability interact with different attributes of physical and social settings so that supportive settings and relationships are less likely to activate self-regulatory mechanisms than are demanding settings and relationships. Thus the attributes of those with whom one shares a living space are an important in assessing stressors within the home. Coping models tend to focus on internalizing outcomes of stress; however, it is important to note that, in some individuals, volatile externalizing is another possible outcome of the interaction of low self-regulation with high perceived environmental stress. In some cases, it may be that household conflicts arise because the set of coping skills that underlie successful transitions to an independent household are the same set of skills that would enable tolerance for interpersonal and environmental stressors. To the extent that individuals self-select into the least-constrained living environment possible (Regoeczki, 2002), those least able to manage an exit from crowded housing may, paradoxically, also be those least skilled at coping in such settings. Thus, within a household, the maladaptive behavior of other such individuals may increase stress and decrease perceived housing adequacy even for those household members with more well-developed self-regulating abilities.

One model of self-regulation consists of five stages: situation selection, situation modification, attention deployment, cognitive change or reappraisal, and response modulation or suppression. Of these, the first four are most adaptive, while the last strategy is least adaptive (Gross & John, 2004). In a home setting, adaptive behaviors might involve identifying personal spaces or, if necessary, seeking out alternative environments outside the home; reconfiguring the domestic space to some extent to improve its affordances; choosing to focus on or ignore certain aspects of the space; or reframing one's perception of that space (Archea, 1977; Boss, 1992; Brown et al., 2006; Morris & Winter, 1975; Priemus, 1986). A maladaptive response would omit these first four strategies and instead restrain one's affective expression. Yet, the latter tactic increases not only one's capacity for negative felt emotion but also negative felt and expressed emotion among those with whom one interacts (Gross & John, 2004). In contrast, expression of positive affect and perception of positive affect in others permits mental scenario-testing that is creative, flexible, and responsive to contextual cues (Isen, 2000) thereby strengthening schema for more automatic problem-solving (Sweeney, 2008;

Taylor, 1983). As will be discussed in the following section, the intrapersonal effects of housing stressors may also have adverse results in other life domains (Gómez-Jacinto & Hombrados-Mendieta, 2002). To the extent that the opposite is true—that a capacity for mental scenario-testing of possible interpersonal exchanges translates across domains to mental scenario-testing in an academic setting—it may be that adaptive responses within home settings are associated with adaptive responses in educational settings as well.

Linkages between perceived housing stress and academic standing

Studies of the spillover effects of household crowding into other life domains indicate that adverse conditions in the primary setting of the home increase sensitivity to stressors experienced in secondary settings in the community (Gómez-Jacinto & Hombrados-Mendieta, 2002). One mechanism for the translation of housing stress into other life domains is the tendency of those living in crowded conditions to withdraw from social interaction not only inside but outside the home as well. Early findings on this phenomenon were obtained through experimental research in which college students were exposed to brief simulated social interactions. Those residing in crowded off-campus housing were found to be less likely to recall identifying details of people they had first met in the experimental setting (Evans et al., 2000b). However, a weakness of such laboratory research is that it neither elicits the sorts of interpersonal engagement that occur in everyday nonresidential environments nor does it capture the variability over time of individual approach and withdrawal behavior toward those with whom one shares a home. In contrast, a recent longitudinal study of low-income, community-dwelling individuals relocated to higher-quality housing found that earlier maladaptive withdrawal behaviors persisted over time in the new home setting. Individuals continued older patterns of self-isolating behavior despite the improved affordances of the new home for interaction with kin, friends, and neighbors (Wells & Harris, 2007). However, this literature review found no peer-reviewed research on the effects of stressful housing on academic performance among community-dwelling adult students.

The role of self-regulation in academic standing.

In previous decades, the bulk of the literature on student retention and academic success followed from models of student engagement which emphasized the role of the campus environment and the academic institution (Pascarella & Terenzini, 1980; Tinto, 1975.) In later decades, a more individualistic cognitive model was introduced which, while still embedded in the sociocultural context of the school, focused more closely on person-level attributes and processes associated with self-regulated learning (Duncan & McKeachie, 2005; Pintrich et al., 1993). More recently, a number of studies have attempted to integrate the effects of psychosocial factors at both the individual and institutional level (Robbins et al., 2004).

The self-regulated learning model was the basis for the development and validation of a scale, the Motivated Strategies for Learning Questionnaire (MSLQ), that has been used extensively in course evaluation, student assessment, and institutional development (Duncan & McKeachie, 2005). The Motivation subscale of the MSLQ has three sets of measures pertaining to expectancy beliefs about task completion, the value that students ascribe to academic tasks, and an affective component framed as test anxiety. The Learning Strategies (or Cognitive) subscales include three groupings that measure cognitive strategies, metacognitive strategies, and resource management strategies.

The MSLQ was designed for the student assessment in the context of secondary and higher education. Yet its constructs are analogous to those described in the literature on problem-focused and proactive coping (Aspinwall & Taylor, 1997; Diamond & Aspinwall, 2003; Isen, 2000). Also, though an examination of the role of agentive processes (Bandura, 1982) in educational attainment is outside the scope of this dissertation, an argument can be made that the MSLQ supports the premise that students' own sense of self-efficacy is key to their success. A meta-analysis (Robbins et al., 2004) of 109 studies on the connection between psychosocial skills and academic outcomes found that academic self-efficacy was the best predictor (ρ = .496) of student GPA. In the validation sample (Pintrich et al., 1993), a correlation coefficient was obtained for each of the 15 latent factors' relationships to students' final course grades. (Please see Appendix Table F.17.) Several of the MSLQ factors were found to have a very low or negative association with final course grades obtained in the validation sample. Extrinsic Goal Orientation and Help-Seeking each had *r* values of only .02, while Test Anxiety

(r = –.27) and Peer Learning (r = –.06) were negatively correlated with course outcomes. The negative association for Test Anxiety is to be expected. However, it may be that Extrinsic Goal Orientation is associated with past or present rather than future temporal orientations (to be discussed further below) while Help-Seeking and Peer Learning may be forms of emotion-focused coping that are not necessarily conducive to goal attainment.

The role of time orientation in the linkage between perceived housing stress and academic standing.

The constructs of time orientation and perceived stress differ in that the former is a relatively durable personal attribute (Zimbardo & Boyd, 1999) while the latter may vary more over time (Cohen, Kamarck, & Mermelstein, 1983). Yet, both constructs may convey important elements of one's current life space that strongly influence one's actions across a range of ecological settings (Lewin, 1951). As such, temporal orientation and perceived stress are appropriate factors to examine in the context of the individual experience of higher education.

Some published empirical studies link time orientation to student achievement. In one study, future time orientation was found to mediate the relationship between self-reported learning behaviors and personal academic engagement (Horstmanshof & Zimitat, 2007). In another study, the effect of future time perspective on academic outcomes was found to be mediated by students' mastery beliefs and by their reliance on approach strategies instead of avoidance strategies (Phan, 2009).

The role of self-regulation in the linkage between perceived housing stress and academic standing.

In the literature on child development, selective attention, automatic processing, and metacognition are among the basic cognitive capacities upon which later academic learning is based (Bjorklund, 2005). Selective attention permits filtering of unwanted stimuli, automatic processing enables streamlining of concurrent cognitive tasks, and metacognition entails reflective thought about one's own thought processes. Successful mastery of these basic mental skills leads to a sense of competence in school-aged children which, in turn, encourages further learning (Robbins et al., 2004). However, as noted above in the initial review of self-regulation, basic mental processes become effortful in stressful conditions (Compas et al., 1997; Evans & Schamberg, 2009).

When stress in the primary home environment is constant, individuals may become conditioned to manage their responses in ways that have adverse effects in other life settings. Learned helplessness is one mechanism through which housing stress generalizes to other life domains (Abramson, Seligman, & Teasdale, 1978; Baum, Aiello, & Calesnick, 1978, Evans & Stecker, 2004). Studies of children living in crowded or chaotic settings found that task persistence weakened even in situations where an immediate goal was clearly attainable (Evans, Lepore, Shejwal, & Palsane, 1998; Evans, Saegert, & Harrid, 2001; Evans, Gonnella, Marcynyszyn, Gentile, & Salpekar, 2005). To the extent that family members continue to live in settings that reproduce the crowded and chaotic environments of their childhood (Luecken et al., 2006), they may lack or suppress the level of task-persistence and self-regulation that are the foundation for the skill sets associated with success outside the home (Bandura & Locke, 2003). Learned physiological "fight or flight" responses to chronic environmental threat provide another explanation for the transfer of adaptive or maladaptive responses to non-residential settings (Taylor, Repetti, & Seeman, 1997). In a more psychodynamic model, the idea of ego depletion suggests that individual reserves are finite and are easily exhausted beyond an optimal range of functioning (Baumeister & Hetherton, 1996; Baumeister et al., 2000).

As noted earlier, expressive suppression is an effortful form of affective self-regulation because one must redirect attention away from physiological cues such as increased heart rate or muscle tension. However, expressive suppression also strains a person's cognitive processing through the need to monitor one's own behavior as well as the expressive behavior of others. In this manner, expressive suppression also diminishes the ability to perceive and, later, recall factual details of the environment and of social interactions (John & Gross, 2004). Therefore, to the extent that learned affective patterns generalize across life domains, a stressful home environment may lead students to be more attuned to their own and to others' expressive behaviors rather than to the actual content of their studies (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003; Caprara et al., 2008).

PURPOSE OF THE RESEARCH

Given the long-term adverse effects of environmental stressors and inadequate self-regulation upon life course prospects on one hand (Evans & Schamberg, 2009) and, on the other hand, the

significant improvement in quality of life through educational attainment (Attewell, Lavin, Domina, & Levey, 2007), further research into the relationship between household stressors and self-regulated learning is warranted.

Spatial self-regulation as an element in cognitive and affective self-regulation

An underlying assumption of this dissertation is that spatial self-regulation and self-regulated learning strategies are important elements of goal-oriented self-regulation among young adult students. Much of the literature on the effects of environmental stress in children entailed experimental observations of their completion of simple cognitive tasks (Evans & Stecker, 2004). However, measurement of enacted behaviors associated with self-regulation in adults is inherently complicated by the fact that normally-functioning adults minimize and internalize their affective expression and also have a much broader repertoire of self-regulating processes than do children (Holodynski & Friedlmeier, 2006). Therefore, for both theoretical and practical reasons, this exploratory model did not entail direct observation and measurement of self-regulation processes in college students but instead relied on their own self-reports of perceptions and behaviors at home and on campus.

The process model of emotion regulation described earlier (Gross & John, 2003) places situation selection, situation modification, and attention deployment at the start of an emotion regulation strategy that is proactive and is associated with less disruptive emotion response tendencies. A premise of this dissertation is that a set of purposive transactions with one's environment is necessary for that same setting to be conducive to the cognitive processes needed for academic success. That is, one must ensure that the setting will neither cause emotional distress nor strain one's ability to deploy cognitive skills to the presenting mental tasks.

The home is an important primary setting and thus affects students' learning habits even if it is not their main study location. In situations where the home is an inappropriate study setting, adequate campus spaces become essential as alternative spaces for out-of-classroom learning. The urban campus from which the dissertation sample was drawn is unusual among local community colleges because it is a 43-acre site with clear physical boundaries, both built and natural, separating it from the surrounding

neighborhood. Its high proportion of open spaces and greenery, as well as variety in the texture of the landscape and architecture, are a contrast to the adjacent residential and commercial areas. Large public parks do adjoin the campus, but these are underutilized and border on industrial zones and a major highway. Therefore, the campus is an educational setting that is more likely to support selective attention and attention restoration.

The concept of spatial self-regulation does not exist in the literature to date. In the current study, spatial self-regulation was defined as the ability to recognize whether a setting is conducive to one's goals and the ability to engage or change that setting in order to move toward those goals. The rationale for introducing a spatial self-regulation measure was threefold. First, the ability to recognize the adequacy of one's current environment for learning tasks and the ability to modify or shift to a different environment are each important elements of self-regulation, especially for those whose primary home environment is inadequate for those purposes. Second, this study hypothesized that there is a direct correlation between being able to self-regulate spatially and having a future time orientation. As discussed earlier, many elements of proactive coping, secondary appraisal, and reappraisal are consistent with mental scenario-testing and cognitive or affective rehearsal of future interactions and experiences. Third, spatial self-regulation may be an important element of a larger model of emotional intelligence that itself has been insufficiently defined and validated to date (Waterhouse, 2006; Zeidner, Roberts, & Matthews, 2008). Although a discussion of the literature on the bases for the sorts of intelligence underlying academic success is beyond the scope of the current research, an exploration of the elements of an individual capacity for spatial self-regulation in the context of educational achievement is warranted. The construct of *spatial self-regulation* is defined as operating across settings and domains, that is, both at home and on campus. Thus, if a student assessed the home as an inappropriate setting for study activities, utilization of campus spaces may be a compensatory strategy. In contrast, if the affordances of the home setting were ideal for study activities, utilization of campus spatial resources would be lower.

SUMMARY OF HYPOTHESES

Linkages between time orientation and spatial self-regulation.

- Hypothesis 1: Greater *future time orientation* is associated with greater *spatial self-regulation*.

  Students who self-report temporal tendencies toward the future are likely to also to report patterns of thought, feelings, and behaviors consistent with spatial self-regulation processes.

Linkages among household density, perceived housing adequacy, and perceived housing stress.

- Hypothesis 2a: Greater *household density* is associated with greater *perceived housing stress*.
- Hypothesis 2b: Greater *perceived housing inadequacy* is associated with greater *perceived housing stress*.
- Hypothesis 2c: *Perceived housing inadequacy* mediates the relationship between *household density* and *perceived housing stress*.

The first linkage states that, as household density increases, individual distress increases. This relationship may be mediated in part by *perceived housing inadequacy* because the stressful effects of crowding arise from the diminished capacity of the environment to meet individual needs.

The roles of time orientation and spatial self-regulation in the linkage between perceived housing inadequacy and perceived housing stress.

- Hypothesis 2d: Students with higher *future time orientation* will have an attenuated association between *perceived housing inadequacy* and *perceived housing stress*.
- Hypothesis 2e: Students with higher *spatial self-regulation* will have an attenuated association between *perceived housing inadequacy* and *perceived housing stress*.

The link between perceived housing inadequacy and perceived housing stress may be moderated by *time orientation* and by *spatial self-regulation*. Specifically, having a stronger future orientation or a better ability to self-regulate in response to one's environment may attenuate the adverse effect of living in inadequate housing.

Linkages among perceived housing stress, self-regulated learning, and academic standing

- Hypothesis 3a: Greater *perceived housing stress* is associated with lower levels of *self-regulated learning*.
- Hypothesis 3b: A lower level of *self-regulated learning* is associated with lower *academic standing*.
- Hypothesis 3c: *Self-regulated learning* mediates the relationship between *perceived housing stress* and *academic standing*.

The first linkage states that as *perceived housing stress* increases, academic achievement decreases. This relationship may be mediated, in part, by *self-regulated learning* because a greater presence of goal-orientated perceptions and behaviors may compensate for the adverse effects of housing stress on academic outcomes.

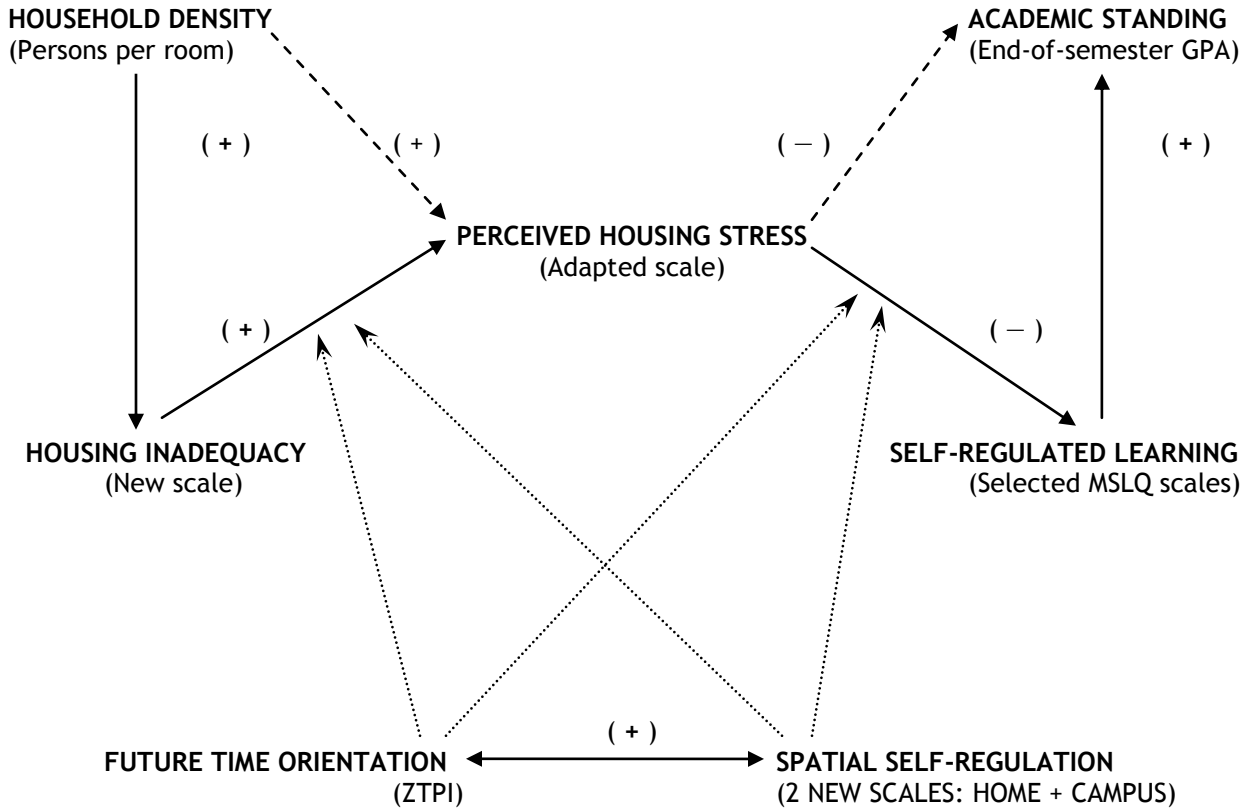
The role of time orientation and spatial self-regulation in the linkage between perceived housing stress and self-regulated learning.

- Hypothesis 3d: Students with higher *future time orientation* will have an attenuated negative association between *perceived housing stress* and *self-regulated learning*.
- Hypothesis 3e: Students with greater *spatial self-regulation* will have an attenuated negative association between *perceived housing stress* and *self-regulated learning*.

A significant future orientation and a greater ability to self-regulate in response to one's environment are each hypothesized to lessen the negative effect of perceived housing stress on the utilization of self-regulated learning strategies.

Figure 1 on the following page consolidates the above hypotheses within a path model, and notes the variables used for each predictor.

Figure 1. Hypothesized Path Model among Major Predictors.



Legend

Predictive path
Correlational path
Mediated path
Moderation effect

EFFECTS OF BETWEEN-GROUP DIFFERENCES IN THE MAJOR PREDICTORS

Non-experimental predictive models risk errors in causal assumptions if they do not consider the possible effects of unspecified influences from outside the model (Lieberson, 1985). External influences may function as selection factors, which concentrate scores for participants' demographic or other attributes non-randomly at a certain range within the rest of the sample. External influences may also function as control factors, which differ from selection factors in that they are enduring or irreversible individual traits. A further distinction between control and selection factors is that, in a path model approach, selection factors represent more proximate exogenous effects upon the endogenous factors while control factors represent effects more distal to the endogenous factors.

The construct of gender is an important example of the differences between selection and control factors. Gender is a classification which, in normative terms, arises from a person's biological sex, a construct closer in definition to a control variable. However, the proximate influence of gender in a model of perceived stress is due not to a person's biological sex but to the bundle of socially-constructed affects, cognitions, and behaviors normatively associated with that biological sex. Thus, a respondent's caregiving role is an example of a selection variable strongly associated with gender, whether as a parent of young children or as a caregiver for an elderly or disabled adult.

Similarly, the control measure of chronological age is not itself what influences measures such as time orientation; rather, emotional maturation and accumulation of life experiences are the more proximate selection effects. Thus, measures of household composition and the respondent's household role may be stronger indicators of certain explanatory variables. Students who live with parents and siblings while attending a community college may prolong the parent-child relationships of late adolescence leading to tension in the household (Goldscheider & Goldscheider, 1989; Shields, 2004). Yet, for other students, living with one's parents may remove the stress of having to maintain a separate household and support oneself financially. In contrast, parents of dependent children may experience additional demands from childcare and from employment, yet may also possess a greater sense of self-efficacy than younger students still in a dependent role (Dill & Henley, 1998; Shields, 2004). Thus, household role and household composition may have inconsistent effects.

Being born outside the US is another discrete exogenous measure with various complex implications. Differences in the major predictors according to non-US origin may point to cultural and socioeconomic variations at the group level. For example, Zimbardo and Boyd (1999) found that mean scores for temporal factors varied by respondents' ethnicity. Thus cultural differences may underlie attitudes toward time to a degree that alters the ability of temporal factors to accurately predict other endogenous factors in the model. However, differences due to immigration also point to individual-level or family-level traits, which are in themselves indicators for the decision to relocate to a different country, regardless of cultural or socioeconomic factors.

Immigration is relevant to measures of household density. Among non-native students, greater household density may be explained by the need of recent immigrants to share resources with extended kin and other compatriots who are not immediate relatives. It may be that, in these cases, household density is less closely related to perceived housing stress. Recent immigrants may not view their living arrangements in the same way as do others with a longer-term connection to their homes because shortcomings in those residential settings do not have the same salience for individuals who perceive their living arrangement as a temporary condition.

Group differences among the model's major predictors suggest topics for further research to elaborate the relationships found in this study. Chapter 4 includes a discussion of these implications.

CHAPTER 2. METHODS

SAMPLE RECRUITMENT AND DATA COLLECTION

The sample consisted of students enrolled in Introduction to Psychology (PSY 11) at Bronx Community College (BCC) during fall 2010 and spring 2011. PSY 11 is a core requirement for many curricula. Course enrollment was approximately 1,430 during fall 2010 and 1,760 during spring 2011.

The Research Participation component of PSY 11 requires that students either take part in a research pool or submit a written assignment about psychological research methods. During the fall semester, the research pool offered three different self-administered surveys. In the first six weeks of the spring semester during which this study continued, it was the only survey-based option available. The researcher posted a recruitment flyer in a designated common area in the Department of Social Sciences and also gave these flyers to section instructors to announce in their classes. (Appendix A contains the recruitment flyer.) Research sessions happened most weeks during Thursday "club hours" when no classes meet. A single Saturday session also occurred near the end of each semester. Students self-scheduled on the dates and times posted. Each session accommodated 15 to 60 students.

Each participant received an Informed Consent form to review and complete before beginning the study in compliance with a protocol approved on March 1, 2010 by the local campus Institutional Review Board. (Appendix A contains the Informed Consent document.) The Informed Consent described the goals and methods of the research, stated that participants must be 18 years or older, and explained that participation was confidential, rather than anonymous, because participants' identity would be linked to survey responses so that the researcher could look up each student's academic record at the end of the semester. The researcher key-coded each set so that the questionnaires and the Informed Consent documents could be detached and stored apart. To ensure confidentiality, the questionnaires had no unique identifiers and only the researcher knew the key-coding system.

During fall 2010, 353 surveys were collected in 20 sessions; during spring 2011, 198 surveys were collected in five sessions. Of 551 students, 89% (n = 490) stayed in the sample. Reasons for excluding 61 students had to do with lack of Informed Consent (n = 35, 6%), living alone (n = 21, 4%), or

missing data (n = 5, 1%). Completed surveys with blank Informed Consent were not part of the sample. Many measures in this study pertained to sharing domestic space, so students who reported living alone were removed from the dataset. The questionnaires with missing data suggested a pattern of unintentional omission because single pages rather than certain scales or items were left unanswered.

Data other than academic indicators were collected by the self-administered survey (Appendix B) which included both published (Pintrich et al., 1993; Zimbardo & Boyd, 1999) and original scales. One original scale had been used earlier in student research pools from the same population (Campagna, 2010) while two other scales were newly written and piloted in July, 2010, a few months before the start of data collection. The Measures section below describes the development of the three original scales. The survey also collected demographic information about the participants.

All academic data came from campus databases rather than student self-report. Self-reported grades, enrolled credits, and remedial placements were not used due to the need to measure GPA and related indicators accurately. In a literature review and meta-analysis of a pairwise sample of over 60,000 cases, Kuncel, Credé, and Thomas (2005) found not only random but also systemic error—students with lower actual GPA were less likely to report that figure correctly than were students with higher actual GPA. Because at-risk students are a population of interest, the risk of inflated self-reported GPA warranted obtaining these figures directly from official records. After final grades were posted, the researcher recorded semester GPA and credit hours as well as the number of remediation courses required by standardized entrance placements. Remediation in English, reading, math, and ESL were recorded because individual variations in aptitude may be significant predictors of GPA.

MEASURES

The research used three sets of self-reported variables: data used to formulate exogenous factors, data used to formulate endogenous factors, and demographic indicators used to screen for group differences in the exogenous and endogenous factors.

Exogenous Factor: Household Density

Household density was calculated by dividing the number of persons in the household (Question 5) by the number of habitable rooms (Item 10). Item 5 instructed participants to count themselves and

also “anyone who stays there more than they stay anywhere else.” Item 10 instructed participants to omit hallways, bathrooms, and kitchens too small for a table and chairs. *Persons per room* is the label for the resulting variable and is consistent with measures of objective crowding described earlier in the literature review (Edwards, Fuller, Sermsri, & Vorakitphokstorn, 1994).

An alternative measure of space utilization came from dividing the number of rooms used for sleeping (Item 11) by the total number of habitable rooms (Item 10). Item 11 asked, with regard to Item 10, “How many of these rooms usually have someone sleeping there at night? *Rooms ratio* was the label for the resulting variable.

To the extent that study participants accurately reported the number of individuals in the household, the number of habitable rooms, and the number of those rooms used for sleeping, Persons per room and Rooms ratio are both exogenous variables measured without error. Yet Rooms ratio and Persons per room have different theoretical and practical implications for how domestic space is used.

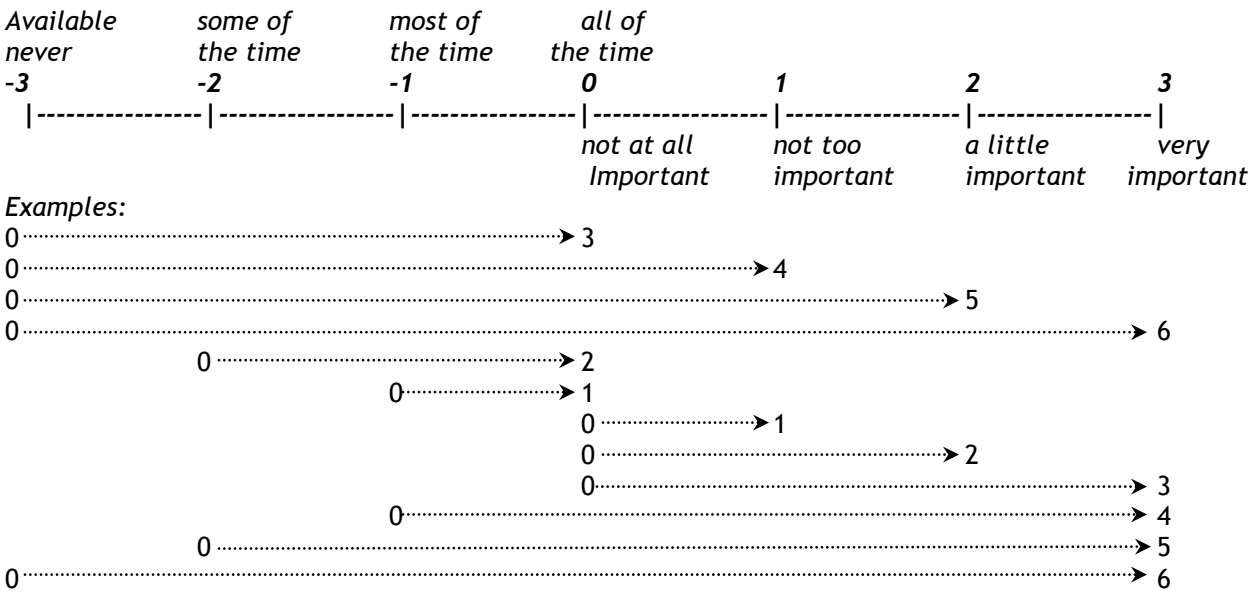
The number of persons per room is often higher in households that include adult partners or young siblings. Each of these high-density situations is normative and expected in the general population. Yet households where all rooms are used for sleeping are less likely to afford their inhabitants adequate spaces into which to retreat from each other (Pedersen, 1999; Proshansky et al., 1970; Pruchno et al., 1993). Although college dormitory units are designed to have a high ratio of private areas to common areas, the students in this community college sample live in family households, in housing stock that is configured with gathering areas such as living rooms and eat-in kitchens. In high-density households where most or all rooms are repurposed for sleeping, or otherwise usually occupied by more than one person, students are less able to manage their exposure to distracting stimuli. Furthermore, a traditional college dormitory contains only students while a family household often functions mainly according to the needs of its non-student occupants. Very high utilization of domestic space is likelier in households whose non-partnered adult members are constrained in some way from moving out to more suitable living arrangements (DeMarco & Berzin, 2008; Gallo et al., 2005; South & Crowder, 1998; Spencer et al., 2002). Thus, the Persons per room measure and the Rooms ratio measure point to different latent constructs of household density.

***Endogenous Factor: Housing Adequacy*.**

Despite many attempts to describe an ideal home setting (Smith, 1994) and despite normative benchmarks reflected in local zoning and safety ordinances, the literature to date has few empirically-derived, comprehensive, and generalizable schemes of how a home should be configured. Rather than rely on an existing scale to assess housing quality, this study used a new one which operationalized perceived housing inadequacy as the gap between individual priorities and available concrete affordances. Items were taken from original questions in a prior instrument which also measured future housing aspirations (Campagna, 2010). The premise of that earlier instrument was that housing adequacy is subjective and influenced not only by current needs but also by expectations of future change in personal circumstances. The current research also takes a transactional perspective because several hypotheses state that students' attitudes about their housing right now are affected by how they think about their future prospects. Section II of the current questionnaire (Appendix B) contained two identical lists of various home features; participants first rated the availability of each affordance and then rated how important each was to them. Thus, Housing inadequacy, as defined here, is a subjective aggregate of perceived deficits in the domestic environment.

The *Housing Inadequacy* measure was derived through a factor analysis of difference scores for various domestic affordances. For each affordance, students first answered whether a particular housing feature was available "all of the time," "most of the time," "some of the time," or "never." Students then answered whether each housing feature was "very important," "a little important," "not too important," or not at all important." The first set of responses were reverse-coded so that a score of negative-three indicated "never" available while a score of zero indicated the affordance was available "all of the time." The second set of responses were coded so that a score of zero indicated the housing feature was "not at all important" while a score of three indicated it was "very important." Difference scores were then computed as shown in Figure 2 below. So, for example, a feature rated as "never available" but "very important" had the highest difference score of six while a feature rated as available "most of the time" but "a little important" had a lower difference score of four. A feature available "all of the time" but "not at all important" had the lowest difference score of zero. Scores from zero to three indicated adequacy while scores above three indicated inadequacy.

Figure 2. Number line for computing Housing inadequacy difference scores.



The resulting difference scores were entered into an exploratory factor analysis which found sub-factors for the habitation interior, building interior, and for the outdoor surroundings. Several single-item questions were used to test their construct validity. Item II.19 asked, “Now, please think of where you live compared to most of the other people living near you in your area. Compared to your neighbors, would you say that the housing that you now have is:” [followed by five responses ranging from “much better” to “much worse”]. Item II.39 asked, "Overall, how satisfied are you with the interior of the home or apartment where you live right now?” Item II.40 substituted “building” for the “home or apartment” of Item II.39; both items had four responses ranging from “very satisfied” to “not at all satisfied.” Item II.41 asked, “Compared to how other people living in your community feel about their housing, is your satisfaction level: [followed by five responses ranging from “much higher” to “much lower”]. Chapter 3 describes how the single-item responses were regressed on the Housing inadequacy factors to test their construct validity.

Endogenous Factor: Perceived Housing Stress.

The major hypotheses listed at the end of Chapter 1 modeled Perceived housing stress as an outcome of Housing density and Housing inadequacy, two factors described earlier. If Housing density

and Housing inadequacy measure stressors, then Perceived housing stress must measure the outcome of those two sets of predictors. However, no validated scale for perceived housing stress exists in the literature to date (Evans, 1999; G. W. Evans, personal communication, November 16, 2009).

The model for the new instrument used to assess *Perceived housing stress* was the PSS-10 scale (Cohen & Williamson, 1988). The PSS-10 is a global measure of individual appraisal of unspecified life stressors in the prior month. It measures respondents' overall sense of their ability to predict, control, and manage stressors during the past month but it is not an inventory of the duration, intensity, and type of stressors experienced (Cohen, 1986). Yet, within a reserve capacity or stress-diathesis model, what matters is whether and to what extent a person reports being under stress no matter the origin of that stress. Thus the PSS-10 is useful as an ecological gauge of a person's general ontological state. The PSS-10 contains two subscales measuring, respectively, perceived Helplessness and perceived Self-efficacy each found to have alpha values above .80 (Roberti, Harrington, & Storch, 2006).

The PSS-10 score is influenced by conditions outside the focus of the current study such as physical or mental health, difficult personal relationships, or economic hardship. These exogenous influences may be filtered by some of the demographic group differences described in Chapter 1 and screened for in Chapter 3. Yet, other unspecified causal and selection factors may contribute to a significant error term for the larger exploratory model. Although measurement errors due to such outside factors cannot be fully eliminated, they can be reduced by focusing the respondents' attention to their living environments. Therefore, a revised instrument was needed to elicit respondents' perceived stress due to crowding, sensory distractions, and other spatial aspects of home settings.

Table 1 below lists the adapted questions side by side with the original PSS-10 items. Review of the literature on housing stressors suggested two more items measuring cognitive withdrawal (Item 11) and predictability of the home setting (Item 12). Five of the adapted items, including Item 12 measuring predictability, were phrased with positive valence to correspond to the PSS-10 Self-efficacy subscale. The researcher discussed a draft of the Perceived housing stress scale with 15 students enrolled in an upper-level psychology elective during the summer of 2010. The students' feedback indicated that the instrument was understandable and that its content was adequate and relevant.

Table 1. Adaptation of the PSS-10 as a Perceived housing stress scale.

PSS-10 Items (Cohen & Williamson, 1988)	*Adapted Items for "Perceived Housing Stress"*
1. In the last month, how often have you been upset because of something that happened unexpectedly?	1. In the last month, how often have you been upset because of some unexpected problem with the physical condition of your home?
2. In the last month, how often have you felt that you were unable to control the important things in your life?	2. In the last month, how often have you felt that you were unable to do anything about the physical condition of the inside of your home?
3. In the last month, how often have you felt nervous and "stressed"?	3. In the last month, how often have you felt nervous and "stressed" by how crowded your home is?
4. In the last month, how often have you felt confident about your ability to handle your personal problems? [a]	4. In the last month, how often have you felt confident about your ability to deal with noise or other irritating distraction inside your home? [b]
5. In the last month, how often have you felt that things were going your way? [a]	5. In the last month, how often have you felt satisfied that things were going your way in how you use the space inside your home? [b]
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	6. In the last month, how often have you felt that you could not manage everything you had to do to take care of the place where you live?
7. In the last month, how often have you been able to control irritations in your life? [a]	7. In the last month, how often have you felt confident about your ability to deal with noise or other irritating distractions from neighbors in your building or next door to your house? [b]
8. In the last month, how often have you felt that you were on top of things?	8. In the last month, how often have you felt that you were able to keep the places inside your home comfortable enough for yourself? [b]
9. In the last month, how often have you been angered because of things that happened that were outside of your control?	9. In the last month, how often have you been angry because you didn't have enough privacy or personal "space" for yourself at home?
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	10. In the last month, how often have you felt that your responsibilities at home were piling up so high that you could not manage them?
	11. In the last month, how often have you found yourself withdrawing from or trying to ignore what was going at home?
	12. In the last month, how often have you felt comfortable that you could predict how things would happen at home each day? [b]

Note. Responses are on a 5-step Likert scale ranging from "never" to very often."

[a] *n*. This positive-valence item is part of the Self-Efficacy subscale of the existing PSS-10.

[b] *n*. This new positive-valence item was tested in a two-factor model of Perceived housing stress.

Exogenous Factor: Future Time Orientation.

Future time orientation was measured with the Future subscale of the ZTPI described in Chapter 1. The ZTPI has four other subscales for past-negative, past-positive, present-fatalistic, and present-hedonistic orientations. *Alpha* values range from .74 to .82 (Zimbardo & Boyd, 1999). Although the Future subscale is most salient for the current study (McInerney, 2004), all five factors were used so as to obtain a more holistic temporal assessment and also to identify areas for further research. The survey (Appendix B, Section IV) omitted five ZTPI items that overlapped with the MSLQ (described below), or had low factor loadings in the original, or were phrased too colloquially to be clear to non-native students (Tourangeau, Rips, & Rasinski, 2000). Appendix Table F.16 notes the omitted items.

Alternative interaction models were tested for Present-fatalistic and Present-hedonistic orientations because those latent factors are linked to impediments to academic success (Zimbardo & Boyd, 1989). Before modeling the temporal factors with other predictors, factor structures were tested to verify that the patterns in the current dataset matched those of the published instrument.

Exogenous Factor: Spatial Self-Regulation (SSR).

The new SSR construct was assessed in two parts. The first (Appendix B, Section V) asked how students used the home setting and the second (Appendix B, Section VII) asked how students used the campus. Item development was informed by past findings on affective self-regulation and restorative environments. One model of emotion regulation (Gross & John, 2003) entailed a five-stage process of situation selection, situation modification, attention deployment, cognitive change, and response modulation. Because fewer adverse outcomes are associated with the first three stages, those were chosen to measure SSR. The situation selection and situation modification steps of Gross and John's (2003) parallel findings in environmental psychology as to the attention-restoring effects of home (Hartig, 2003) and non-home spaces (Laumann, Gärling, & Stormark, 2001; Scopelleti & Giuliani, 2004). Other research on non-home settings (Laumann et al.; Scopelleti & Giuliani) has focused on affordances of environmental escape or personal compatibility.

The researcher discussed a draft of the SSR scale with 15 students enrolled in an upper-level psychology elective during the summer of 2010. The students recommended that the Home SSR scale

focus more explicitly on environmental stressors and aspects of cognitive functioning directly relevant to the experience of living with family while attending a commuter college. This conversation led to three Home SSR items: V.3, "I'm satisfied that the people I live with are considerate when I need to pay attention to doing school work at home," V.6, "When I try to do schoolwork at home it takes a lot of effort to avoid getting distracted by the people I live with," and V.12, "I'm comfortable asking the people I live with to share daily responsibilities so that I have time to be a good student." Feedback about the Campus SSR scale led the researcher to reword several questions to hone in on behaviors that the students considered to be proactive. The statement in item VII.6, "Being around other students on campus helps me to focus on getting my school work done," was one example of the observations expressed by the pilot group.

Endogenous Factor: Self-Regulated Learning.

Students' self-regulated learning was measured using the MSLQ, described in Chapter 1. The MSLQ is an 81-item, self-report tool with two subscales, Motivation Strategies and Learning Strategies (McGraw Center for Teaching and Learning, 2009; Pintrich et al., 1993). The MSLQ was designed to be used in modules as needed for assessment or research (Duncan & McKeachie, 2005; Pintrich et al.). The modules used here were chosen for their relevance to the hypotheses. The Motivation subscale has six latent factors, all of which were used: Intrinsic Goal Orientation, Extrinsic Goal Orientation, Task Value, Control Beliefs, Self-Efficacy for Learning, and Test Anxiety. The Learning Strategies subscale has nine latent factors of which five were used: Metacognitive Self-Regulation, Time and Study Environment Management, Effort Regulation, Peer Learning, and Help-Seeking. Since the current research did not deal with higher-order cognitive processes, the Learning strategies scales for Rehearsal, Elaboration, Organization, and Critical Thinking were not used. Also excluded were two items in the Time and Study Environment Management subscale that pertained to study environments, because the new SSR scale addressed the spatial aspect in more detail.

Many of the mean scores for the MSLQ validation sample were at the high end of the 7-point Likert scales (Pintrich et al., 1993). These scores may have reflected the academic success of a

convenience sample of self-selected students[3] or may have been affected by social desirability issues (Dijkstra & VanderZouwen, 1982; Tourangeau et al., 2000). In contrast, scores for Test Anxiety, Peer Learning, and Help-Seeking were less skewed (Pintrich et al.). These three scales may have elicited individual differences more accurately because students may consider test anxiety to be normative while self-reports of peer learning and help-seeking behaviors are less influenced by social desirability. Also, as the number of intervals used in a Likert-type measure increases, the less likely respondents are to differentiate among the gradations offered (Dunn, Lo, Mulvenon & Sutcliffe, 2011; Nunnally, 1967).

Before modeling Learning Motivation and Learning Strategy with other predictors, their factor structure was tested to verify that the response pattern of motivations and strategies in the current dataset matched that of the published instrument. Findings are detailed in Chapter 3.

PROCEDURE FOR DATA ANALYSIS

The steps taken in the data analysis included data screening, factor analyses, calculation of major predictors and reliability testing, screening for selected demographic group differences for each major predictor, regression modeling, and structural equation modeling. All of these steps except for structural equation modeling used the SPSS Statistics 20 software package. Structural equation modeling used the LISREL 8.80 program.

Data Screening.

The earlier explanation of sample recruitment and data collection detailed the steps taken to arrive at the sample of 490 students. Data for three pairs of items in the Housing inadequacy scale (Appendix B, Section II) were excluded due to problematic response patterns explained in the Measures section of Chapter 3.

Factor Analyses.

Factor analyses were done for each measure of self-reported attitudes, perceptions, or behaviors. Exploratory and confirmatory factor analysis use similar statistical techniques, but their

[3] The validation sample consisted of undergraduates enrolled in a range of courses at a Midwestern university. Of the three-fourths of the sample that provided demographic information, 66% were female and 90% were Caucasian (Pintrich et al, 1993).

intents differ (Brown, 2006; Loehlin, 1998). Exploratory factor analysis seeks patterns in a dataset for which a theoretical framework is not yet set. In contrast, confirmatory factor analysis verifies that a given dataset's patterns match those of earlier research and are consistent with a priori theoretical models. Therefore, the results in the Measures section of Chapter 3 entailed exploratory factor analysis for the new scales and confirmatory factor analysis for scales taken from the existing literature.

Although interpreting the output of a factor analysis is an iterative and subjective process (Brown, 2006; Loehlin, 1998), some standards exist for evaluating model strength. The first step, Principal Components Analysis (PCA), determines the number of factors. The general standard is to recognize factors with Eigenvalues greater than 1 and to compare those values with the appearance of the scree plot. A factor's Eigenvalue is associated with how much of the model variance it explains, and decreasing Eigenvalues indicate a smaller share of the model's total variance. The scree plot is a graphical representation of each factor's contribution to the model and is useful because the change in slope from greater than 1 to less than 1 (or, in layperson's terms, from near-vertical to near-horizontal) gives an intuitive sense of the diminishing importance of each additional factor.

The second step is Maximum Likelihood (ML) extraction with Varimax Rotation. ML differs from PCA in that ML runs repeated iterations of the model in order to generate the most likely parameter weights for each item within each factor. Varimax rotation then maximizes weights for stronger items and minimizes weights for weaker items. ML is the default second-step extraction method if the dataset has no undesirable properties. Missing values interfere with ML processes; the 490 students remaining in this dataset have no missing values. Excessive non-normality requires that parameter estimating methods other than ML be used; for scale items other than the MSLQ, the largest skewness and kurtosis value found was 1.6. For the MSLQ, the maximum skewness was 2.3 while the maximum kurtosis was 6.2; these were consistent with skewness and kurtosis described by Pintrich et al. (1993) in the original validation sample. Correlated multivariate errors distort ML results because these errors point to significant associations among variables that the hypotheses did not consider; no mulitivariate errors were found in the regressions. ML also differs from PCA in that the latter is mainly a mathematical process while ML assumes a meaningful latent factor beneath the pattern of item weights in each measured factor. Thus, ML re-specification must consider relevant a priori theories.

The decision to retain or exclude items in the re-specified factor analyses followed published guidelines. Velicer and Fava (1998) recommend that each factor have at least three items with loadings of .300 or higher, and that no item cross-load more strongly on another factor. Grice (2001) recommends excluding items with loadings that are less than one-third of the largest loading in the same factor. If factors did not conform to Velicer and Fava's (1998) standard, Grice's (2001) was used.

The goodness-of-fit index reported by SPSS follows the chi-square distribution. Yet in large samples (i.e., over 400), the chi-square statistic overestimates the significance of model fit. Many other fit indices exist yet published standards for interpretation are either few or contradictory (Kline, 2005). One such fit index is the adjusted chi-square, X^2/df, which is calculated in Chapter 3 so as to compare values reported by Zimbardo & Boyd (1999) for the original ZTPI and by Pintrich et al. (1993) for the original MSLQ. Later, Chapter 3 reports the Root mean square error of approximation (RMSEA) for CFAs of these same models using LISREL instead of SPSS. RMSEA is calculated as $(X^2-df)^{1/2} / [df*(N-1)]^{1/2}$ and is independent of sample size. Its advantage is that its interpretation conforms to the *alpha* significance levels used in null-hypothesis testing (Kline, 2005; McDonald & Ho, 2002).

Reliability testing and calculation of major predictors.

A coefficient of reliability, Cronbach's *a*, is given in Chapter 3 for each measure obtained through factor analysis whether new or taken from an existing scale. The coefficient of reliability estimates how much of the total score is measured without error. In practice, reliability predicts whether a multi-item measure is likely to give the same result in a different sample. Standards for reliability in basic exploratory research are less strict than for applied research or for high-stakes assessment instruments (Nunnally, 1967). For the purposes of this study, coefficient *a* of at least .60 was considered adequate and coefficient *a* of at least .70 was considered good.

Composite predictors were calculated by averaging the respective item scores. Each new predictor was checked for normality. Each had acceptable skewness and kurtosis, but some had outliers (less than 5% of the students), the effects of which are undesirable in ordinary least-squares regression (Berry, 1993) and in structural equation modeling (Kline, 2005). Outliers were modified by Winsorizing, rather than by algebraic transformations, in order to preserve the Likert scheme of their respective

items and to facilitate interpretation of later multivariate analyses (Kline, 2005). Outlier values were recoded to less extreme proximate scores within an acceptable range, here by using "Tukey's fences" of 2.70 standard deviations above or below the mean (Barnett & Lewis, 1995; Tukey, 1977). The relative position of each outlier was preserved. Chapter 3 notes the details for each recoded predictor.

Screening for selected demographic group differences.

Table 2 below describes binomial variables relevant to the major predictors in this study. Each variable was dummy-coded and *t*-tests of independent samples were run for each major predictor. Significant group differences are reported in the relevant sections of Chapter 3. Implications for conclusions drawn from the current study, as well as for future research, are discussed in Chapter 4.

Table 2. Description of group differences used to screen major predictors.

Binomial variable	Description and source in Questionnaire (Appendix B).
Gender = Female	Self-reported in Question 1.
Age = 18 to 21	Coded based on self-reported age (continuous) in Question 2.
Primary household [a]	Assigned based on Question 6 if respondent reported living with partner and/or own children only.
Filial household [a]	Assigned based on Question 6 if respondent reported living with parent(s) and sibling(s) only.
Caregiver	Assigned if "a lot of time" spent caring for a child (Question 8a) and/or an elderly or disabled adult (Question 8b) living in the same household.
Immigrant	Self-reported in Question 12 as born outside the United States.
All rooms used for sleeping (Room ratio=1) [b]	Computed by dividing the number of rooms used for sleeping (Question 11) by the number of habitable rooms (Question 10). Case values equal to 1.0 were coded "1."

[a] *n.* Students that were neither Primary households nor Filial households were recoded into a third binomial variable, Other households.

[b] *n.* This binomial variable is described further in the Measures section of Chapter 3.

Regression models.

Chapter 3 details results of the regression models obtained from hypotheses described at the end of Chapter 1. Standards for testing regression models include mean-centering all continuous explanatory variables and re-specifying the regression to exclude any explanatory variable found to be

non-significant. Measures of statistical significance estimate the probability that a finding is due to chance rather than to a plausible relationship among variables. As the significance level decreases, the probability that the model has explanatory value increases. In general, the Results section in this study reports statistical significance at conventional *alpha* levels of $p < .05$, $p < .01$, $p < .001$, or, for non-significant results, $p > .10$. Yet, because this study is in part exploratory and includes three newly-developed scales, significance levels in the range of $p = .05$ to $p < .10$ are reported to two decimal places to identify models that merit further inquiry. Where no significance level is noted, all statements herein as to statistical findings are based on a critical *alpha* level of $p < .05$.

Regression models were screened for multivariate outliers, which may appear even when there are no univariate outliers among the predictors. Multivariate outliers are problematic because they indicate that the variables are linked by significant non-random disturbances not addressed by the hypotheses. As a result, parameter weights may be distorted. Standardized residuals were screened for casewise values above 3.0 but none were found. Also, Mahalanobis values were screened for chi-square statistics, relative to degrees of freedom, with significance levels of $p < .001$, but none were found. Therefore, no significant multivariate outliers affected the regression outcomes.

In certain circumstances reported in Chapter 3, however, non-significant predictor variables stayed in the regressions. Although Future orientation was the temporal factor most salient to the research, Present-fatalistic orientation and Present-hedonistic orientation also each had statistically significant and theoretically interesting effects. In several instances in the analyses, some parameters changed or reached significance when all three temporal variables were modeled together, even though the other variables were not significant. Zimbardo and Boyd (1999) construed individual temporal orientation as multidimensional, so that controlling for one aspect may affect the parameter for another aspect. Yet these findings also suggest suppression effects, which appear when the parameter weight for a significant predictor increases with the presence of a non-significant predictor in the same regression. The significant and non-significant predictors both correlate with some other unspecified influence, the effect of which is suppressed, thereby increasing the strength of the already significant predictor (Maassen & Bakker, 2001; Tzelgov & Henik, 1991). Possible suppression effects in a few instances, detailed in Chapter 3, where housing-related indicators were modeled together.

Suppressor effects matter because they point to the need for future research to identify and elaborate the unknown influences.

Hypotheses 2a to 2c and Hypotheses 3a to 3c entailed mediation models; Hypotheses 2d, 2e, 3d, and 3e entailed moderation models. Procedures for testing mediation and moderation followed the recommendations of Baron and Kenny (1986).

Mediation occurs if a significant predictor of some outcome is no longer significant when a third variable, the mediator, is introduced. Instead, the mediator takes over the predictive role completely, or reduces the significance level of a still-significant predictor. In the latter situation, Sobel's test of partial mediation, $(b^2s_a^2 + a^2s_b^2)^{1/2}$, evaluates the significance of the drop in significance of the original predictor. Sobel's test gives a *z* statistic, values of which are significant at $p < .05$.

Moderation occurs if a third variable interacts with the predictor such that the predictor's effect on the outcome differs at different levels of the moderator. Interaction testing is indicated if a theoretical justification is not supported by a simple regression model. The moderator helps to distinguish conditions under which the predictor does or does not predict the outcome. Baron and Kenny (1986) preferred that the moderator be uncorrelated with both the predictor and outcome, so as to allow clearer interpretation of any interaction effect.

The two sets of variables hypothesized to act are moderators were the Time orientation and Spatial self-regulation factors. In Hypotheses 2d and 2e, the predictor is Interior Inadequacy (one of three Housing inadequacy factors) and the outcome variable is Perceived housing stress. In Hypotheses 3e and 3d, Perceived housing stress is the predictor and the outcome variables are the MSLQ factors. Aiken & West (1991) recommend that the interaction term be calculated as the product of the mean-centered predictor variable and the mean-centered moderator variable so as to facilitate accurate interpretation of the interaction effect.

Moderation was tested using hierarchical regressions so that the *F* values for the Step 1 main effects models and the Step 2 interaction models could be compared. If the *F* change was significant, two new interaction terms were calculated, which substituted values, respectively, one standard deviation above the mean and one standard deviation below the mean, for the prior mean-centered value of the moderator. Interaction regressions were then rerun for high and low levels of the

moderator, substituting the mean-centered value of the moderator plus or minus one standard deviation, and substituting the appropriate high or low recalculated interaction term. From those results, the intercepts and parameter weights for the original predictor formed the two simple-slopes regression equations, which were then graphed to illustrate the contrasting interaction effects. Following the moderation tests of Future time orientation, alternative interaction effects were also tested for the two other temporal factors, Present-fatalistic and Present-hedonistic orientations.

Structural equation models (SEM).

As recommended by Anderson and Gerbing (1988), a two-step process was used in which Confirmatory Factor Analysis (CFA) first tested the measurement model of relationships among items within factors, and Structural Equation Modeling (SEM) then tested the fit of the path structure of the overall model. Although CFA and SEM are iterative and subjective processes, certain guidelines for specification and re-specification were followed. In general, a measured item was considered significant at $t > 1.96$, and was retained in the model if it had no standardized residuals greater than 3.0 and no statistically significant ($p < .05$) modification indices with expected positive change in chi-square. However, although these indices provide information about the model's mathematical properties, *a priori* theory is what informs the construction of a meaningful model. For example, high standardized residuals indicate that a pair of items shares some unmeasured error variance. Yet, at times, a pragmatic explanation exists for the high standardized residual as can happen when two questions measure essentially the same thing. Also, high modification indices in a multi-factor path model suggest, for example, that perceptions and behaviors elicited separately may actually point to the same latent construct. On the other hand, a poorly specified item may indeed load on an unexpected factor. In each case, contextual and conceptual criteria matter.

The CFA models reexamined the latent factors from the prior SPSS analyses. For some scales obtained through SPSS, LISREL did give well-fitting models using all of the same indicators. For other scales, weaker items had to be trimmed, or, for the Perceived housing stress scale, single indicators had to be parceled in order to obtain an identifiable model. Parceling is indicated when some items are

not normally distributed or, as with the Perceived housing stress scale, when high correlated errors point to common dimensions measured by multiple items (Coffman & MacCallum, 2005; Kline, 2005).

Several models were tested for each latent construct. (Appendix G reports parameters and fit indices for the chosen re-specified model.) The Root Mean Square Error of Approximation, or RMSEA, has advantages over other available fit indices in that it is independent of sample size, makes no assumptions about population comparisons, and is interpreted according to the *alpha* significance levels used in null-hypothesis testing (Kline, 2005). The RMSEA statistic is also assessed by its 90% confidence interval. If the upper bound of the confidence interval is greater than 0.050, this indicates sampling error and a weaker possibility of reproducing the findings in a different set of cases. RMSEA is also assessed by the *p*-value for Test of Close Fit. This *p*-value tests a null hypothesis as to whether the population RMSEA is less than .05. As such, *p*-values for RMSEA should not be significant, but rather should be greater than .05 to indicate good fit. Finally, the Comparative Fit Index, or CFI, measures how much better the hypothesized model is than the null model in explaining the patterns in the data. Values of .90 or greater are ideal and indicate that findings are not due to chance.

After reassessing the individual latent factors through LISREL confirmatory factor analysis, structural equation models were tested for the sequential pairs of higher-order factors that made up smaller segments of the overall model. For some endogenous variables, the same first-order latent factors were used as in the earlier SPSS exploratory factor analyses. For other endogenous variables, the LISREL CFAs indicated that a more detailed parsing of the first-order factor structure was needed. The SEM segments were assessed and respecified according to the same criteria as the CFA models.

Interaction effects were retested in the SEM based on the findings of the earlier regression models. Since interaction effects cannot be modeled in SEM by calculating simple product terms, a technique that relies on interaction residuals (Little, Bovaird, & Widaman, 2006)[4] was used instead.

[4] A two-step process is used to calculate "orthogonalized" product terms each containing the residual of the interaction of each pair of predictor and moderator terms. First we compute and save product terms for each pair of predictor and moderator indicators. Then we regress all indicators onto each product term separately and save the unstandardized residual for each regression. The residuals then enter into the interaction SEM together with the original predictor and moderator items. For example, if the predictor and the moderator latent variables each contain three indicators, then the process entails computing nine product terms, running nine regressions, and saving nine residuals. The resulting SEM has three predictor items + three moderator items + nine residuals = 15 indicators. The SEM syntax also entails equating the TE matrix errors for the 18 pairs of correlated residual terms.

CHAPTER 3. RESULTS.

CHARACTERISTICS OF THE SAMPLE

Academic Characteristics.

The sample reflects the diversity of the BCC campus. Yet, because this was a self-selected group of students, the sample did not fully represent that population.

Academic data for the sample was obtained directly from computerized campus databases. The mean semester grade point average (GPA) for all 490 participants was 2.65 (*SD* = 0.94). GPA did not differ significantly ($p > 0.05$) between fall and spring subsamples. Table 3 compares sample mean GPA to course and campus data for the fall 2010[5] and spring 2011[6] semesters.

Table 3. Comparison of sample GPA with course-wide and campus-wide GPA.

	Study sample			All PSY 11			All campus [a]		
Semester	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*N*
Fall 2010	2.70	0.90	321	2.21	0.98	1,430	2.39	0.82	10,740
Spring 2011	2.53	1.01	169	2.08	1.47	1,760	2.23	1.41	11,062

Note. Mean GPA for the full sample was 2.65 (*SD* = 0.94).

[a] *n*. Campus-wide data are for non-remedial credit-bearing courses.

Fall and spring subsamples each had significantly higher ($p < .001$) mean GPA than all students enrolled in the Introduction to Psychology course for the corresponding semester. Fall and spring subsamples also each had significantly higher ($p < .001$) mean GPA than all students enrolled in any non-remedial credit-bearing courses campus-wide. Courses in English as a Second Language (ESL) were completed by 11% (n = 53).[7] For remedial preparation other than ESL, 13% (n = 64) of the sample required no remediation, 72% (n = 355) required one or two remediation courses, and 14% of the

[5] Personal communication, Chris Efthimiou, Director of BCC Institutional Research, February 8 and April 12 2011.

[6] Personal communication, Chris Efthimiou, Director of BCC Institutional Research, February 1, 2012.

[7] For students placed into ESL remediation, the most basic ESL course is a prerequisite for PSY 11. Intermediate ESL courses may be taken as co-requisites with PSY 11.

sample (n = 69) required three or more remediation courses.[8] Also, compared to the campus wide population (BCC Office of Institutional Research, 2010; 2011), Appendix Tables C.3 shows that, for both the fall and spring semesters, the study participants were also more likely to be enrolled full-time.

Individual characteristics.

Participants were significantly younger and included a higher percentage of females than did the campus population during the same semesters (Appendix Tables C.4 and C.5, respectively).

Participants were asked where they were born and grew up and, if immigrants, how long ago they moved to the US. The majority of the sample (54%, n = 264) reported that they were born and raised in the US; of these, 94% (n = 248) grew up in the northeast. Of those who reported that they were born outside the US (46%, n = 226), the largest single group is from the Caribbean (n = 105, 46%), followed by immigrants from Africa (n = 48, 21%) Among all non-US born participants, 42% (n = 95) reported immigrating over 10 years ago, 23% (n = 53) reported immigrating between 5 and 10 years ago, and 35% (n = 78) reported immigrating within the last 5 years. (More data as to immigration and geographic origin is shown in Appendix Table D.6.) The immigration profile of the sample is consistent with samples obtained in earlier studies from this same campus population (Campagna, 2007; Campagna, 2010). Although official campus profiles do not itemize by country of origin, for the fall 2010 and spring 2011, 28% of all students were known to be non-citizens (Bronx Community College, fall 2010; spring 2011).

Most students in the sample did not report being employed (n = 282, 58%). Of those who did (n = 208), time at work ranged from 5 to 60 hours per week (M = 30.14, SD = 10.71).

Chapter 4 discusses possible implications for the validity of the model due to these demographic differences between the study sample and the campus population.

Household characteristics.

Participants were instructed to report their household size by counting themselves as well as "anyone who stays there more than they stay anywhere else." Household size ranged from 2 to 10

[8] Remediation is based on entrance placement exams. Math remediation, required for 86% of the sample, is not a prerequisite for PSY 11. Non-ESL English remediation, required for 8% of the sample, and Reading remediation, required for 14% of the sample, are prerequisites or co-requisites for PSY 11.

persons (M = 4.00, SD = 1.58). Most (n = 408, 83%) of respondents reported living in their current homes for at least one year; 14% (n = 71) reported living in their current homes for less than one year but more than one month; 2% (n = 11) reported living in their current homes for less than one month. Only 9% reported living in a house rather than in a multiple dwelling.[9]

A variety of family types were found in the sample. Among respondents ages 18 to 21 (n = 248), a significantly higher number (n = 173) reported living with parents and siblings than did respondents age 22 and over (X^2 = 148.38, p < .001) Among respondents ages 22 to 29 (n = 151), 44% (n = 66) reported living with their children, 28% (n = 42) reported living with a spouse or long term partner, and 18% (n = 28) reported living with both children and partners. Among respondents ages 30 and over (n = 91), 73% (n = 66) reported living with their children, 42% (n = 38) reported living with a spouse or long term partner, and 35% (n = 32) reported living with both children and partners. Intergenerational households including the respondent's child, as well as the respondent's parent or grandparent, were reported in only 7% (n = 33) of the cases.

For the sample as a whole, 31% (n = 152) reported "a lot of time" spent in care-giving for children, and only 3% (n = 15) reported "a lot of time" spent in care giving for an elderly or disabled adult. Consistent with the increased prevalence in the sample of having one's own children in the household as one ages, the prevalence of care-giving for children was highest among respondents ages 30 and over (n= 51, 56%). Among respondents ages 22 to 29, the prevalence of care-giving for children was 44% (n = 67); among respondents ages 18 to 21 the prevalence of care-giving was 14% (n = 34). Since only nine respondents ages 18 to 21 reported living with their own children, child care in this youngest group is presumed to be for siblings or other related children living in the household. 45% of females and 12% of males reported spending "a lot of time" in care-giving. Care-giving is significantly associated with being female; 88% (n = 142) of all caregivers (n = 162) in the sample are female (X^2 = 54.18, p < .001). (Appendix D shows additional data as to household composition.)

The implications of the sample demographics for the reliability and validity of the study findings are discussed in Chapter 4.

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[9] The rate of 9% is based on respondents who left blank Item II.40, "Overall, how satisfied are you with the *interior* of the *building* where you live right now? (Please skip if *a house*.)"

MAJOR PREDICTORS

The major predictors in this study are described below in the order that they appear in the survey instrument. Campus Spatial self-regulation, however, is described together with Home spatial self-regulation. For each predictor, this section summarizes the respective factor analyses and describes the reliability of the resulting measures. For measures replicating or adapted from existing validated scales, comparisons between the original and current results are reported as well.

Group comparisons are reported after the descriptions of the housing-related factors, temporal factors, spatial self-regulation factors, and learning factors. The sample already described above is heterogeneous in its individual and household attributes. The need to consider possible effects of between-group differences was raised earlier at the end of Chapter 1, as was the rationale for the demographic variables described in Table 2, at the end of Chapter 2. Given the sample's diversity, differences in group means may clarify or complicate some of the findings here, and point to areas of further inquiry. Although the implications of some group differences may be commented upon in the context of the model's measures elaborated this section, the effects of other group differences are more easily comprehended after the findings of the regression analyses are reported in Chapter 3.

Exogenous Factor: Household Density.

The measure used to represent household density is *Persons per room*, computed as the number of persons in the household divided by the total number of habitable rooms. Household size ranged from 2 to 10 persons (M = 4.00, SD = 1.58, skewness = 0.81, kurtosis = 0.52). Number of habitable rooms ranged from one to 12 rooms (M = 3.36, SD = 1.57, skewness = 1.66, kurtosis = 5.50). The computed measure, Persons per room, ranged from 0.33 to 6.00 (M = 1.37, SD = 0.72, skewness = 1.90, kurtosis = 6.40) but was not normally distributed due to 23 cases (5%) with values of three or higher. The metric of Persons per room has concrete meaning, so non-normality was addressed by Winsorizing rather by an algebraic transformation. The resulting distribution ranged from 0.33 to 2.75 persons per room (M = 1.33, SD = 0.58, skewness = 0.65, kurtosis = –0.26).

The alternative measure of utilization of household space described in Chapter 2 was a ratio of the number of rooms used for sleeping compared to the total number of habitable rooms. Reported

number of rooms used for sleeping ranged from one to seven (*M* = 2.38, *SD* = 0.99, skewness = 1.21, kurtosis = 3.39). Dividing these figures by the respective number of habitable rooms gave a *Rooms ratio* measure ranging from 0.20 to 1.00 (*M* = 0.76, *SD* = 0.23, skewness = –0.32, kurtosis = –1.20). Of 490 students, 42% (n = 207) had a Rooms ratio of 1.0, indicating that all rooms were used for sleeping. Of the 58% (n = 283) that had a Rooms ratio less than 1.0, the mean Rooms ratio was 0.59 *(SD* = 0.14, skewness = –0.57, kurtosis = –0.53). Rooms ratio correlated significantly with Persons per room (*r* = .61, *p* < .001). Rooms ratio had a bimodal distribution, so it was dichotomized as a binomial variable, *Rooms ratio=1*. A *t*-test of independent samples verified that mean Persons per room was significantly higher (*p* < .001) for the 207 students with Rooms ratio=1 (*M* = 1.74, *SD* = 0.43) than for the 283 students with Rooms ratio less than 1. The Rooms ratio binomial variable is included among the group differences reported below for the major predictors described in this section.

***Endogenous Factor: Housing Inadequacy*.**

Appendix Table F.1 lists item responses for the 13 difference scores in the Housing Inadequacy scale and details the results of the factor analyses. Difference scores were computed from paired items in Section II of the instrument. First, respondents were asked the extent to which certain household features were available; then, respondents were asked how important those same household features were to them. (For scoring, see Figure 2 in Chapter 2).

Review of the pattern of responses during data entry indicated that difference scores for five of the 18 housing features were problematic. Three item pairs (II.11 and II.31, II.12 and II.32, and II.13 and II.33) elicited the availability and importance of private sleeping accommodations “for each person who lives there, (not counting the adult couples),” “for the adults and children,” and “for males and females (not counting the adult couples).” Those items were worded as to “sleeping areas,” rather than “bedrooms,” because crowded households may repurpose other common spaces such as living rooms for sleeping. Approximately 8% of the students replied that private sleeping accommodations were available “all of the time” for at least one of the above item pairs, even though this contradicted their respective entries for household size (Item I.5), household composition (Item, I.6), number of habitable rooms (Item I.10), and number of rooms used for sleeping (Item I.11). That is, private

sleeping accommodations actually could not be always available; rather, rooms were likely being shared for sleeping even when the often-greater total number of rooms (Item I.10) was compared instead of the number of sleeping rooms (Item 1.11). Since students may have interpreted "sleeping areas" other than as intended by the researcher, the factor analysis excluded items about sleeping spaces. Two other item pairs about toilet and bathing affordances were omitted (II.14, 34 and II.15, 35) because their scores had the highest kurtosis (5.63 and 7.11), the lowest means (3.10 and 3.09), and the smallest standard deviations (0.79 and 0.72). These item pairs had least variability and contributed least to a composite inadequacy measure. Since the measurements for privacy of sleeping spaces were not reliable and since privacy affordances for sleeping, bathing, and toileting were elicited by other questions in Section II of the survey instrument, the analysis excluded these five item pairs.

The remaining 13 difference scores were entered into a Principal Component analysis, which extracted three components with initial eigenvalues greater than 1. Maximum Likelihood extraction with Varimax rotation gave three factors, each with at least three items with loadings greater than .400. The first factor explained 27% of the variance with loadings from .505 to .796 and had the seven item pairs about the household interior (II.4, II.24 through II.10, 30). A second factor explained 15% of the variance with loadings from .665 to .695 and had the three item pairs for concerns about neighbors outside the household (II.16, 36 through II.18, 38). A third factor explained 14% of the variance with loadings from .421 to .814 and had the three item pairs about the exterior physical environment (II.1, 21 through II.3, 23). Appendix Table F.1 shows the factor loadings for each item in all three factors.

Reliability was good for each of the three subscales, *Interior inadequacy* (a = .88), *Neighbors inadequacy* (a = .77), and *Outdoors inadequacy* (a = .75) and for the total 13-item *Housing inadequacy* measure (a = .89) A composite score was computed for each factor by averaging the respective item scores, which ranged from zero to six. The resulting Interior inadequacy measure showed four outliers less than 2.70 standard deviations below the mean, 1.41. The closest value was 2.14. To preserve their relative position, the outliers were recoded to 2.0. Correlations among the three resulting factors ranged from .41 to .57 (p < .001). Appendix Table F.2 lists descriptive data and the correlation matrix.

Construct validity for Interior inadequacy was tested in a regression predicting a single item response, II.39, "Overall, how satisfied are you with the *interior* of the home or apartment where you

live right now?" Item responses ranged from 1, "very satisfied" to 4, "not at all satisfied." The regression equation is *Reported Overall Dissatisfaction with Interior = 1.87 + 0.59* Interior Inadequacy*. According to the bivariate regression equation, as Interior inadequacy increased, reported overall dissatisfaction with the interior of the household increased ($p < .001$). Interior inadequacy explained 32% of the variance in responses to the single-item question.

Construct validity for the other two factors, Neighbors inadequacy and Outdoors inadequacy, was less readily tested because the instrument contained no single item that directly elicited students' housing satisfaction beyond the dwelling interior. Instead, overall Housing inadequacy was tested against two single items that elicited, respectively, students' perceptions of the relative quality of other housing in the same community (Item II.19, scored 1, "much better" to 5, "much worse") and students' perceptions of the relative housing satisfaction of other community residents (Item II.41, scored 1, "much higher" to 5, "much lower"). Overall Housing Inadequacy correlated both with the single-item measure (II.1) of perceived relative housing inadequacy ($r = .33$, $p < .001$) and with the single-item measure (II.41) of perceived relative housing dissatisfaction ($r = .37$, $p < .001$).

Endogenous Factor: Perceived Housing Stress.

The Perceived Housing Stress scale was adapted from a previously validated Perceived Stress Scale, the "PSS-10" (Cohen et al., 1983; Cohen & Williamson, 1988). The original PSS-10 scale contains two subscales measuring, respectively, perceived helplessness and perceived self-efficacy each found to have alpha values above .80 (Roberti et al., 2006). Ten of the 12 items in the current scale were revised from the original PSS-10 to elicit stressors specific to the household environment. Review of the literature on housing stressors suggested two additional questions measuring cognitive withdrawal (Item 11) and the predictability of the home setting (Item 12). Five of the adapted 12 items, including the new item as to predictability, were worded with positive valence to correspond to the original self-efficacy subscale. Appendix Table E.2 lists the text of each item with the item responses.

A principal components analysis yielded one factor that explained 35% of the variance and a second factor that explained 16% of the variance. A Maximum Likelihood extraction with Varimax rotation confirmed that the two factors grouped the items by valence. The seven negatively-phrased

items had loadings from .574 to .713 on the first factor, while the five positively-phrased items had loadings from .414 to .586 on the second factor. Goodness of fit was significant (X^2 = 293.99, *df* = 43, *p* < .001). Though the rotated factor matrix (Appendix Figure F.2) showed two distinct factors, it lacked simple structure due to the diffusion of the five positive-valence items. Appendix Table F.4 shows the factor loadings for each item in both factors. Reliability was good for the seven-item Helplessness subscale (*a* =.86, *M* = 2.57, *SD* = 0.92) and adequate for the five-item Efficacy subscale (α =.69, *M* = 3.40, *SD* = 0.77). The subscales were negatively correlated (*r* = -.27, *p* < .001). The full 12-item scale had good reliability (*a* =.81), yet caution is needed in assessing this figure since reliability parameters increase with the number of items. A composite measure was computed by averaging the scores for seven negative-valence items and the five reverse-coded positive valence items that ranged in score from one to five. The computed measure had one univariate outlier higher than 2.70 standard deviations above the mean, beyond 4.46. The closest value was 4.25 so the outlier was recoded to 4.36. The resulting *Perceived housing stress* measure had a mean of 2.58 (*SD* 0.70).

Group Differences in Housing-related factors.

Appendix Table D.2 lists the results of *t*-tests of independent samples for the Persons per room measure as well as chi square comparisons for the Rooms ratio=1 binomial variable. Appendix Tables F.3 and F.6 list, respectively, the results of *t*-tests of independent samples for the three Housing inadequacy factors and for the Perceived housing stress measure.

The two measures of housing density described earlier, Persons per room and Rooms ratio=1, each had significant differences among the demographic variables listed and described in Figure 2. The Persons per room measure was computed by dividing the number of occupants by the number of habitable rooms, while the Rooms ratio=1 measure represents students who reported that all habitable rooms were used for sleeping. Thus, as explained earlier in Chapter 2, the two measures represent different constructs of housing density. Mean Persons per room was significantly lower (*p* < .05) for female respondents, while the chi square comparison for Rooms ratio=1 measure showed that females were significantly less likely to live in households using all rooms for sleeping. In contrast, among

caregivers[10], mean Persons per room was significantly higher ($p < .05$) as was the chi square value for Rooms ratio=1 ($p < .001$). The contrast is notable because, while 88% of caregivers in this sample were female, only 45% of female respondents reported a caregiving role. Similarly, although means did not differ by gender ($p > .10$) for any of the three Housing inadequacy factors nor for Perceived housing stress, caregivers reported significantly higher inadequacy for interior and outdoor affordances and concerns about neighbors ($p < .05$), as well as greater Perceived housing stress ($p < .01$). It follows from the previous sentence that, although male students lived in households with higher mean Persons per room and greater probability of using all rooms for sleeping, male students did not report significantly higher Housing inadequacy or higher Perceived housing stress. Therefore, higher levels of perceived stress and housing inadequacies were associated not with gender, but rather with the caregiving role.

The overlap in the sample between age and household composition[11] was significant (see Appendix Table D.3). Students ages 18 to 21 were most likely to live with their parents and siblings, while students ages 22 and over were most likely to live with their children and/or adult partners ($p < .001$). Students defined as living in Filial households had significantly higher Persons per room ($p < .001$) and were also more likely to live in households using all rooms for sleeping ($p < .05$). However, students 18 to 21 did not report significantly higher Persons per room, nor were they more likely to live in households using all rooms for sleeping. Yet when means were compared for the 18 to 21 age group and the Filial households group, there was no significant difference in responses as to Housing inadequacy and Perceived housing stress. These findings of higher density in Filial households, compared to respondents ages 18 to 21, suggests a pattern of delayed home-leaving among students ages 22 and over. However, the absence of significant differences between the age-based binomial variable and the household composition binomial variable for both the Housing inadequacy measure and the Perceived housing stress measure suggests that delayed home-leaving, in itself, is not associated with adverse housing perceptions in this sample.

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[10] "Caregivers" were defined in Table 2 as students who reported "a lot of time" spent caring for a child or an elderly or disabled adult living in the same household. Caregiving was mainly for children (94% of caregivers) rather than other adults (9% of caregivers, with 3% caring for both children and adults).

[11] Figure 2 earlier defined Primary households for students who reported living only with their child(ren) and/or an adult partner, and defined Filial households for students who reported living only with their parents and siblings.

No significant differences in housing density or Perceived housing stress were found for students living in Primary households. However, such students did report significantly higher perceived inadequacy of interior ($p < .01$) and outdoor ($p < .001$) affordances. As a further contrast to findings noted above for caregivers, household composition was not as significant a predictor of adverse housing perceptions as were the role demands of caring for others in the household.

Students born outside the US were defined as immigrants for the purpose of these group comparisons.[12] Immigrants reported significantly higher Persons per room ($p < .001$) and were more likely to use all habitable rooms for sleeping ($p < .01$). Although they did not report significantly different interior inadequacy or concerns about neighbors, they did report higher inadequacy of outdoor affordances ($p < .01$) as well as greater Perceived housing stress ($p < .05$). For immigrants in this sample, crowding is a more significant stressor than are the spatial affordances of the home.

The binomial Rooms ratio=1 variable was not associated with any significant differences in the three housing inadequacy factors, though it was linked with significantly higher Perceived housing stress ($p < .05$). Therefore, in this sample, utilization of all habitable rooms for sleeping is not necessarily associated with the inadequacy of spatial affordances of the household.

Exogenous Factor: Time Orientation.

The measure used to assess Time orientation was adapted from the Zimbardo Time Perspective Inventory (ZTPI), a 56-item scale measuring attitudes toward the past, present, and future (Zimbardo & Boyd, 1999). The Methods section in Chapter 2 earlier described how 32 items were chosen from that scale for the purpose of the current study. Items reverse-coded in the original ZTPI were again reverse-coded here. (Appendix Table E.3 includes the text of each item.) A Principal components analysis found nine factors with initial eigenvalues greater than 1. The first three factors explained 31% of the total variance. The scree plot (Appendix Figure F.5) showed that incremental gain in variance explained began to decrease after the third factor. Three factors were then extracted using Maximum Likelihood with Varimax rotation. Appendix Table F.13 compares each item's factor loadings in the original ZTPI (Zimbardo & Boyd, 1999) with those found in the current sample.

[12] Sample data is available as to geographic origin and time since immigration, but these differences are not reflected in the comparisons for the Immigrant binomial variable.

The rotated factor matrix did not match the dimensionality of the original ZTPI. (Possible reasons for differences in this sample, and the implications thereof, are discussed in Chapter 4.) Seven of the eight items in the Future subscale appeared together with loadings from .242 to .683 but only five had factor loadings above .300. The eighth item in the Future subscale (50: "There will always be time to catch up on my work") was reverse-coded and loaded at .147 among the Future items but at –.420 among the Present hedonistic items. Eight of the nine items in the Present fatalistic subscale appeared together with loadings from .338 to .600. A ninth item (3: "Fate determines much in my life") loaded at .129 among the Present fatalistic items but at .280 among the Present hedonistic items. Twelve of the thirteen items in the Present hedonistic subscale appeared together with primary loadings from .273 to .727. Only one (8: "I do things impulsively") loaded below .300. The thirteenth item from the Present hedonistic subscale (25: "I feel that it's more important to enjoy what you're doing than to get work done on time") loaded at .238 among the Present hedonistic items but at .504 among the Present fatalistic items. Maximum likelihood extraction was rerun without the three cross-loaded items. The rotated factor matrix now had adequate loadings from .258 to .742 with all items appearing in the expected factors. Goodness of fit for the revised three-factor model was significant (X^2 = 667.59, *df* = 273, $p < .001$). Zimbardo and Boyd (1999) did not use the traditional chi-square measure of goodness-of-fit because of the very high *df* of 1,480 in the original study. Instead Zimbardo and Boyd reported model fit as X^2/df = 2.30 (3,398.73/1,480) for the ZTPI sample n = 361. The comparable value for the current sample is X^2/df = 2.45 (667.59/273).

RMSEA calculated for the ZTPI is: $(3{,}398.73 - 1{,}480)^{1/2} / [1{,}480*(361-1)]^{1/2} = 0.06$.

RMSEA calculated for the current sample is: $(667.59 - 273)^{1/2} / [273*(490-1)]^{1/2} = 0.05$. Thus the ZTPI scale and the current study scale both have reasonable goodness-of-fit.

A subscale containing the seven Future orientation items had adequate reliability (a =.60) though weaker than the original 12-item ZTPI future subscale (a =.77). A subscale containing the eight Present fatalistic items had good reliability (a =.71) though below that of the original nine-item subscale (a =.74). A subscale containing the 12 Present hedonistic orientation items had good reliability (a =.76) though below that of the original 15-item subscale (a =.79) (Zimbardo & Boyd, 1999). Three

composite scores were computed by averaging each subscale's item scores, which ranged from one to five. Univariate outliers greater than 2.7 standard deviations from the mean were found. The Future subscale had two outliers below 2.00 that were recoded to 2.00. The Present fatalistic subscale had five outliers above 4.18 that were recoded so that the highest value was 4.12. The Present hedonistic subscale had four outliers below 1.75 that were recoded so that the lowest score was 1.92 and one high outlier that was recoded from 4.83 to 4.67. (Appendix Table F.14 contains descriptive data and the correlation matrix for the three factors.) The resulting *Future orientation* factor (M = 3.57, SD = 0.58) and *Present fatalistic orientation* factor (M = 2.45, SD = 0.63) correlated negatively (r = -.23, p < .001). The Present fatalistic orientation factor and the *Present hedonistic orientation* factor correlated positively (r = .35, p < .001). The Future orientation and Present hedonistic orientation factors did not correlate (p > .10). Appendix Table F.14 compares factor correlations, coefficient *alphas*, and other descriptive data from the original ZTPI (Zimbardo & Boyd, 1999) with those of the current sample.

Group differences in Time orientation factors.

T-tests of independent samples listed in Appendix Table F.15 showed significant differences in Time orientation for several subgroups. Future orientation was higher for female respondents (p < .001), respondents living in primary households (p < .05), caregivers (p < .001), and immigrants (p < .01). Future orientation was lower among respondents ages 18 to 21 (p < .01). Present-fatalistic orientation was lower for female respondents (p < .05) but higher for respondents ages 18 to 21 (p < .05), those living in filial households (p < .01), immigrants, or living in households where all rooms were used for sleeping (p < .01). Present-hedonistic orientation was higher for respondents ages 18 to 21 (p < .01) but lower for caregivers (p < .05) and those living in primary households (p < .05). Group differences in temporal orientation are notable because they situate the current sample in relation to the samples used to develop the original ZTPI scale (Zimbardo & Boyd, 1999). Zimbardo and Boyd found that women scored significantly higher than men (p < .01) in Future orientation, and that Hispanics scored significantly higher than all other ethnic groups except Asians in Present-fatalistic orientation; Zimbardo and Boyd did not report any differences for Present-hedonistic orientation. The finding for female respondents in the current sample matches that in the original sample. However, ethnic

differences in the original ZTPI are not fully comparable to the current sample because geographic origin was elicited here rather than ethnic affiliation. Since temporal orientation is proposed to have a moderating role in several hypotheses in this study, the implications of group differences in temporal orientation are addressed further in the later discussion of research findings (see Chapter 4).

Exogenous Factors: Home and Campus Spatial Self-Regulation (SSR).

The current research measures SSR in two settings, the home and the campus. Appendix Tables E.4 and E.6 list item responses for the 12 questions about the home and the 11 questions about the campus, respectively. Though two separate sections of the survey elicited these responses, initial exploratory factor analysis combined both sets of items to test for any cross-domain factors. Three Home items (V.6, V.7, and V.8) and three Campus items (VI.3, VII.7, and VII.8) were worded negatively in the survey and were reverse-coded to match the positive valence of the rest of the items in the analysis. Principal components analysis of all 23 items found five factors with initial eigenvalues greater than 1, which together explained 54% of the variance. The scree plot (Appendix Figure F.3) showed no clear break but rather a gradual decrement in slope change after the second factor.

Five factors were extracted using Maximum Likelihood method with Varimax rotation. The rotated factor matrix showed a first factor containing ten of the twelve Home items, including all three reverse-coded Home items, with loadings ranging from .441 to .814. The first factor also included a reverse-coded campus item (VII.3), "I don't have other good places besides the BCC campus to study and do my homework." A second factor contained six of the ten campus items, excluding the reverse-coded items, with loadings from .351 to .622. A third factor contained two pairs of similarly-worded items across home and campus settings, V.9 and VII.9, "I can usually push myself to concentrate…" and V.10 and VII.10, "I can usually predict when during the day or week is a good time …to get my school work done," with loadings from .417 to .626. These four items had in common only their initial wording, "I can usually…." The fourth factor contained two of the three reverse-coded campus items (VII.7 and VII.8) and the fifth factor contained no items that had not already loaded more strongly on another factor. Appendix Table F.7 shows the results of this combined analysis. The combined rotated

analysis indicated only two adequate factors, one for each environment. Therefore the Home SSR items and the Campus SSR items were rerun separately.

Home Spatial Self-Regulation.

A Principal Components analysis extracted two factors from the 12 Home SSR items. The first factor explained 39% of the variance, while the second factor explained 13% but contained only the two items phrased, "I can usually…," that had loaded earlier on a third factor in the combined analysis. The Principal components analysis was rerun excluding the second factor's Items 9 and 10. Two components with initial eigenvalues greater than 1 together explained 57% of the variance. The scree plot showed a clear break after two components. A Maximum Likelihood analysis with Varimax rotation gave a rotated factor matrix with one factor containing the seven positive-valence items and a second factor containing the three negative-valence items. Primary loadings ranged from .373 to 751. The two-factor model held whether the negative-valence items were reverse-coded or left as originally worded. The rotated factor plot (Appendix Figure F.4) shows that the three negative-valence items, as originally coded, were not a distinct orthogonal factor but rather on the same vector as the seven positive-valence items. The extraction was rerun as a single factor using reverse-coded negative-valence items. Goodness-of-fit was significant ($X^2 = 793.72$, $df = 208$, $p < .001$). Reliability for the ten-item Home SSR scale including the three reverse-coded items is good ($a = .87$) A subscale of the seven positive-valence items also had good reliability ($a = .86$) and a subscale of the three negative-valence items had adequate reliability ($a = .67$). Appendix Table F.9 shows the factor loadings for each item.

Campus Spatial Self-Regulation.

Principal Components Analysis extracted three factors explaining 53% of the variance from 10 Campus SSR items. (Item VII.3, "I don't have other good places besides the BCC campus to study and do my homework," was excluded because its primary loading was with the Home SSR items in the initial combined analysis.) Maximum Likelihood analysis with Varimax rotation gave a rotated factor matrix with one factor containing the five positive-valence items, a second factor containing the two reverse-coded negative-valence items, and a third factor containing items VII.9 and VII.10. The items in the third factor were both worded, "I can usually…," and had loaded together with similarly-phrased Home

SSR items in the earlier combined analysis. Principal Components Analysis was rerun without these four items and gave a single factor explaining 40% of the variance. Maximum likelihood loadings ranged from .358 to .612 with significant goodness-of-fit (X^2 = 28.25, *df* = 9, $p < .01$). Reliability for the six-item Campus SSR scale was adequate ($a = .69$). Appendix Table F.10 shows factor loadings for each item.

A composite variable was computed for each SSR factor by averaging their item values, which ranged from one to five. Univariate outliers greater than 2.7 standard deviations from the mean were found. For the Home SSR scale, one case with a value less than 1.30 was recoded to 1.30. For the Campus SSR scale, eight cases with values less than 1.72 were recoded so that lowest value was 1.71.

The resulting measures for Home SSR (*M* 3.65, *SD* = 0.89) and Campus SSR (*M* 3.59, *SD* = 0.68) did not correlate ($p > .10$). Yet each factor was linked with a Campus SSR item excluded from both scales, VII.3, "I don't have other good places besides the BCC campus to study and do my homework." This item correlated negatively with Home SSR ($r = -.55$, $p < .001$) and positively with Campus SSR ($r = .15$, $p < .001$). Students who disagreed with this statement scored higher in Home SSR, while students who agreed with this statement scored higher in Campus SSR.

Group differences in Spatial self-regulation factors.

The *T*-tests of independent samples listed in Appendix Table F.12 show differences in Home SSR and Campus SSR for several subgroups. Home SSR was lower for caregivers ($p < .001$) and students whose Room ratio=1 score indicated all habitable rooms were used for sleeping ($p < .01$); however, variance around the mean for Home SSR was significantly greater for caregivers than for non-caregivers. No subgroups reported significantly higher Home SSR. These findings suggest that engagement with the domestic environment is impeded by role obligations and by high utilization of habitable rooms as sleeping spaces. Students who were immigrants reported marginally higher Campus SSR ($p < .10$), but differences in age, gender, household composition, and caregiving roles were not associated with differences in Campus SSR. The differences in Home SSR are consistent with the differences in Perceived housing stress noted earlier for these same groups, while the marginal difference in Campus SSR anticipates the higher mean scores for learning factors among immigrants, which is discussed in the following section.

Self-Regulated Learning

The measure used to assess Self-regulated learning was adapted from the Motivated Strategies for Learning Questionnaire (MSLQ), an 81-item inventory with 31 motivation items in six subscales and 50 strategy items in nine subscales (Pintrich et al., 1993). The Methods section earlier described how 22 motivation items and 23 strategy items were chosen from the original instrument scale for the purpose of the current study. All six motivation subscales and five of the nine strategy subscales were used. Items reverse-coded in the original MSLQ were again reverse-coded here. Appendix Table E.5 lists item responses and Appendix Table F.16 details the factor analyses. The factor structures found in this sample for both Learning motivations and Learning strategies did not match those of the published scale (Pintrich et al., 1993). Chapter 4 discusses possible reasons for these differences and the implications thereof for the reliability and validity of the study findings.

Learning Motivations.

The 22 Learning Motivation items were entered into a Principal Components Analysis to confirm a six-factor model consistent with the original MSLQ. In the current instrument, at least three items represented each Motivation factor. Five factors with initial eigenvalues greater than 1 were found, which together explained 52% of the total variance. Though the scree plot (Appendix Figure F.5) showed a clearer decrease in incremental variance after the second factor, five factors were extracted using Maximum likelihood with Varimax rotation. The rotated factor matrix did not reproduce the dimensionality of the original scale. Only 14 of 22 items had primary loadings in their expected MSLQ factors: Intrinsic goals, Extrinsic goals, Task value, Self-efficacy for learning, and Test anxiety. Items from the sixth MSLQ factor, Control beliefs, appeared among all five groupings. Only the four Test anxiety items were found together, with loadings from .537 to .707, and no cross-loadings from other factors.

Because the factor structure of the current data set did not match the factor structure of the validated MSLQ instrument, the factor analysis was rerun to extract two factors, Test anxiety, and all others. Two factors were tested because Pintrich et al. (1993) found that the Test anxiety subscale had correlated negatively, while all other Motivation factors correlated positively, with course grades. In

the rerun Maximum likelihood model, the rotation gave one factor containing the Test Anxiety items and a second factor with primary loadings ranging from .227 to .703 for 17 of 18 items. Item VI.22, "I want to do well in my courses because it is important to show my ability to my family, friends, employer, or others," came from the Extrinsic goals subscale of the MSLQ but loaded here at .281 with the Test anxiety items. Item VI.7, "It is my own fault if I don't learn the material in a course," loaded at .167, less than one-third of the highest loading in that factor. Maximum Likelihood extraction omitting the two problematic items gave a two-factor model with simple structure (Appendix Figure F.8) and significant goodness of fit (X^2 = 464.45, *df* = 134, $p < .001$). The Test anxiety factor had loadings from .565 to .696 and the other factor had loadings from .319 to .712. Pintrich et al. reported a X^2/df ratio of 3.49 for the original 41-item Motivation model. The comparable X^2/df ratio for the current 20-item Motivation measure is 3.47 (464.45, 134). Reliability was good (α = .73) for the subscale made up of the four Test anxiety items and also for the subscale made up of the remaining 16 Motivation items (α = .83). Appendix Table F.17 compares factor correlations and coefficient *alphas* for the original MSLQ with those from the current sample. Test anxiety is a motivation for learning because students act to avoid unpleasant feelings associated with not doing well in school (Phan, 2009; Pintrich et al.; Sullivan, Worth, Baldwin, & Rothman, 2006). In contrast, the remaining motivation items entail wanting to attain a socially-desirable goal. The distinction between the two factors conforms to a model of approach and avoidance described extensively in the literature on human motivation (Elliot, 2006; Murayama, Elliott, & Yamagata, 2011). Thus, the subscale of Test anxiety items was relabeled *Avoidance motivation* and the subscale with the remaining motivation items associated with goal attainment was labeled *Approach motivation*. The Avoidance subscale (*M* = 4.14, *SD* = 1.53) and the Approach subscale (*M* = 5.74, *SD* = 0.68) were negatively correlated ($r = -0.17$, $p < .001$).

Learning strategies.

The 23 Strategy items were entered together into a Principal Components Analysis to confirm a five-factor model consistent with the latent factors selected from the original MSLQ: Metacognitive self-regulation, Time management, Effort management, Peer learning, and Help seeking. Each latent factor was represented by at least three items. Only four factors with initial eigenvalues greater than 1

were found, which together explained 48% of the total variance. Five factors were then extracted using the Maximum Likelihood with Varimax rotation. The dimensionality of the rotated factor matrix did not match the original MSLQ scale. The first and third factors each contained items from three separate MSLQ factors. The second factor contained items for Help seeking and Peer learning and the fourth factor contained a primary loading for only one item. Appendix Table F.16 (third and fourth pages) compares the original factor loadings (Pintrich et al., 1993) with those obtained in the current sample. Maximum likelihood rotation was rerun requesting two factors. As with re-specified Motivation factors earlier, two factors were tested because Pintrich et al. found that Metacognitive self-regulation, Time management, and Effort management each correlated positively with academic outcomes, while Help seeking and Peer learning had no significant association with academic outcomes. In the re-specified Maximum Likelihood model, each item loaded as expected but primary loadings ranged from .099 to .747. The smallest loadings included one for Help seeking (VI.26, "Even if I have trouble learning the material in a course, I try to do the work on my own, without help from anyone"), one for Time management (VI.32, "I find it hard to stick to a study schedule"), and one for Metacognitive self-regulation (VI.36, "I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for a course"). A rerun extraction omitting the three weakest items gave a two-factor model with primary loadings from .249 to .749 in the first factor and from .396 to .817 in the second factor. The model had significant goodness of fit (X^2 = 585.50, df = 151, p < .001) yet the rotated factor plot (Appendix Figure F.9) did not have simple structure. Item VI.34, "I ask the instructor to clarify concepts I don't understand well," had a secondary loading of .279 on the first factor. Pintrich et al. (1993) reported a X^2/df ratio of 2.26 for the original 50-item Strategy model. The comparable X^2/df ratio for the current 20-item Strategy measure is 3.88 (585.50, 151).

Reliability was good (a = .81) for the subscale made up of the six Help Seeking and Peer Learning items. Reliability was also good (a = .78) for the subscale made up of the remaining fourteen Learning Strategy items. Because the two subscales differed in whether their items elicited students' social or individual study habits, the subscale containing the Help seeking and Peer learning factors was relabeled *Social Strategy* and the subscale containing the remaining factors was relabeled *Solo Strategy*. The Social strategy subscale (M = 4.51, SD = 1.40) and the Solo strategy subscale (M = 5.00,

SD = 0.82) were positively correlated (r = .26, p < .001). Appendix Table F.17 compares the factor correlations and coefficient *alphas* for the original MSLQ (Pintrich et al., 1993) with those obtained in the current sample.

Group differences in Self-regulated learning factors.

Appendix Table F.18 lists results of *t*-test comparisons of the seven group differences for the two learning motivations and the two learning strategies. Female students were more likely (p < .01) to report test anxiety, labeled in the analysis as Avoidance motivation, and there was significantly less variance around the mean for female students than for male students for this measure. However, compared to male students, female students reported significantly greater use of Solo strategies (p < .01), which Pintrich, et al. (1993) found to be positively correlated with course outcomes. There were no differences by gender for Approach motivation or Social strategy. Differences were found earlier for caregivers among the housing-related factors, temporal orientations, and SSR factors, but caregivers had no significant differences in means for the four Self-regulated learning factors. Therefore, differences noted here for female students are not related to caregiving roles in the home.

Differences in factor means existed based on age group and household type. Students ages 18 to 21 had marginally lower (p < .10) mean Approach motivations, and significantly lower mean Social strategies (p < .01) and Solo strategies (p < .01). Similar differences were found for students in Filial households: Approach motivation (p < .05), Social strategies (p < .01), and Solo strategies (p < .01) were all lower, though variance around the mean was significantly higher for Solo strategies. No differences in Avoidance motivation were found by age group or household type. Students in Primary households reported marginally higher (p < .10) use of Social strategy and Solo strategy, but no difference in Approach motivation. Therefore, younger students and those living with parents and siblings were less likely to report motivations and strategies associated with academic success.[13] These results are consistent with published findings that note an association between future orientation and academic success but also significantly lower Future orientation among younger students

[13] As described in Figure 2, students whose household compositions were neither "Primary" nor "Filial" were categorized into a third binomial variable, "Other households."

(Horstmanshof & Zimitat, 2007; Phan, 2009; Zimbardo & Boyd, 1999). In the current sample, Appendix Table C.2 shows that GPA was significantly lower ($p < .001$) for students ages 18 to 21.

Students who were immigrants reported marginally higher Avoidance motivation ($p < .10$), and significantly higher means for Approach motivation ($p < .01$), Social strategy ($p < .001$), and Solo strategy ($p < .05$). This high utilization of Social strategy ($t = 4.36$) is consistent with the earlier finding of marginally higher Campus SSR ($t = 1.70$) among immigrant students.

SUMMARY DATA FOR MODEL MEASURES

Table 4 below summarizes descriptive data for all of the major measures described in this chapter. Table 5 on the next page gives the correlation matrix for these measures.

Table 4. Descriptive data for major measures.

Measure	Range	*M*	*SD*	skewness	kurtosis
1. Persons per room [a]	0.33 – 2.75	1.33	0.58	0.65	-0.26
2. Interior inadequacy [a]	2.00 – 6.00	3.81	0.85	0.38	-0.61
3. Perceived housing stress	1.00 – 4.36	2.58	0.70	-0.08	-0.54
4. Home SSR	1.30 – 5.00	3.65	0.89	-0.47	-0.57
5. Future orientation [a]	2.00 – 5.00	3.57	0.58	-0.08	-0.07
6. Present fatalistic orientation [a]	1.00 – 4.12	2.45	0.63	0.13	-0.25
7. Present hedonistic orientation [a]	1.80 – 4.67	3.25	0.54	-0.06	-0.08
8. Approach motivation	4.01 – 7.00	5.74	0.68	-0.49	-0.28
9. Avoidance motivation	1.00 – 7.00	4.14	1.53	-0.17	-0.68
10. Social strategy	1.00 – 7.00	4.51	1.40	-0.44	-0.44
11. Solo strategy	3.00 – 7.00	5.01	0.82	-0.09	-0.65
12. Campus SSR [a]	1.71 – 5.00	3.59	0.68	-0.44	0.02
13. GPA	0.00 – 4.00	2.65	0.94	-0.76	0.15

Note. Sample size is 490 for all measures. The standard error of skewness is .11 and the standard error of kurtosis is .22. Predictors 1 through 12 are listed in the table in the order that they appear in the survey instrument.

[a] *n.* Data for this measure reflects recoding of univariate outliers, as explained earlier in this section.

Table 5. Correlation matrix for major measures.

Measure	1	2	3	4	5	6	7	8	9	10	11	12
1. Persons per room	—											
2. Interior inadequacy	.25***	—										
3. Perceived housing stress	.23***	.59***	—									
4. Home SSR	-.27***	-.59***	-.68***	—								
5. Future orientation	-.03	.09*	.04	.00	—							
6. Present fatalistic orientation	.08†	-.02	-.19***	-.16***	-.24***	—						
7. Present hedonistic orientation	-.03	-.04	.03	-.05*	-.02	.35***	—					
8. Approach motivation	.03	.04	-.08†	.17***	.35***	-.19***	.15***	—				
9. Avoidance motivation	.01	.04	.18***	-.22***	-.04	.18***	.07	-.17***	—			
10. Social strategy	.00	-.11**	-.02	.12**	.18***	-.02	.12*	.35***	.01	—		
11. Solo strategy	-.03	-.02	-.18***	.22***	.38***	-.28***	-.08†	.53***	-.17***	.26***	—	
12. Campus SSR	.06	.07	.09†	-.04	.19***	-.01	.15**	.37***	-.02	.41***	.21***	—
13. GPA	-.01	.15**	.01	-.01	.28***	-.13**	-.10*	.23***	-.06	.09†	.24***	.03

Note. Predictors 1 through 12 are listed in the table in the order that they appear in the survey instrument.

* $p < .05$ ** $p < .01$ *** $p < .001$ † $p < .10$

REGRESSION MODELS

Linkages between time orientation and spatial self-regulation

Table 6. Correlations among Time orientation and SSR factors.

Factor	1	2	3	4
1. Time: Future	—			
2. Time: Present-fatalistic	-.24***	—		
3. Time: Present-hedonistic	-.02	.35***	—	
4. Home SSR	.00	-.16***	-.05	—
5. Campus SSR	.19***	-.01	.15**	-.04

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

Hypothesis 1 states that greater Future time orientation is associated with greater SSR. In Table 6, Future orientation correlated with Campus SSR but not with Home SSR. Students who reported higher Future orientation were more likely ($p < .001$) to report higher spatial engagement with the campus. Yet Future orientation did not correlate with Home SSR. Future orientation correlated with one SSR factor but not the other. Therefore the data only partially supported Hypothesis 1.

Time factors other than Future orientation did correlate with SSR factors. Table 6 shows that Present-fatalistic orientation correlated with Home SSR but not with Campus SSR. Students who reported higher Present-fatalistic orientation were more likely to report lower spatial engagement with the home setting. Yet Present-fatalistic orientation did not correlate with Campus SSR. Present-hedonistic orientation correlated with Campus SSR but not with Home SSR. Students who reported higher Present-hedonistic orientation were more likely to report higher spatial engagement with the campus. Present-hedonistic orientation did not correlate with Home SSR.

In Table 6, the correlation between Home SSR and Campus SSR was not significant ($p > .10$). Because the two factors were construed as measuring behaviors that are consistent across spatial domains, a test of the possible role of different levels of a third variable in linking the two factors is warranted (Baron & Kenny, 1986). Several models were tested to see whether any of the Time factors moderated the relationship between Home SSR and Campus SSR.[14]

[14] As explained in Chapter 2, under Procedure for Data Analysis, though Future orientation was most salient to the research questions, the temporal interaction models tested in Chapter 3 included all three time factors, Future,

Table 7. Interaction tests of Time orientation factors in predicting Campus SSR from Home SSR.

Variable	*B*	*SE B*	*β*	Model R^2
Step 1				
Home SSR	–0.03	0.03	–.04	.06***
Future orientation	0.22	0.05	.19***	
Present-fatalistic orientation	–0.03	0.05	–.03	
Present-hedonistic orientation	0.20	0.06	.16**	
Step 2: Future orientation				
Home SSR	–0.03	0.03	–.03	.06***
Future orientation	0.22	0.05	.19***	
Present-fatalistic orientation	–0.03	0.05	–.02	
Present-hedonistic orientation	0.19	0.06	.16**	
Home SSR * Future orientation	–0.06	0.06	–.04	
Alternative Step 2 model: Present-fatalistic orientation				
Home SSR	–0.02	0.03	–.03	.07***
Future orientation	0.22	0.05	.19***	
Present-fatalistic orientation	–0.02	0.05	–.02	
Present-hedonistic orientation	0.20	0.06	.16**	
Home SSR * Present-fatalistic orientation	0.11	0.05	.09*	

Note. Values for Step1 are not re-displayed for each Step 2 model.

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

In Table 7, the main effects predicted Campus SSR. As Future orientation and Present-hedonistic orientation each increased, Campus SSR increased. When the interaction term was added, the *F* change was not significant ($p > .10$).

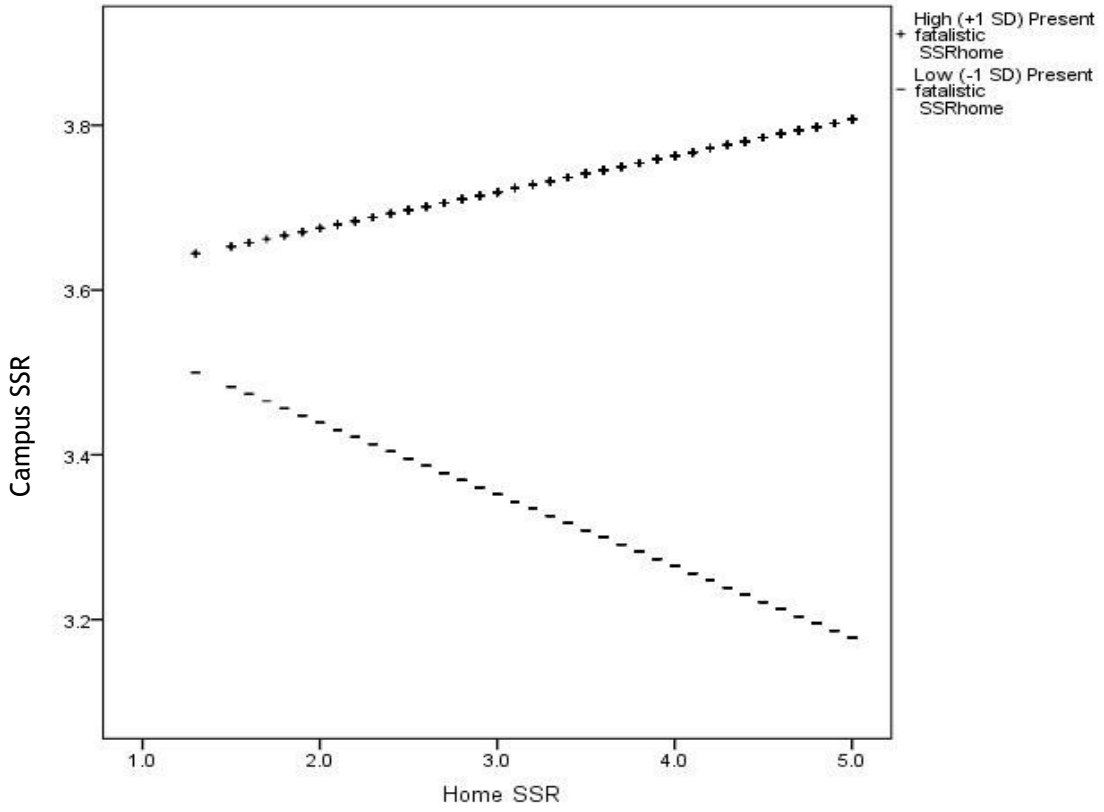
Alternative interactions were tested. Present-fatalistic orientation did moderate the effect of Home SSR in predicting Campus SSR. When the interaction term was added in Step 2, the *F* change from 7.61 (4,485) to 6.93 (5,484) was significant ($p < .05$). Present-hedonistic orientation did not moderate the effect of Home SSR in predicting Campus SSR. When the interaction term was added the

Present fatalistic, and Present hedonistic, as main effects even where some were found to be non-significant in certain models. The temporal factors have theoretical interconnectedness, and some of the findings presented in Chapter 3 also suggest that suppression effects occur when all three components are modeled together.

F change was not significant ($p < .10$). Of the three possible Time orientation interactions, only Present fatalistic-orientation moderated the effect of Home SSR on Campus SSR.

The simple slopes regression equation for students with low Present-fatalistic orientation (–1 *SD*) is: *Campus SSR = 3.61 + -.10* Home SSR*. The simple slopes regression equation for students with high Present-fatalistic orientation (+1 *SD*) is: *Campus SSR = 3.59 + .04 * Home SSR*.

Figure 3. Interaction of high and low levels of Present-fatalistic orientation with Home SSR in predicting Campus SSR.



In Figure 3, students with high Present-fatalistic orientation (+1 *SD)* reported greater overall Campus SSR than did students with low Present-fatalistic orientation (–1 *SD)*. Students with low Present-fatalistic orientation showed a marginally significant decrease in Campus SSR ($\beta = -0.11$, $p = 0.05$) as Home SSR increased, but students with high Present-fatalistic orientation showed a non-significant increase in Campus SSR ($\beta = 0.06$, $p > 0.10$) as Home SSR increased. Though neither simple slope parameter differed significantly from zero, the data indicated a difference ($p < .05$) in how high versus low levels of Present-fatalistic orientation interacted with Home SSR to predict Campus SSR.

Alternative model: Campus SSR as moderator for Time orientation in predicting Home SSR.

Table 8. Interaction test of Future orientation in predicting Home SSR from Campus SSR.

Variable	*B*	*SE B*	*β*	Model R^2
Step 1				
Campus SSR	–0.05	0.06	–.04	.03**
Future orientation	0.05	0.07	–.03	
Present-fatalistic orientation	–0.25	0.07	–.18***	
Present-hedonistic orientation	0.03	0.08	.02	
Step 2: Future orientation				
Campus SSR	–0.05	0.06	–.04	.06***
Future orientation	0.06	0.07	.04	
Present-fatalistic orientation	–0.25	0.07	–.18***	
Present-hedonistic orientation	0.04	0.08	.02	
Campus SSR * Future orientation	–0.09	0.10	–.04	
Alternative Step 2 model: Present-fatalistic orientation				
Campus SSR	–0.05	0.06	–.04	.04*
Future orientation	–0.05	0.07	–.04	
Present-fatalistic orientation	–0.27	0.07	–.19***	
Present-hedonistic orientation	0.05	0.08	.03	
Campus SSR * Present-fatalistic orientation	0.21	0.09	.10*	

Note. Values for Step 1 are not re-displayed for each Step 2 interaction model.

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

In Table 8, the main effects model predicted Home SSR. As Present-fatalistic orientation decreased, Home SSR increased. When the interaction term, Campus SSR * Future orientation, was added in Step 2, the *F* change was not significant ($p > .10$).

Alternative recursive interaction models.

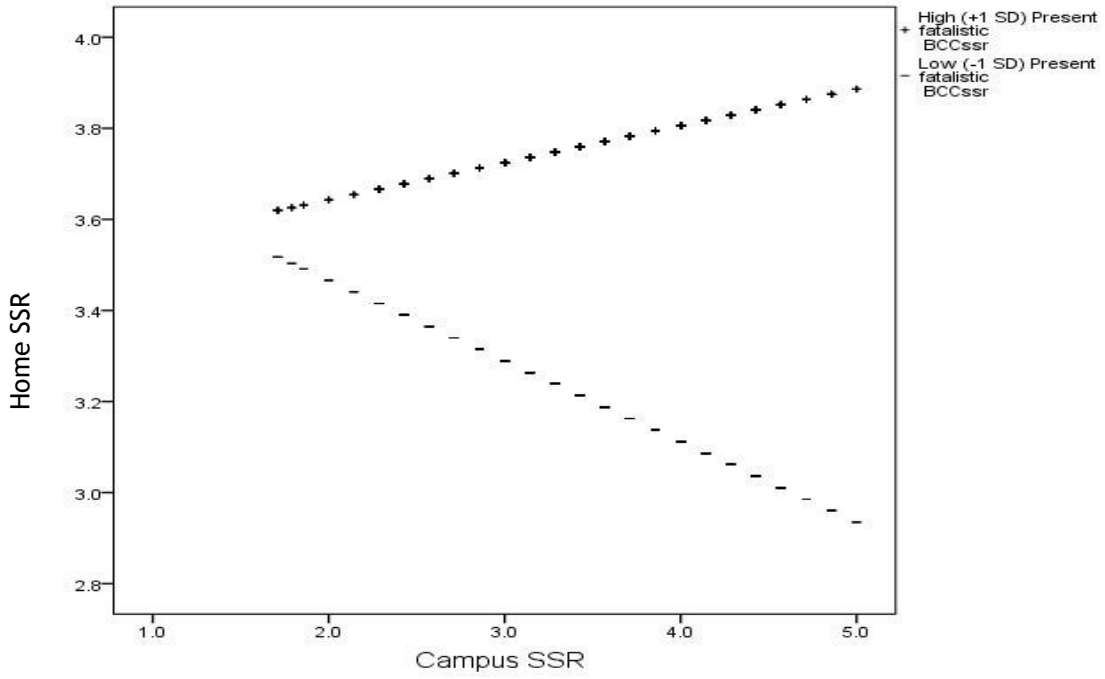
Moderation effects were also tested for Present-fatalistic orientation and Present-hedonistic orientation. When the interaction term, Home SSR * Present-fatalistic orientation, was added in Step 2, the *F* change from 3.63 (4,485) to 3.98 (5,484) was significant ($p < .05$). The interaction, Campus SSR * Present-fatalistic orientation, was significant ($\beta = 0.10$, $p < .05$) in predicting Home SSR.

Present-hedonistic orientation did not moderate the effect of Home SSR in predicting Campus SSR. When the interaction term was added, the *F* change was not significant ($p > .10$). Of the three Time factors, only Present-fatalistic orientation interacted with Campus SSR in predicting Home SSR.

Recursive models linking the interaction of Campus SSR and Time orientation backward to predict Home SSR may test either Time orientation or Campus SSR as the moderator. The previous test of Home SSR in predicting Campus SSR used Present-fatalistic orientation as the moderator. Here again, we first specified Present-fatalistic orientation as the moderator variable.

The simple slopes regression equation for students with low Present-fatalistic orientation (–1 *SD*) is: *Home SSR = 3.82 + -0.18 * Campus SSR*. The simple slopes regression equation for students with high Present-fatalistic orientation (+1 *SD*) is: *Home SSR = 3.48 + 0.08 * Campus SSR*.

Figure 4. Interaction of high and low levels of Present-fatalistic orientation with Campus SSR in predicting Home SSR.

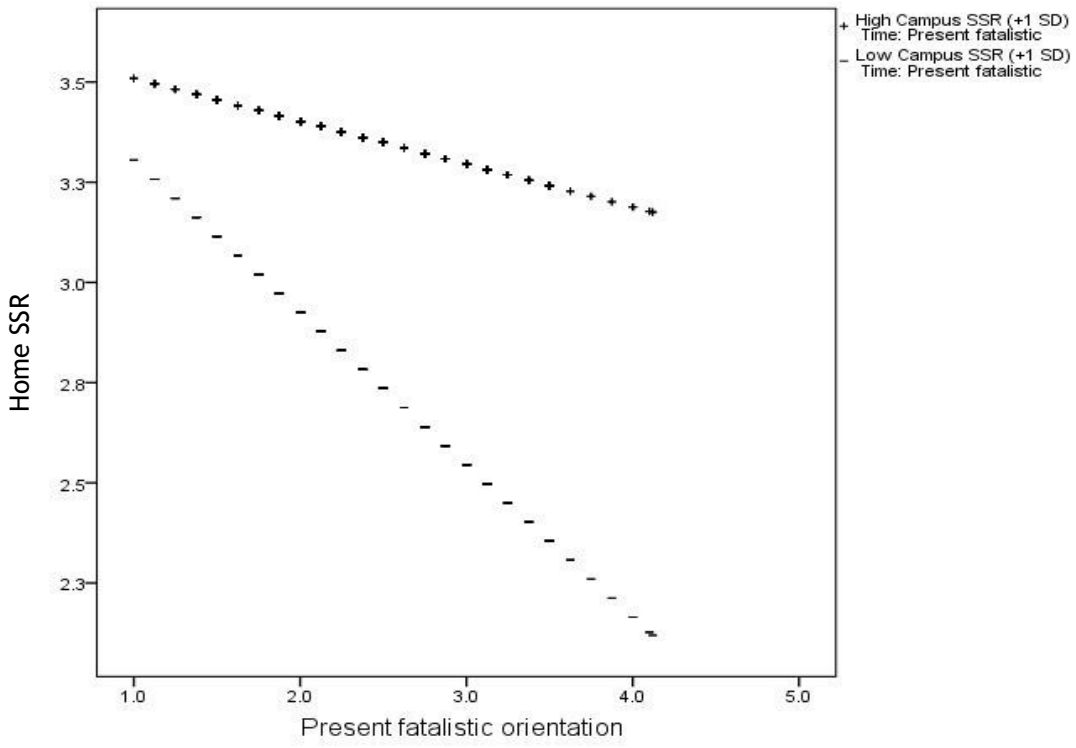


In Figure 4, students with high Present-fatalistic orientation (+1 *SD)* reported higher overall Home SSR than did students with low Present-fatalistic orientation (–1 *SD)*. As Campus SSR increased, low Present-fatalistic orientation predicted decreased ($\beta = -0.14$, $p < 0.05$) Home SSR. For students with high Present-fatalistic orientation, no significant effect ($\beta = 0.06$, $p > 0.10$) predicting Home SSR

from Campus SSR was found. The data showed a significant difference ($p < .05$) in how high versus low levels of Present-fatalistic orientation interact with Campus SSR in predicting Home SSR. Among students with low Present-fatalistic orientation, students that reported higher engagement with the campus environment were more likely to report lower engagement with their home environments.

The next test was of Campus SSR as moderator for Time orientation in predicting Home SSR. The simple slopes regression equation for students with low Campus SSR (–1 *SD*) is: *Home SSR = 3.69 + -0.38 * Present-fatalistic orientation.* The simple slopes regression equation for students with high Campus SSR (+1 *SD*) is: *Home SSR = 3.62 + -0.11 * Present-fatalistic orientation.*

Figure 5. Interaction of high and low levels of Campus SSR with Present-fatalistic orientation in predicting Home SSR.



In Figure 5, students with high Campus SSR (+1 *SD)* reported higher overall Home SSR than did students with low Campus SSR (–1 *SD)*. As Present-fatalistic orientation increased, low Campus SSR was associated with decreasing (β = -0.38, $p < 0.001$) Home SSR, but for high Campus SSR, Present-fatalistic orientation did not predict (β = –0.08, $p > 0.10$) Home SSR. The data showed a difference ($p < .05$) in

how high versus low levels of Campus SSR interacted with Present-fatalistic orientation to predict Home SSR. Compared to students with low Campus SSR, students with higher Present-fatalistic orientation were likely to report lower engagement with home spaces.

Group differences in Time orientation and Spatial self-regulation.

The previous section, Major Predictors, noted several group differences in Time orientation and SSR. Appendix Tables F.12 and F.15 give results for demographic variables associated with differences in SSR and Time orientation, respectively. Mean Future orientation was higher for females, respondents in Primary households, Caregivers, and Immigrants, but lower for respondents ages 18 to 21 and students in Filial households. Mean Present-fatalistic orientation was lower for females and students in Primary households, but higher for students ages 18 to 21, those in Filial households, Immigrants, and those using all rooms for sleeping. Mean Present-hedonistic orientation was higher for respondents ages 18 to 21, but lower for Caregivers and students in Primary households. Home SSR was significantly lower for Caregivers and those using all rooms for sleeping. Campus SSR was marginally higher for Immigrants, but no other subgroups differed significantly in Campus SSR.

Linkages among household density, perceived housing inadequacy, and perceived housing stress

Table 9. Correlations among Persons per room, Housing inadequacy factors, and Perceived housing stress.

Variable	1	2	3	4
1. Persons per room	—			
2. Interior inadequacy	.25***	—		
3. Neighbors inadequacy	.07	.44***	—	
4. Outdoors inadequacy	.12**	.56***	.41***	—
5. Perceived Housing Stress	.23***	.59***	.32***	.44***

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

Hypothesis 2a states that higher household density is associated with greater Perceived housing stress. Household density was defined as Persons per room. In Table 9, the correlation between Persons per room and Perceived housing stress is positive and significant. The regression equation predicting Perceived Housing Stress is: *Perceived Housing Stress = 2.58 + 0.28 * Persons per Room*. As Persons per room increased, Perceived Housing Stress increased. Therefore, the data supported Hypothesis 2a.

Hypothesis 2b states that greater perceived Housing inadequacy is associated with greater levels of Perceived housing stress. In Table 9, Perceived housing stress correlated with each of the Housing inadequacy factors. The regression equation for predicting Perceived Housing Stress is: *Perceived Housing Stress = 2.58 + 0.40 * Interior inadequacy + 0.04 Neighbors inadequacy + 0.09 *Outdoors inadequacy*. Interior inadequacy (β = 0.49, $p < .001$) and Outdoors inadequacy (β = 0.14, $p < .01$) predicted Perceived housing stress but Neighbors inadequacy did not (β = 0.05, $p > .10$). This model explained 37% of the variance in reported Perceived housing stress. Therefore, the data supported Hypothesis 2b.

Hypothesis 2c states that Housing inadequacy mediates the relationship between household density and Perceived housing stress. In the test of Hypothesis 2b, Interior inadequacy was the stronger of the two factors predicting Perceived housing stress. As a measure of interior affordances, Interior inadequacy is relevant to household density, and thus is used to represent Housing inadequacy.

Table 10. Test of mediation by Interior inadequacy in predicting Perceived housing stress from Persons per room.

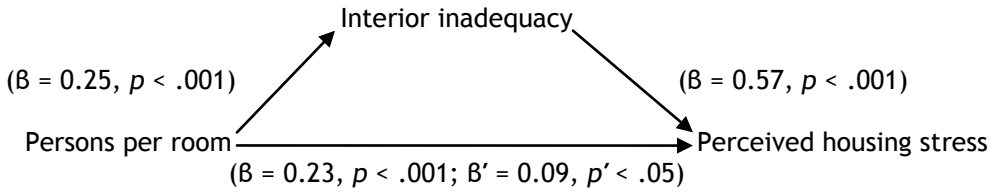
Equation Variable	*B*	*SE B*	*β*	Model R^2
1. *Perceived housing stress = a + b * Persons per room*				
Persons per room	0.28	0.05	.23***	.05***
2. *Interior inadequacy = a + b * Persons per room*				
Persons per room	0.36	0.06	.25***	.06***
3. *Perceived housing stress = a + b * Interior inadequacy*				
Interior inadequacy	0.49	0.03	.59***	.35***
4. *Perceived housing stress = a + b_1 * Persons per room + b_2 * Interior inadequacy*				
Persons per room	0.11	0.09	.09*	.36***
Interior inadequacy	0.47	0.03	.57***	

* $p < .05$ *** $p < .001$

All four equations in Table 10 were significant ($p < .001$). The first equation is from Hypothesis 2a and the third equation is from Hypothesis 2b. The third equation states that as Persons per room increases, Interior inadequacy increases. The fourth equation states that as Persons per room and Interior inadequacy each increase, Perceived housing stress increases. In the last equation the parameter for Persons per room decreased from ß = 0.23 to 0.09 but remained significant ($p < .05$)

when Interior inadequacy was included. Thus Interior inadequacy did not completely mediate the effect of Persons per room on Perceived housing stress. Sobel's test gave a *z* statistic of 5.22 (p < .001), indicating that Interior inadequacy significantly mediated Persons per room. Therefore, the data partially supported Hypothesis 2c. Figure 6 shows the partial mediation.

Figure 6. Mediation of Persons per room by Interior inadequacy in predicting Perceived housing stress.



Alternative measures of household density

The variable, Room ratio, is an alternative measure of utilization of household space and was computed by dividing the number of rooms used for sleeping by the total number of habitable rooms. Lower values of Room ratio denote more rooms used for sleeping and fewer rooms used only as common space, while higher values denote more rooms used for sleeping and fewer rooms used only as common space.

Hypothesis 2a stated that higher household density is related to greater Perceived housing stress. When household density was measured as Persons per room, the data supported Hypothesis 2a. When the alternative Room ratio measure was dichotomized, a *t*-test of independent samples showed that respondents using all rooms for sleeping reported significantly higher (p < .05) Perceived housing stress (M = 2.66, SD = 0.69) than respondents who did not use all rooms for sleeping (M = 2.52, SD = 0.70). Yet when Room ratio was tested as a continuous independent variable for the 283 students with Room ratio < 1, the measure did not predict Perceived housing stress (F (1, 281) = 0.13, p > .10, R^2 = .00). When household density was construed as a measure of space utilization, the data again supported Hypothesis 2a though only with a binomial predictor.

Hypothesis 2c [15] stated that Housing inadequacy mediates the relationship between household density and Perceived housing stress. The hypothesis tested above used Persons per room as the predictor but found no significant mediation. Hypothesis 2c was retested using the binomial Room ratio variable in place of Persons per room. The four regression equations[16] for the mediation model are:

*Perceived Housing Stress = 2.52 + 0.14 * Room ratio=1.* (1)

*Interior inadequacy = 3.77 + 0.10 * Room ratio=1.* (2)

*Perceived housing stress = 2.58 + 0.49 * Interior inadequacy.* (3)

*Perceived housing stress = 2.54 + 0.09 * Room ratio=1 + 0.48 * Interior inadequacy* (4)

The first, third, and fourth equations gave significant results but the second equation did not ($p > .10$). In the first equation, Room ratio=1 predicted Perceived housing stress but, with the addition of Interior inadequacy, Room ratio=1 was no longer significant in the fourth equation ($p > .10$). Since Room ratio=1 did not predict Interior inadequacy in the second equation, no mediation existed. Rather, the fourth equation shows that Interior inadequacy was a better predictor for Perceived housing stress than was the dichotomized Room ratio variable. Room ratio was tested earlier as a continuous predictor for Perceived housing stress for the 283 students for which Room ratio was less than 1. Since Room ratio was not significant ($p > .10$) as a continuous predictor for Perceived housing stress, a test of whether Interior inadequacy mediated the continuous Room ratio variable was not appropriate.

Moderation models.

Hypothesis 2d states that students high in Future time orientation have an attenuated association between Perceived housing inadequacy and Perceived housing stress. Hypothesis 2d followed from Hypothesis 2c, which stated that Housing inadequacy mediates the relationship between household density and Perceived housing stress. Yet the test of Hypothesis 2c found only partial mediation. Thus Hypothesis 2d was expanded to consider first whether Future time orientation moderated the paths from Household density to Perceived housing stress (Hypothesis 2d.1) and from Household density to

[15] Hypothesis 2b did not include household density.

[16] Though Room ratio is a binomial variable, linear regression is used rather than ANOVA in order to compare parameter estimates in the mediation model (Baron & Kenny, 1986).

Perceived Housing inadequacy (Hypothesis 2d.2) before evaluating whether Future time orientation moderated the path from Perceived housing adequacy to Perceived housing stress (Hypothesis 2d.3). Household density was operationalized as Persons per room and perceived housing inadequacy was limited to the measure of Interior inadequacy.

Table 11. Correlations among Persons per room, Interior inadequacy, Perceived housing stress, and Time orientation factors.

Variable	1	2	3	4	5
1. Persons per room	—				
2. Interior inadequacy	.25***	—			
3. Perceived housing stress	.23***	.59***	—		
4. Time: Future	-.03	.09*	.04	—	
5. Time: Present-Fatalistic	.08†	-.02	.19***	-.24***	—
6. Time: Present-Hedonistic	-.03	-.04	-.03	-.02	.35***

* $p < .05$ ** $p < .01$ *** $p < .001$ † $p < .10$

Table 11 shows only two significant correlations and one marginal correlation among the nine paired correlations of the three housing variables and the three Time factors. Future orientation correlated positively with Interior inadequacy but not with Persons per room or Perceived housing stress. Present-fatalistic orientation had a marginal positive correlation with Persons per room and a significant positive correlation with Perceived housing stress. Present-hedonistic orientation did not correlate with any of the housing variables.

Hypothesis 2d.1 stated that students high in Future time orientation would have an attenuated association between Persons per room and Perceived housing stress. In Table 12 below, the main effects predicted Perceived housing stress. As Persons per room, Future orientation, and Present-fatalistic orientation each increased, Perceived housing stress increased. When the interaction term was added in Step 2, the *F* change was not significant ($p > .10$). Therefore, the data did not support Hypothesis 2d.2.

Table 12. Interaction test of Time factors in predicting Perceived housing stress from Persons per room.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Persons per room	0.26	0.05	.22***	.09***
Future orientation	0.12	0.05	.10*	
Present-fatalistic orientation	0.23	0.05	.21***	
Present-hedonistic orientation	0.04	0.06	.03	
Step 2: Future orientation				
Persons per room	0.26	0.05	.22***	.10***
Future orientation	0.12	0.05	.10*	
Present-fatalistic orientation	0.23	0.05	.21***	
Present-hedonistic orientation	-0.05	0.06	-.04	
Persons per room * Future orientation	0.07	0.09	.03	

* $p < .05$ *** $p < .001$ † $p < .10$

Alternative temporal effects were tested. Present-fatalistic orientation did not moderate the effect of Persons per room in predicting Perceived housing stress. When the interaction term, Persons per room * Present-Fatalistic orientation, was added in Step 2 the *F* change was not significant ($p > .10$). Present-hedonistic orientation marginally interacted ($p = .06$) with household density in predicting Perceived housing stress. When the interaction term, Persons per room * Present-hedonistic, was added in Step 2 the *F* change was only marginally significant ($p = .06$). Thus none of the three Time factors significantly moderated the path from Persons per room to Perceived housing stress.

Hypothesis 2d.2 stated that students high in Future time orientation would have an attenuated association between Persons per room and Interior inadequacy. Results of the main effects and interaction models for each of the three Time factors are shown in Table 13 below. The main effects model predicted Interior inadequacy. As Persons per room and as Future orientation each increased, Interior inadequacy increased. When the interaction term was added in Step 2, the *F* change was not significant ($p > .10$). Therefore the data did not support Hypothesis 2d.2.

Table 13. Interaction test of Time factors in predicting Interior inadequacy from Persons per room.

Variable	B	SE B	B	Model R^2
Step 1				
Persons per room	0.36	0.06	.25***	.07***
Future orientation	0.15	0.07	.10*	
Present-fatalistic orientation	–0.02	0.06	.00	
Present-hedonistic orientation	–0.06	0.07	–.04	
Step 2: Future orientation				
Persons per room	0.36	0.06	.25***	.07***
Future orientation	0.15	0.07	.10*	
Present-fatalistic orientation	0.00	0.06	.00	
Present-hedonistic orientation	–0.06	0.07	–.04	
Persons per room * Future orientation	0.11	0.11	.04	

* $p < .05$ *** $p < .001$

Alternative temporal interaction effects were tested. Present-fatalistic orientation did not moderate the effect of household density in predicting Interior inadequacy. When the interaction term was added in Step 2, the *F* change was not significant ($p > .10$). Present-hedonistic orientation did not moderate the effect of household density on Interior inadequacy. When the interaction term was added in Step 2, the *F* change was not significant ($p > .10$). Therefore, none of the three Time factors moderated the effect of household density on Interior inadequacy.

Hypothesis 2d.3 stated that students high in Future time orientation would have an attenuated association between Interior inadequacy and Perceived housing stress.

Table 14. Interaction test of Time factors in predicting Perceived housing stress from Interior inadequacy.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Interior inadequacy	0.49	0.03	.59***	.39***
Future orientation	0.05	0.04	.04	
Present-fatalistic orientation	0.24	0.04	.22***	
Present-hedonistic orientation	–0.02	0.05	–.02	

(*table continues*)

Variable	*B*	*SE B*	*B*	Model R^2
Step 2: Future orientation				
Interior inadequacy	0.48	0.03	.58***	.41***
Future orientation	0.05	0.04	.04	
Present-fatalistic orientation	0.25	0.04	.22***	
Present-hedonistic orientation	-0.03	0.05	-.02	
Interior inadequacy * Future orientation	0.16	0.05	.11**	
Alternative Step 2 model: Present-fatalistic orientation				
Interior inadequacy	0.49	0.03	.60***	.42***
Future orientation	0.05	0.04	.04	
Present-fatalistic-orientation	0.25	0.04	.23***	
Present-hedonistic-orientation	-0.02	0.05	-.01	
Interior inadequacy * Present-fatalistic orientation	-0.21	0.04	-.17***	

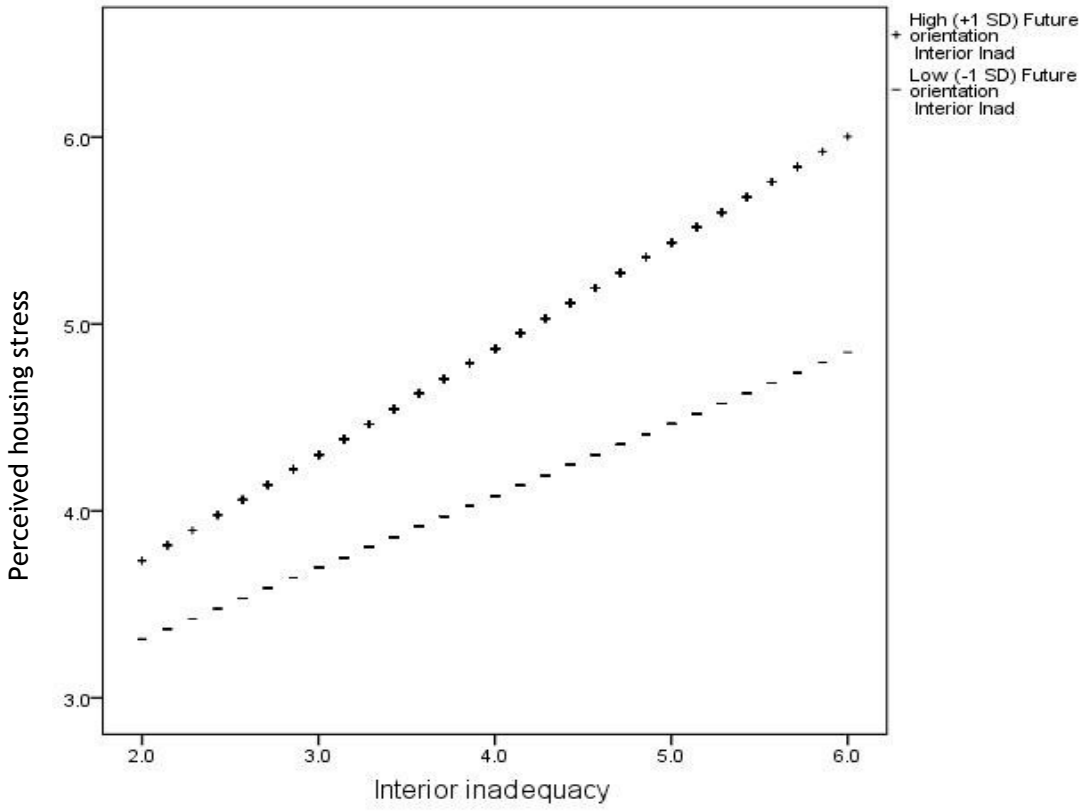
Note. Values for Step 1 are not re-displayed for each Step 2 interaction model.

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

In Table 14, the main effects predicted Perceived housing stress. When the interaction term, Interior inadequacy * Future time orientation, was added the *F* change from 78.34 (4, 485) to 65.94 (5,484) was significant ($p = .001$). The simple slopes regression equation for students with low Future orientation (-1 SD) is: *Perceived housing stress = 2.55 + 0.38 * Interior inadequacy.* The simple slopes regression equation for students with high Future orientation (+1 *SD*) is*: Perceived housing stress = 2.60 + 0.57 * Interior inadequacy*.

In Figure 7 below, students with high Future orientation (+1 *SD*) reported higher overall Perceived housing stress than did students with low Future orientation (-1 *SD*). At both high and low levels of Future orientation, Perceived housing stress scores were significantly higher for students who reported greater Interior inadequacy. Yet among students with high Future orientation, Interior inadequacy had a steeper effect ($\beta = 0.69$, $p < 0.001$) in predicting Perceived housing stress than among students with low Future orientation ($\beta = 0.47$, $p < 0.001$). Although a significant interaction was found, the analysis showed that Future orientation amplified rather than attenuated the effect of Interior inadequacy on Perceived housing stress. Therefore, the data did not support Hypothesis 2d.3.

Figure 7. Interaction of high and low levels of Future orientation with Interior inadequacy in predicting Perceived housing stress.



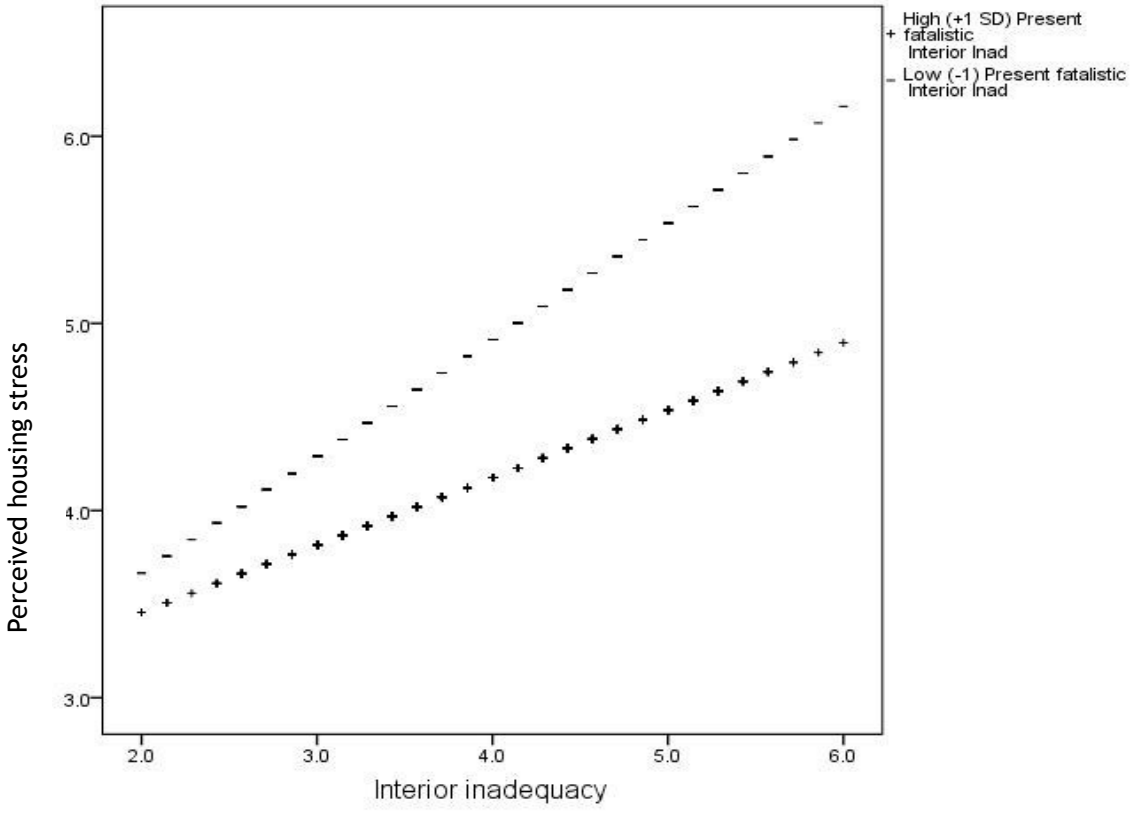
Alternative temporal effects were tested. Present-fatalistic orientation did moderate the effect of Interior inadequacy in predicting Perceived housing stress. When the interaction term was added in Step 2, the *F* change from 78.34 (4, 485) to 70.69 (5,484) was significant. Present-hedonistic orientation did not moderate the effect of Interior inadequacy in predicting Perceived housing stress. When the interaction term was added in Step 2, the *F* change was not significant ($p > .10$).

The simple slopes regression equation for students with low Present-fatalistic orientation (-1 *SD*) is: *Perceived housing stress = 2.42 + 0.62 * Interior inadequacy*. The simple slopes regression equation for students with high Present-fatalistic orientation (+1 *SD*) is: *Perceived housing stress = 2.74 + 0.36 * Interior inadequacy*.

In Figure 8 below, students with high Present-fatalistic orientation reported lower overall scores for Perceived housing stress than did students with low Present-fatalistic orientation. At higher scores for Interior inadequacy, Perceived housing stress was significantly higher both for students with

low Present-fatalistic orientation and high Present fatalistic orientation. Yet among students with low Present-fatalistic orientation, Interior inadequacy had a steeper effect ($\beta = 0.76$, $p < 0.001$) in predicting Perceived housing stress than among students with high Present-fatalistic orientation ($\beta = 0.44$, $p < 0.001$).

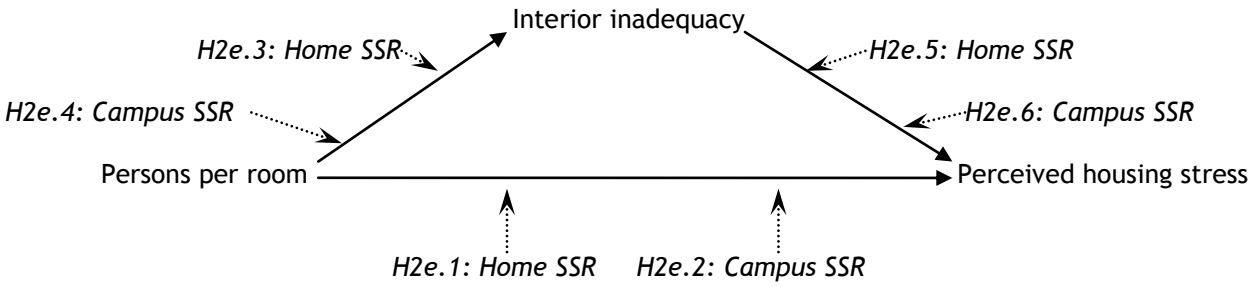
Figure 8. Interaction of high and low levels of Present-fatalistic orientation with Interior inadequacy in predicting Perceived housing stress.



HYPOTHESIS 2E

Hypothesis 2e states that students high in SSR have an attenuated negative association between Perceived housing adequacy and Perceived housing stress. As in the prior test of Hypothesis 2d, Hypothesis 2e follows from an assumed mediation in Hypothesis 2c. Since the test of Hypothesis 2c showed that Interior inadequacy did not fully mediate the effect of Persons per room on Perceived housing stress, Hypothesis 2e was tested along each path in Hypothesis 2c, as shown in Figure 9 below.

Figure 9. Tests of moderation by Home SSR and Campus SSR in predicting Perceived housing stress.



Hypotheses 2e.1 and 2e.2 tested Home and Campus SSR on the path between Persons per room and Perceived housing stress. Hypotheses 2e.3 and 2e.4 tested Home and Campus SSR on the path between Persons per room and Interior inadequacy. Hypotheses 2e.5 and 2e.6 tested Home and Campus SSR on the path between Interior inadequacy and Perceived housing stress.

Table 15 shows four significant correlations among the six paired correlations of the three housing variables and the two SSR factors. Home SSR correlated negatively with Persons per room, Interior inadequacy, and Perceived housing stress. Campus SSR correlated positively with Perceived housing stress but not with Persons per room or Interior inadequacy.

Table 15. Correlations among Persons per room, Interior inadequacy, Perceived housing stress, and SSR factors.

Variable	1	2	3	4
1. Persons per room	—			
2. Interior inadequacy	.25***	—		
3. Perceived housing stress	.23***	.59***	—	
4. Home SSR	-.27***	-.59***	-.68***	—
5. Campus SSR	.06	.07	.09*	-.04

* $p < .05$ *** $p < .001$

Hypothesis 2e.1 states that students high in Home SSR will have an attenuated association between Persons per room and Perceived housing stress. In Table 16 below, the main effects predicted Perceived housing stress. As Home SSR decreased, Perceived housing stress increased. In Step 1 Persons per room did not predict Perceived housing stress. When the interaction term was added in Step 2, the

F change was not significant ($p > .10$). Therefore, Home SSR did not moderate the effect of Persons per room on Perceived housing stress.

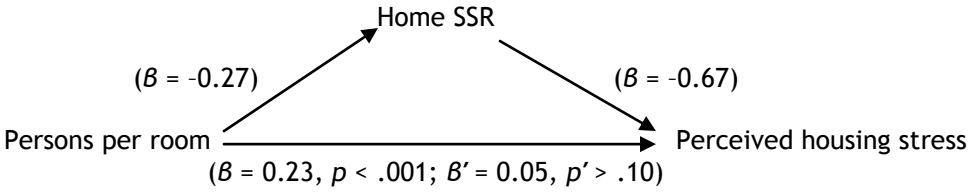
Table 16. Interaction test of Home SSR in predicting Perceived housing stress from Persons per room.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Persons per room	0.06	0.04	.05	.47***
Home SSR	-0.52	0.03	-.67***	
Step 2				
Persons per room	0.06	0.04	.05	.47***
Home SSR	-0.52	0.03	-.67***	
Persons per room * Home SSR	0.00	0.05	.00	

*** $p < .001$

In Table 16, the main effects parameter for Persons per room decreased ($\beta = .05$, $p < .10$) from the earlier test of Hypothesis 2a ($\beta = 0.23$, $p < .001$). The decrease suggested that Home SSR fully mediated the path from Persons per room to Perceived housing stress. If so, Persons per room must also predict Home SSR, as in the equation, *Home SSR = 3.65 + -0.41*Persons per room*. The equation was significant (F (1, 488) = 38.56, $p < .001$, $R^2 = .07$). As Persons per room decreased, Home SSR increased. Figure 10 shows the mediation effect.

Figure 10. Full mediation of Persons per room by Home SSR in predicting Perceived housing stress.



Hypothesis 2e.2 states that students high in Campus SSR will have an attenuated association between Persons per room and Perceived housing stress. In Table 17 below, the main effects predicted Perceived housing stress but only due to Persons per room. The effect of Campus SSR was marginal.

When the interaction term was added in Step 2, the *F* change was not significant. Therefore, Campus SSR did not moderate the effect of Persons per room on Perceived housing stress.

Table 17. Interaction test for Campus SSR in predicting Perceived housing stress from Persons per room.

Variable	B	SE B	B	Model R^2
Step 1				
Persons per room	0.27	0.05	.23***	.06***
Campus SSR	0.08	0.05	.08†	
Step 2				
Persons per room	0.27	0.05	.23***	.06***
Campus SSR	0.08	0.05	.08†	
Persons per room * Campus SSR	0.01	0.08	.01	

*** $p < .001$ † $p < .10$

Hypothesis 2e.3 states that students high in Home SSR will have an attenuated association between Persons per room and Interior inadequacy. In Table 18, the main effects predicted Interior inadequacy. As Persons per room increased and as Home SSR decreased, Interior inadequacy increased. When the interaction term was added in Step 2, the *F* change was not significant. Therefore the data did not support Hypothesis 2e.3.

Table 18. Interaction test of Home SSR in predicting Interior inadequacy from Persons per room.

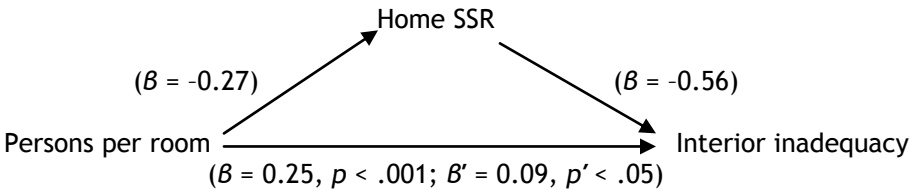
Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Persons per room	0.14	0.06	.09*	.35***
Home SSR	-0.54	0.04	-.56***	
Step 2				
Persons per room	0.13	0.06	.09*	.35***
Home SSR	-0.53	0.04	-.56***	
Persons per room * Home SSR	-0.04	0.06	-.02	

* $p < .05$ *** $p < .001$

The earlier test of Hypothesis 2c used the equation, *Interior inadequacy = 3.82 + 0.36 * Persons per room*. In that equation, Persons per room predicted Interior inadequacy ($B = 0.25$, $p < .001$). Table 18 suggests partial mediation because including Home SSR in the 1 main effects model reduced the

effect of Persons per room (B = 0.09, p < .05). For mediation to occur, Persons per room must also predict Home SSR, as it did in the earlier equation testing Hypothesis 2e.1: *Home SSR = 3.65 + -0.41 *Persons per room*. Sobel's test gave a z statistic of 5.77 (p < .001), indicating significant partial mediation of Persons per room by Home SSR. Figure 11 shows the partial mediation effect.

Figure 11. Partial mediation of Persons per room by Home SSR in predicting Interior inadequacy.



Hypothesis 2e.4 states that students high in Campus SSR will have an attenuated association between Persons per room and Interior inadequacy. In Table 19, the main effects predicted Interior inadequacy but, as in the earlier test of Hypothesis 2.e2, only through Persons per room. When the interaction term was added in Step 2, the F change was not significant. Therefore, the data did not support Hypothesis 2e.4.

Table 19. Interaction test Campus SSR in predicting Interior inadequacy from Persons per room.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Persons per room	0.35	0.06	.24***	.06***
Campus SSR	0.07	0.06	.05	
Step 2				
Persons per room	0.35	0.06	.24***	.06***
Campus SSR	0.07	0.06	.05	
Persons per room * Campus SSR	–0.06	0.09	–.03	

*** p < .001

Hypothesis 2e.5 states that students high in Home SSR will have an attenuated association between Interior inadequacy and Perceived housing stress. In Table 20, the main effects predicted Perceived housing stress. As Interior inadequacy increased and as Home SSR decreased, Perceived

housing stress increased. When the interaction term was added in Step 2, the *F* change was not significant. Therefore the data did not support Hypothesis 2e.5.

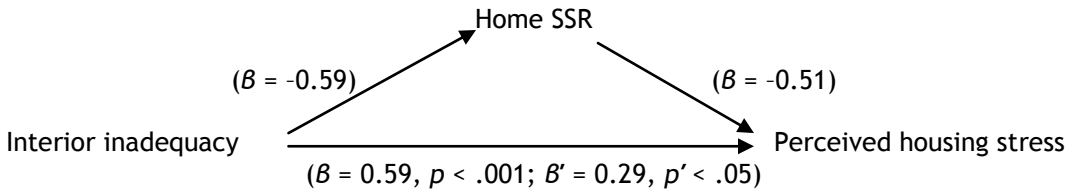
Table 20. Interaction test of Home SSR in predicting Perceived housing stress from Interior inadequacy.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Interior inadequacy	0.24	0.03	0.29***	.52***
Home SSR	-0.40	0.03	-0.51***	
Step 2				
Interior inadequacy	0.25	0.03	0.30***	.52***
Home SSR	-0.40	0.03	-0.52***	
Interior inadequacy * Home SSR	0.03	0.03	0.04	

*** $p < .001$

The earlier tests of Hypotheses 2b, 2c, and 2d used the equation, *Perceived housing stress = 2.58 + 0.49 * Interior inadequacy,* in which Persons per room predicted Interior inadequacy ($\beta = 0.59$, $p < .001$). Table 20 suggests partial mediation because including Home SSR reduced the effect of Interior inadequacy ($\beta = 0.29$, $p < .001$). In a mediation model, Interior inadequacy must also predict Home SSR, as it did in the equation: *Home SSR = 3.65 + -0.62 * Interior inadequacy*. Sobel's test gave a *z* statistic of 10.15 ($p < .001$), indicating significant partial mediation of Interior inadequacy by Home SSR in predicting Perceived housing stress. Figure12 shows the partial mediation.

Figure 12. Partial mediation of Interior inadequacy by Home SSR in predicting Perceived housing stress.



Hypothesis 2e.6 states that students high in Campus SSR will have an attenuated association between Interior inadequacy and Perceived housing stress. In Table 21 below, the main effects

predicted Perceived housing stress (F (2, 487) = 0.00, p < .001, R^2= .00) but only through Interior inadequacy. When the interaction term, Interior inadequacy * Campus SSR, was added in Step 2 the F change was not significant (p > .10). Therefore the data did not support Hypothesis 2e.6.

Table 21. Interaction test of Campus SSR predicting Perceived housing stress from Interior inadequacy.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Interior inadequacy	0.48	0.03	.59***	.35***
Campus SSR	0.05	0.04	.05	
Step 2				
Interior inadequacy	0.48	0.03	.59***	.35***
Campus SSR	0.05	0.04	.05	
Interior inadequacy * Campus SSR	0.02	0.04	.02	

*** p < .001

Group differences in household density, Interior inadequacy, and Perceived housing stress.

The previous section, Major Predictors, noted several group differences in housing-related factors. Appendix Table D.2 lists the results of *t*-test comparisons for Persons per room and chi square comparisons for the Rooms ratio=1 binomial variable; Appendix Tables F.3 and F.6, respectively, list the results of t-test comparisons for the Interior inadequacy and Perceived housing stress. Persons per room was significantly higher for respondents in Filial households, immigrants, and caregivers, but significantly lower for females. Also, crosstab comparisons for Room ratio=1 showed that respondents who are immigrants or living in Filial households were more likely, and female respondents were less likely, to live in households utilizing all habitable rooms as sleeping spaces. Interior inadequacy was significantly higher for students living in Primary households, and caregivers, but marginally lower for students living in Filial households. For the binomial measure of household space utilization, Room ratio=1, there was no significant difference in perceived Interior inadequacy between respondents who used all rooms for sleeping and those who did not. Perceived housing stress was higher among caregivers, immigrants, and those using all rooms for sleeping.

SUMMARY OF RESULTS OF HYPOTHESES 2A TO 2E

Figure 13. Summary of significant findings for Hypotheses 2a to 2e.

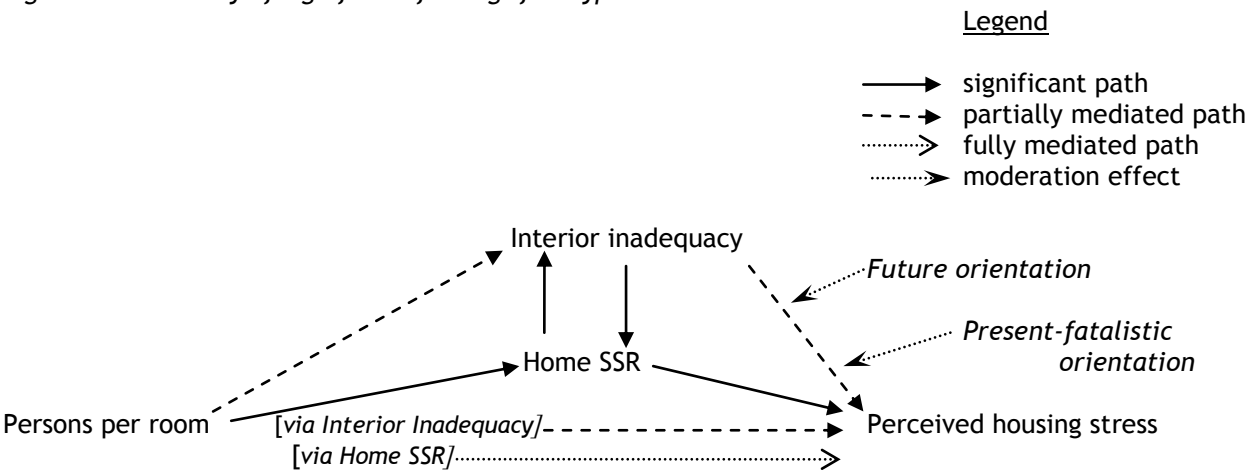


Figure 13 integrates the results of the tests of Hypotheses 2a through 2e. The results of Hypotheses 2a, 2b, and 2c showed that Interior inadequacy partially mediated the effect of Persons per room on Perceived housing stress. Hypothesis 2d introduced Time factors as moderators in the path from Persons per room to Perceived housing stress. None of the three temporal orientations significantly interacted with Persons per room in predicting Perceived housing stress. Future orientation and Present-fatalistic orientation did each moderate the path from Interior inadequacy to Perceived housing stress. Yet Future orientation amplified rather than attenuated the effect of Interior inadequacy on Perceived housing stress.

Hypothesis 2e separately tested the effects of Home SSR and Campus SSR as moderators along the three paths linking Persons per room, Interior Inadequacy, and Perceived housing stress. Home SSR moderated none of these three paths. However, Home SSR fully mediated the effect of Persons per room on Perceived housing stress, partially mediated the effect of Persons per room on Interior inadequacy, and partially mediated the effect of Interior inadequacy on Perceived housing stress. When tested as the moderator for Persons per room, Campus SSR had no significant main effect, mediation effect, nor moderation effect in predicting Interior inadequacy or Perceived housing stress. When tested as the moderator for Interior inadequacy, Campus SSR had no significant main effect,

mediation effect, nor moderation effect in predicting Perceived housing stress. Thus Campus SSR had no recursive role in explaining Perceived housing stress.

Linkages among perceived housing stress, self-regulated learning, and academic standing

Chapter 2 described how the Self-regulated learning measure was adapted from the MSLQ scale (Pintrich et al., 1993). The original MSLQ scale entailed two sets of factors measuring Learning motivations and Learning strategies. The factor analyses here led to two factors within Learning motivations labeled Approach and Avoidance motivation as well as two factors within Learning strategies labeled Social and Solo strategy. Academic standing was defined as the semester GPA.

Hypothesis 3a states that higher Perceived housing stress is associated with lower Self-regulated learning, which entails motivations and strategies from the MSLQ. In Table 22, only Approach motivation and Solo strategy correlated directly with GPA. Perceived housing stress correlated negatively with Solo strategy and positively with Avoidance motivation.

Table 22. Correlations among Perceived housing stress, Learning motivations, and Learning strategies.

Variable	1	2	3	4	5
1. Perceived housing stress	—				
2. Approach motivation	-.09	—			
3. Avoidance motivation	.18***	-.17***	—		
4. Solo strategy	-.18***	.53***	-.17***	—	
5. Social strategy	-.02	.35***	.01	.26***	—
6. GPA	.01	.23***	-.06	.24***	.09

*** $p < .001$

In a bivariate regression, Perceived housing stress predicted Avoidance motivation by the equation, *Avoidance motivation = 0.40*Perceived housing stress + 4.14.* As Perceived housing stress increased, Avoidance motivation increased. In a bivariate regression, Perceived housing stress predicted Solo strategy by the equation, *Solo strategy = -0.22*Perceived housing stress + 5.01.* As Perceived housing stress increased, Solo strategy decreased. Since Perceived housing stress was linked with two of four Self-regulated learning factors, the data only partly supported Hypothesis 3a.

Hypothesis 3b states that lower Self-regulated learning is associated with lower academic standing. Table 22 shows positive correlations between GPA and Approach motivation as well as

between GPA and Solo strategy, but no significant correlation between GPA and Avoidance motivation or between GPA and Social strategy. In a bivariate regression, Approach motivation predicted GPA by the equation, *GPA = 0.31*Approach motivation + 2.65*. As Approach motivation increased, GPA increased. In a bivariate regression, Solo strategy predicted GPA by the equation, *GPA = 0.28 *Solo strategy + 2.65*. As Solo strategy increased, GPA increased. Since GPA was associated with two of four Self-regulated learning factors, the data only partly supported Hypothesis 3b.

Hypothesis 3c states that Self-regulated learning mediates the path between Perceived housing stress and academic standing. Mediation requires that independent variable predict the dependent variable (Baron & Kenny, 1986). Table 22 shows no significant correlation between Perceived housing stress and GPA. Since mediation was not testable, the data did not support Hypothesis 3c.

Alternative mediation models.

Figure 14. Correlation paths among Perceived housing stress, Self-regulated learning, and GPA.

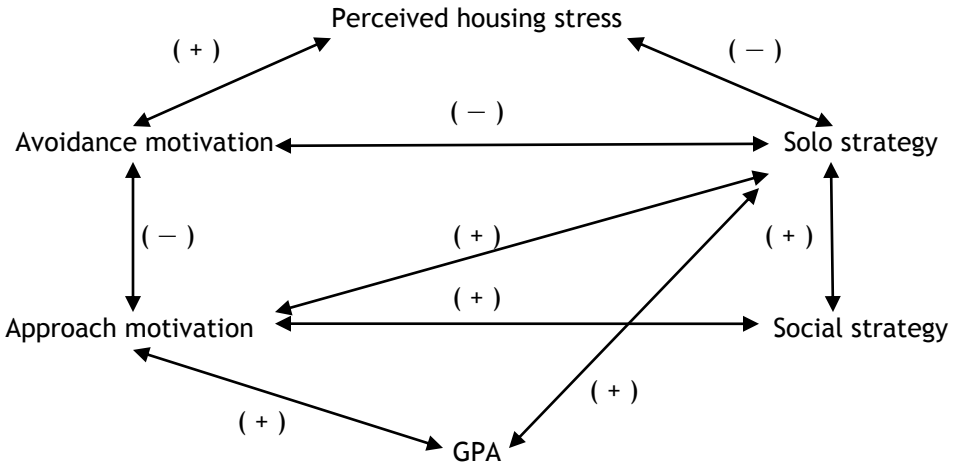


Figure 14 shows significant correlational paths among Perceived housing stress, the four Self-regulated learning factors, and GPA, as listed in Table 22. It suggests several alternative mediation models elaborating the downstream influence of Perceived housing stress on academic standing Consistent with the premise that behavior follows from intention (Ajzen, 1991), these models posited that Learning strategies follow from Learning motivations.

Table 23. Test of mediation by Avoidance motivation in predicting Solo strategy from Perceived housing stress.

Equation Variable	*B*	*SE B*	*β*	Model R^2
1. *Solo strategy = a + b*Perceived housing stress*				
Perceived housing stress	–0.22	0.05	–.18***	.03***
2. *Avoidance motivation = a + b*Perceived housing stress*				
Perceived housing stress	0.40	0.10	.18***	.03***
3. *Solo strategy = a + b*Avoidance motivation*				
Avoidance motivation	–0.09	0.02	–.17***	.03***
4. *Solo strategy = a + b_1 *Perceived housing stress + b_2 *Avoidance motivation*				
Perceived housing stress	–0.19	0.05	–.16**	.05***
Avoidance motivation	–0.07	0.02	–.14**	

** $p < .01$ *** $p < .001$

In Table 23, all four equations were significant. In the first equation, as Perceived housing stress decreased, Solo strategy increased. In the second equation, as Perceived housing stress increased, Avoidance motivation increased. In the third equation, as Avoidance motivation decreased, Solo strategy increased. In the fourth equation, while the absolute value of the parameter for Perceived housing stress decreased to β = –0.16 from β = –0.18, it still predicted Solo strategy after Avoidance motivation was added to the model. Thus Avoidance motivation did not completely mediate the effect of Perceived housing stress on Solo strategy. Sobel's test gave a *z* statistic of 2.63 ($p < .01$), indicating significant partial mediation of Perceived housing stress by Avoidance motivation.

Figures 15.1, 15.2, and 15.3 are each segments of Figure 14 and suggested mediation paths to be tested among Motivations, Strategies, and GPA.

Figure 15.1. Correlation paths among Approach motivation, Avoidance motivation, and Solo strategy.

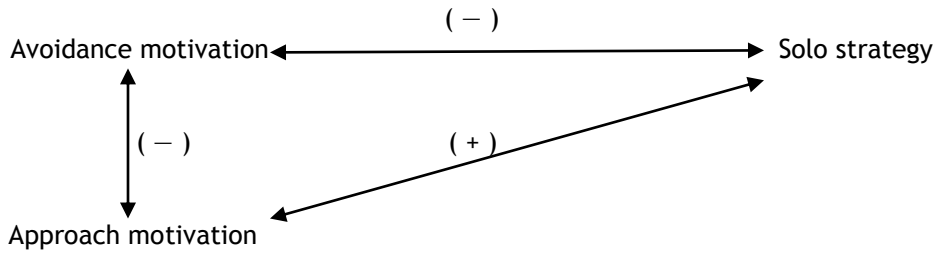


Figure 15.2. Correlation paths among Approach motivation, Social strategy, and Solo strategy.

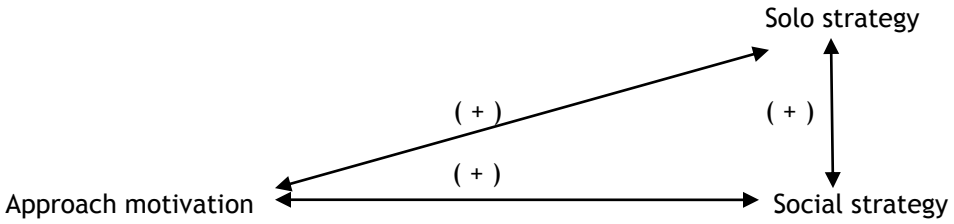


Figure 15.3. Correlation paths among Approach motivation, Solo strategy, and GPA.

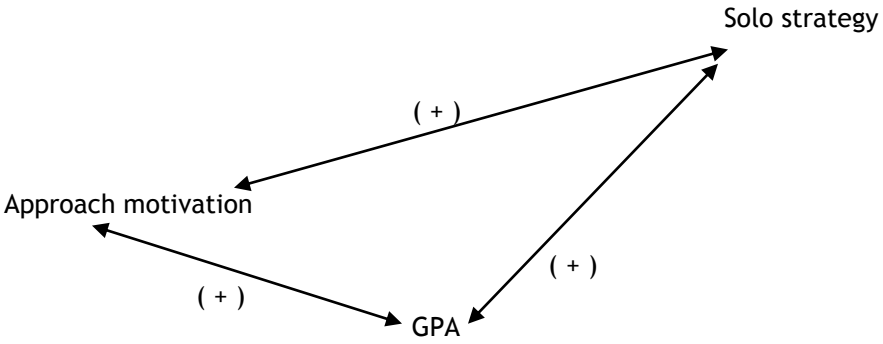


Figure 15.1 shows significant correlations among Approach and Avoidance motivations and Solo strategy. Since Figure 14 showed that Approach motivation and Solo strategy correlated with GPA but Avoidance motivation did not, Solo strategy was the appropriate outcome in a mediational test of the correlations in Figure 15.1. Avoidance motivation became the predictor and Approach motivation the mediator. Table 24 details the results of equations testing the mediation model in Figure 15.1.

Table 24. Test of mediation by Approach motivation in predicting Solo strategy from Avoidance motivation.

Equation Variable	*B*	*SE B*	*B*	Model R^2
1. *Solo strategy = a + b*Avoidance motivation*				
Avoidance motivation	-0.09	0.02	-.17***	.03***
2. *Approach motivation = a + b*Avoidance motivation*				
Avoidance motivation	-0.08	0.02	-.17***	.03***
3. *Solo strategy = a + b*Approach motivation*				
Approach motivation	0.65	0.05	.53***	.29***
4. *Solo strategy = a + b_1*Avoidance motivation + b_2 * Approach motivation*				
Avoidance motivation	-0.04	0.02	-.08	.29***
Approach motivation	0.63	0.05	.52***	

*** $p < .001$

In Table 24, each of the four results was significant. In the first, as Avoidance motivation decreased, Solo Strategy increased. In the second, as Avoidance motivation decreased, Approach motivation increased. In the third, as Approach motivation increased, Solo strategy increased. In the fourth, when Approach motivation was added, Avoidance motivation no longer predicted Solo strategy. Thus Approach motivation completely mediated the effect of Avoidance motivation on Solo strategy.

Figure 15.2 illustrated significant correlations among Approach motivation and Social and Solo strategies. Since Figure 14 showed that Approach motivation and Solo strategy each correlated with GPA but Social strategy did not, Solo strategy was the appropriate outcome. Assuming that motivations precede strategies (Ajzen, 1991), Approach motivation was the predictor and Social strategy the mediator. Table 25 details the results of equations testing paths among these three variables.

Table 25. Test of mediation by Social strategy in predicting Solo strategy from Approach motivation.

Equation Variable	*B*	*SE B*	*β*	Model R^2
1. *Solo strategy = a + b*Approach motivation*				
Approach motivation	0.65	0.05	.34***	.29***
2. *Social strategy = a + b*Approach motivation*				
Approach motivation	0.72	0.09	.35***	.12***
3. *Solo strategy = a + b*Social strategy*				
Social strategy	0.15	0.03	.26**	.07***
4. *Solo strategy = a + b_1 *Approach motivation + b_2 *Social strategy*				
Approach motivation	0.61	0.05	.50***	.29***
Social strategy	0.05	0.02	.08*	

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

In Table 25, each of the four results was significant. In the first, as Approach motivation increased, Solo Strategy increased. In the second, as Approach motivation increased, Social strategy increased. In the third, as Social strategy increased, Solo strategy increased. In the fourth, when Social strategy was added to the model, the *F* change was significant, but Approach motivation continued to predict Solo strategy. Thus, Social strategy did not completely mediate the effect of Approach motivation on Solo strategy. Sobel's test gave a *z* statistic of 2.02 ($p < .05$), indicating significant partial mediation of Approach motivation by Social strategy.

Since Table 22 indicated that Solo strategy correlated more strongly with Approach motivation (r = .53, p < .001) than with Social strategy (r = .26, p < .001), this last mediation model was retested for reverse causation. The second equation from Table 25 was reversed to give Approach motivation = 5.74 + 0.17 Social strategy, showing that Social strategy did predict Approach motivation (B = .35, SE = .02, p < .001). Using the values from the fourth equation in Table 25, Sobel's test gave a z statistic of 6.71 (p < .001), which indicated a higher significance level than the previous model. Figures 16.1 and 16.2 elaborate Figure 15.2, and contrast the Table 25 parameters for the two causation models.

Figure 16.1. Mediation of Approach motivation by Social strategy in predicting Solo strategy.

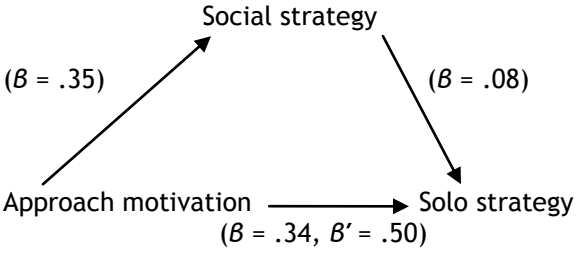
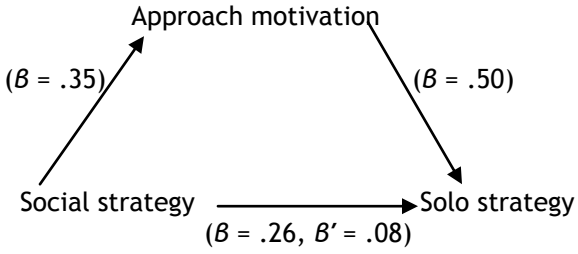


Figure 16.2. Mediation of Social strategy by Approach motivation in predicting Solo strategy.



Therefore, Figure 16.1 and Figure 16.2 show that Approach motivation mediated Social strategy more strongly than Social strategy mediated Approach motivation in explaining Solo strategy.[17]

Table 22 earlier showed that GPA correlated with Approach motivation (r = .23) and with Solo strategy (r = .24). Assuming that motivation precedes strategy, Table 26 gives the results of equations testing Approach motivation as predictor, Solo strategy as mediator, and GPA as outcome.

Table 26. Test of mediation by Solo strategy in predicting GPA from Approach motivation.

Equation Variable	*B*	*SE B*	*B*	Model R^2
1. GPA = *a* + *b**Approach motivation				
Approach motivation	0.31	0.06	.23***	.05
2. Solo strategy = *a* + *b**Approach motivation				
Approach motivation	0.65	0.05	.34***	.29***

(table continues)

[17] Figure 16.1 shows a possible suppression effect by Social Strategy on Approach motivation since *B* for Approach motivation increased rather than decreased when Social Strategy was tested as a mediator.

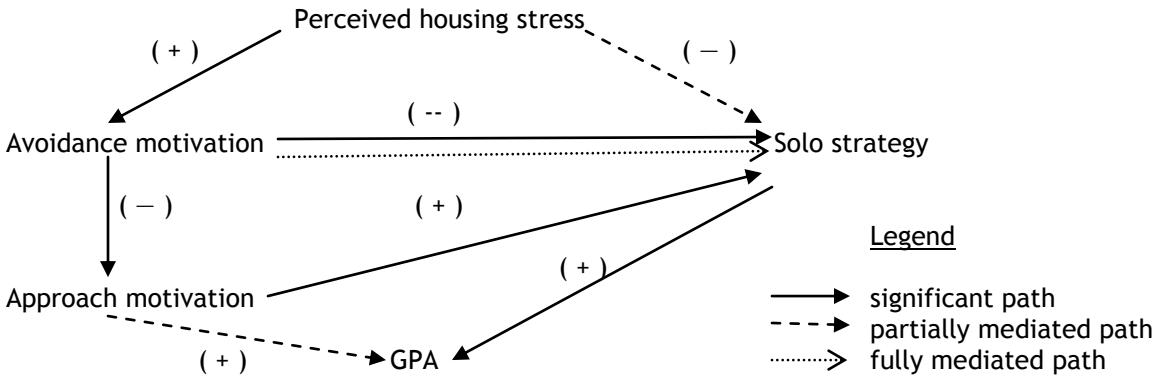
Equation Variable	*B*	*SE B*	*B*	Model R^2
3. GPA = *a* + *b**Solo strategy				
Solo strategy	0.28	0.05	.24***	.06***
4. GPA = *a* + b_1 *Approach motivation + b_2 *Solo strategy				
Approach motivation	0.19	0.02	.13*	.07***
Solo strategy	0.19	0.06	.17**	

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

In Table 26, each of the four results was significant. First, as Approach motivations increased, GPA increased. Second, as Approach motivation increased, Solo strategy increased. Third, as Solo strategy increased, GPA increased. Fourth, when Solo strategy was added, the *F* change was significant but Approach motivation still predicted GPA. Thus Solo strategy did not completely mediate the effect of Approach motivation on GPA. Sobel's test gave a *z* statistic of 3.21 ($p < .001$), indicating significant partial mediation. Reverse causation was tested by reversing the second equation from Table 26 to give *Approach motivation = 5.74 + 0.44 *Solo strategy,* showing that Solo strategy predicted Approach motivation ($\beta = .53$, $p < .001$). Using values from the fourth equation in Table 26, Sobel's test gave a *z* statistic of 2.54 ($p < .01$), indicating a lower significance level. Solo strategy mediated Approach motivation more strongly than Approach motivation mediated Social strategy in predicting GPA.

The remaining hypotheses, 3d and 3e, propose moderation by Future orientation and by SSR in the path between Perceived housing stress and Self-regulated learning. Before testing these last two hypotheses, the results of Hypotheses 3b and 3c must be consolidated to be more parsimonious. The models tested in Hypotheses 3b and 3c showed that Social strategy had no direct relationship with Perceived housing stress or GPA and that Solo strategy was the strongest predictor of GPA. Of the two Learning motivations, Avoidance motivation was directly predicted by Perceived housing stress, and Approach motivation directly predicted Solo strategy. The position of Solo strategy as a direct predictor of GPA suggested its use as an endpoint in the remaining tests of moderation of paths from Perceived housing stress to Self-regulated learning. Approach motivation completely mediated the negative effect of Avoidance motivation on Solo strategy. Figure 17 revises Figure 14 to depict these findings.

Figure 17. Results of mediation models tested in Hypotheses 3b and 3c.



The exogenous GPA outcome variable was tested for differences in student remediation. The mean number of non-ESL[18] remediation courses required of students in the sample was 1.56 (*SD* = 1.17) and ranged from none to six courses. When remediation, as a continuous variable for number of courses, was tested in a hierarchical regression, it predicted GPA both before (*β* = –0.27, *p* < .001) and after (*β* = –0.25, *p* < .001) the inclusion of Solo strategy (*β* = 0.21, *p* < .001)[19]. Thus remediation predicted GPA independently of Solo strategy.

Remediation effects were also relevant in examining the four Self-regulated learning factors. The largest group of students (n = 355, 72%) in the sample required one or two remediation courses. Table 27 below shows *t*-tests for students with no remediation (n = 64, 13%), and *t*-tests for students with three or more courses (n = 69, 14%). Students with no remediation had lower mean scores for Avoidance motivation than did students who required remediation. Students with three or more remediation courses had higher mean scores for Avoidance motivation than students needing fewer than three courses. Students with fewer than three remediation courses also had lower mean scores for Approach motivation and Solo strategy. Yet students with no remediation did not have higher mean scores for Approach motivation or Solo strategy, each of which were strongly correlated with GPA.

[18] The sample had mostly non-ESL students (n = 436, 89%). A *t*-test of independent means showed that mean GPA for ESL students (*M* = 2.39, *SD* = 0.90) was significantly lower (*p* < .05) than for non-ESL students (*M* = 2.68, *SD* = 0.94). Yet the 54 ESL students were more likely to require three or more (X^2 < .001) or four or more (X^2 < .05) non-ESL remediation courses than were the non-ESL students. The effect on GPA of being a non-native speaker of English was explained instead by the effect of other remediation requirements.

[19] Earlier in the Test of mediation by Solo strategy to predict GPA from Approach motivation, Table 26 showed that Solo strategy by itself predicted GPA (β = 0.24, *p* < .001).

Table 27. T-tests of independent means for low and high remediation levels, by Self-regulated learning factors.

	No remediation courses [b]			Three or more remediation courses [c]		
	M (SD)			*M (SD)*		
Factor	1	0	*t*	1	0	*t*
Approach motivation	5.83 (0.67)	5.73 (0.68)	1.10	5.51 (0.77)	5.78 (0.66)	-3.08**
Avoidance motivation [a]	3.64 (1.41)	4.21 (1.54)	-2.83**	4.55 (1.29)	4.07 (1.56)	2.76**
Social strategy	4.35 (1.46)	4.53 (1.39)	-1.00	4.65 (1.21)	4.49 (1.43)	0.88
Solo strategy	5.10 (0.82)	5.00 (0.82)	0.93	4.78 (0.83)	5.05 (0.82)	-2.52*

[a] *n.* Levene's test for equality of variances was significant ($p < .05$). Variances were not equal across groups for Avoidance motivation among students grouped by three or more remediation courses.

[b] *n.* Of the sample of 490 students, 64 were coded 1 for no remediation courses.

[b] *n.* Of the sample of 490 students, 69 were coded 1 for three or more remediation courses.

* $p < .05$ ** $p < .01$

Hypothesis 3d states that students high in Future time orientation will have an attenuated negative association between Perceived housing stress and Self-regulated learning. The results of Hypotheses 3a, 3b, and 3c shown in Figure 17 indicated that Perceived housing stress directly predicted Avoidance motivation, was partially mediated by Avoidance motivation in predicting Solo strategy, and had no direct path predicting Approach motivation.

Table 28. Correlations among Self-regulated learning and Time factors.

Factor	1	2	3	4	5
1. Approach motivation	—				
2. Avoidance motivation	-.17***	—			
3. Solo strategy	.53***	-.17***	—		
4. Time: Future	.35***	-.04	.38***	—	
5. Time: Present-fatalistic	-.19***	.18***	-.28***	-.24***	—
6. Time: Present-hedonistic	.15**	.07	-.08	-.02	.35***

** $p < .01$ *** $p < .001$

In Table 28, only six of the nine paired correlations between Self-regulated learning factors and Time orientation factors were significant. Future orientation correlated with Approach motivation and Solo strategy but not with Avoidance motivation. Present-fatalistic orientation correlated negatively with Approach motivation and Solo strategy and correlated positively with Avoidance motivation.

Present-hedonistic orientation correlated positively with Approach motivation but not with Avoidance motivation or Solo strategy.

Earlier, the findings of Hypothesis 2e listed in Table 15 showed that Perceived housing stress correlated with Present-fatalistic orientation (r = .19, p < .001) but not with Future orientation or Present-hedonistic orientation (p > .10). Baron and Kenny (1986) preferred that the moderator be uncorrelated with both the predictor and outcome variables so as to allow clearer interpretation of any interaction effect. The significant correlations shown in Tables 15 and 28 warrant care in evaluating the outcomes of interaction tests based on these variables.

Hypothesis 3a stated that greater Perceived housing stress is linked to lower levels of Self-regulated learning, yet a significant link was found for only one of the four Self-regulated learning factors, Avoidance motivation. Thus moderation testing may clarify the effects of different levels of Time orientation factors in predicting outcomes for which no main effect existed. Tables 29, 30, and 31 give main effects and interaction effects for Perceived housing stress and time orientation in predicting Approach motivation, Avoidance motivation, and Solo strategy.

Table 29. Interaction tests of Time factors in predicting for Approach motivation from Perceived housing stress.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Perceived housing stress	-0.07	0.04	-.07	.18***
Future orientation	0.37	0.05	.21***	
Present-fatalistic orientation	-0.19	0.05	-.18***	
Present-hedonistic orientation	0.28	0.06	.22***	
Step 2: Future orientation				
Perceived housing stress	-0.07	0.04	-.08	.19***
Future orientation	0.37	0.05	.32***	
Present-fatalistic orientation	-0.19	0.05	-.18***	
Present-hedonistic orientation	0.27	0.06	.22***	
Perceived housing stress x Future	0.05	0.07	.03	

*** p < .001

Table 29 again shows that Perceived housing stress did not predict Approach motivation in a main effects model with Time factors. Each Time parameter was significant. Yet no interaction effects were significant. Hypotheses 3a earlier showed that Perceived housing stress predicted Avoidance

motivation. This main effect appears again in Table 30 below when Perceived housing stress was modeled together with Time factors. Of the latter, Present-fatalistic orientation had a significant main effect but Future and Present-hedonistic orientations did not. No interactions were significant.

Table 30. Interaction test of Time factors in predicting Avoidance motivation from Perceived housing stress.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Perceived housing stress	0.34	0.10	.15**	.06***
Future orientation	-0.03	0.12	-.01	
Present-fatalistic orientation	0.36	0.12	.15**	
Present-hedonistic orientation	0.03	0.13	.01	
Step 2: Future orientation				
Perceived housing stress	0.38	0.10	.17**	.06***
Future orientation	-0.05	0.12	-.02	
Present-fatalistic orientation	0.35	0.12	.14**	
Present-hedonistic orientation	0.07	0.13	.02	
Perceived housing stress * Future	-0.29	0.17	-.08	

** $p < .01$ *** $p < .001$

In Table 31 below, Perceived housing stress predicted Solo strategy in a main effects model with Time factors. Of the latter, Future and Present-fatalistic orientations each had significant main effects but Present-hedonistic orientation did not. None of the interaction effects were significant. The tests of Hypothesis 3d show that Future time orientation did not moderate the effect of Perceived housing stress in predicting Avoidance motivation, Approach motivation, or Solo strategy. Therefore the data did not support Hypothesis 3d. Alternative tests of Present-fatalistic and Present-hedonistic orientations in moderating the effect of Perceived housing stress in predicting Avoidance motivation, Approach motivation, and Solo strategy also found no significant interactions.

Table 31. Interaction test of Time factors in predicting Solo strategy from Perceived housing stress.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Perceived housing stress	-0.20	0.05	-.17***	.21***
Future orientation	0.49	0.06	.35***	
Present-fatalistic orientation	-0.21	0.06	-.16***	
Present-hedonistic orientation	-0.02	0.07	-.01	

(table continues)

Variable	*B*	*SE B*	*B*	Model R^2
Step 2: Future orientation				
Perceived housing stress	-0.20	0.05	-.17***	.21***
Future orientation	0.50	0.06	.35***	
Present-fatalistic orientation	-0.21	0.06	-.16***	
Present-hedonistic orientation	-0.03	0.07	-.02	
Perceived housing stress * Future	0.05	0.08	.03	

*** $p < .001$

Hypothesis 3e states that students high in SSR will have an attenuated negative association between Perceived housing stress and Self-regulated learning. The results of Hypothesis 1 found two uncorrelated factors within SSR, Home SSR and Campus SSR. Table 32 shows correlations among the 2 SSR factors and the three remaining Self-regulated learning factors under consideration.

Table 32. Correlations among Perceived housing stress, SSR factors, and Self-regulated learning factors.

Factor	1	2	3	4	5
1. Perceived housing stress	—				
2. Home SSR	-.68***	—			
3. Campus SSR	.09**	-.04	—		
4. Approach motivation	-.09†	.17***	.37***	—	
5. Avoidance motivation	.18***	-.22***	-.02	-.17***	—
6. Solo strategy	-.18***	.22***	.21***	.53***	-.17***

** $p < .01$ *** $p < .001$ † $p < .10$

In Table 32, Perceived housing stress correlated negatively with Home SSR and positively with Campus SSR and also had a marginally significant negative correlation with Approach motivation (p = .06). Home SSR correlated positively with Approach motivation and Solo strategy and negatively with Avoidance motivation. Campus SSR correlated positively with Approach motivation and Solo strategy but did not correlate with Avoidance motivation.

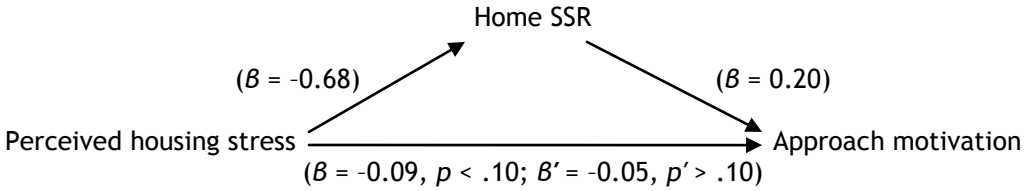
In Table 33 below, Home SSR predicted Approach motivation but Perceived housing stress did not. As Home SSR increased, Approach motivation increased. Earlier in the test of Hypothesis 3c, Perceived housing stress marginally predicted Approach motivation (B = -0.09, p = .06). The main effects here suggested that Home SSR further reduced the significance level for the path from Perceived housing stress to Approach motivation, as shown in the mediation model in Figure 18.

Table 33. Interaction test of Home SSR in predicting Approach motivation from Perceived housing stress.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Perceived housing stress	0.05	0.06	.05	.03**
Home SSR	0.16	0.05	.20**	
Step 2				
Perceived housing stress	0.07	0.06	.07	.05***
Home SSR	0.20	0.05	.26***	
Perceived housing stress * Home SSR	–0.16	0.05	–.15**	

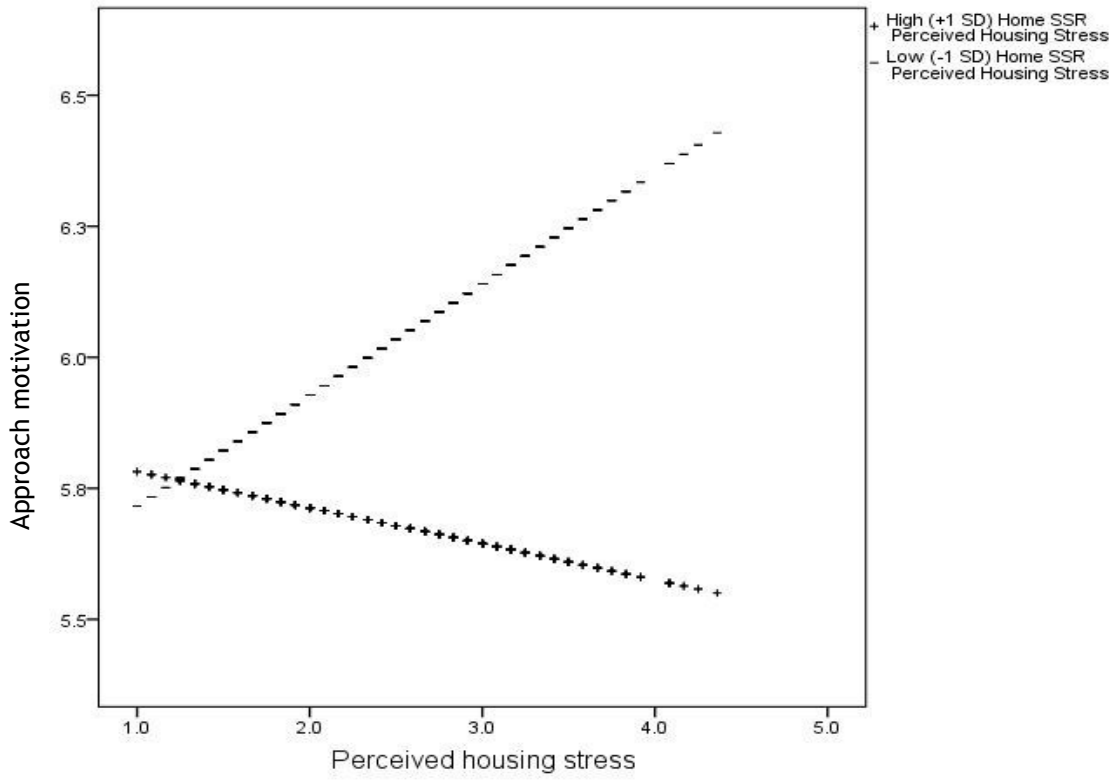
** $p < .01$ *** $p < .001$

Figure 18. Full mediation of Perceived housing stress by Home SSR in predicting Approach motivation.



Also in Table 33, the parameter for Home SSR increased from Step 1 ($B = 0.20$, $p < .01$) to Step 2 ($B = 0.26$, $p < .001$), which suggests that the interaction term, Perceived housing stress * Home SSR, suppressed the effect of some unspecified variable in predicting Approach motivation. In the Step 2 model, the interaction was significant and showed that Home SSR moderated the effect of Perceived housing stress on Approach motivation. The *F* value increased from 7.40 (2, 487) to 8.69 (3, 486). The simple slopes regression equation for students with low Home SSR (–1 *SD*) is: *Approach motivation = 5.50 + 0.21 * Perceived housing stress*. The simple slopes regression equation for students with high Home SSR (+1 *SD*) is: *Approach motivation = 5.85 + -0.07 * Perceived housing stress.*

Figure 19. Interaction of high and low levels of Home SSR with Perceived housing stress in predicting Approach motivation.



In Figure 19, students with low Home SSR (-1 *SD)* reported higher Approach motivation (β = 0.22, $p < .01$) with higher reported Perceived housing stress. Students with high Home SSR (+1 *SD)* had no significant association (β = –0.07, $p > .10$) between Perceived housing stress and Approach motivation. The data indicated a significant difference in how high versus low levels of Home SSR interact with Perceived housing stress in predicting Approach motivation, but the effect shown for students with low Home SSR did not have face validity, that is, it was not intuitively understandable.

Rather, the unexpected pattern in Figure 19 was explained by the full mediation of Perceived housing stress by Home SSR shown earlier in Figure 18, as well as by the further suppression of Perceived housing stress by the interaction term, Perceived housing stress * Home SSR, shown in Step 2 of Table 33. Thus the interaction displayed in Figure 19 actually modeled the effect of Home SSR in predicting Approach motivation, with no significant predictive value for Perceived housing stress.

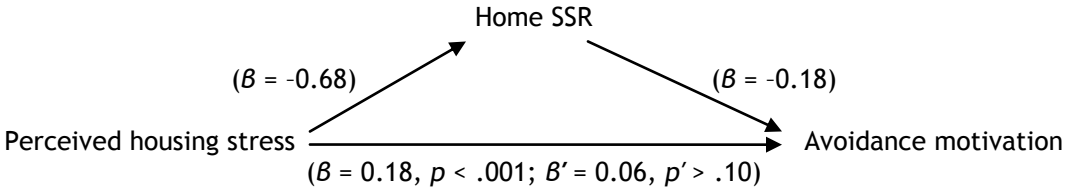
Table 34. Interaction test of Home SSR in predicting Avoidance motivation from Perceived housing stress.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Perceived housing stress	0.13	0.13	.06	.05***
Home SSR	-0.31	0.10	-.18**	
Step 2				
Perceived housing stress	0.12	0.13	.06	.05***
Home SSR	-0.33	0.11	-.19**	
Perceived housing stress * Home SSR	0.06	0.11	.03	

** $p < .01$ *** $p < .001$

In Table 34, Home SSR predicted Avoidance motivation but Perceived housing stress did not. As Home SSR decreased, Avoidance motivation increased. The results of Step 2 show that Avoidance motivation outcomes regressed on Perceived housing stress did not differ significantly at different levels of Home SSR. The test of Hypothesis 3a earlier showed that Perceived housing stress predicted Avoidance motivation ($\beta = 0.18$, $p < .001$). That it no longer does when Home SSR is included in the regression suggests a complete mediation effect. If so, Perceived housing stress must also predict Home SSR, as it did in the bivariate regression, *Home SSR = 3.65 + -0.87 * Perceived housing stress*. As Perceived housing stress decreased, Home SSR increased. Also significant was the bivariate regression, *Avoidance motivation = 4.14 + -0.38 * Home SSR*. The main effects in Table 34 show full mediation in the equation, *Avoidance motivation = 4.14 + 0.13 * Perceived housing stress + -0.31 * Home SSR*. Figure 20 illustrates the complete mediation effect.

Figure 20. Full mediation of Perceived housing stress by Home SSR in predicting Avoidance motivation.



In Table 35 below, Home SSR predicted Solo strategy but Perceived housing stress did not. As Home SSR increased, Solo strategy increased. Earlier in the test of Hypothesis 3c, Perceived housing

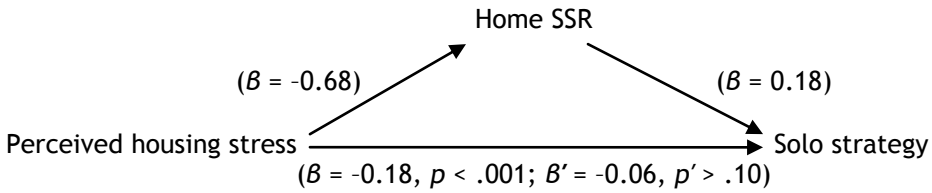
stress predicted Solo strategy (B = –0.18, p < .001). Table 35's main effects suggest that Home SSR completely mediated the path from Perceived housing stress to Solo strategy, as it did the path from Perceived housing stress to Avoidance motivation shown earlier in Figure 20. Below, Figure 21 displays the parameter change for Perceived housing stress in predicting Solo strategy.

Table 35. Interaction test of Home SSR in predicting for Solo strategy from Perceived housing stress.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Perceived housing stress	–0.07	0.07	–.06	.05***
Home SSR	0.16	0.06	.18**	
Step 2				
Perceived housing stress	–0.04	0.07	–.04	.09***
Home SSR	0.23	0.06	.25***	
Perceived housing stress * Home SSR	–0.27	0.06	–.21***	

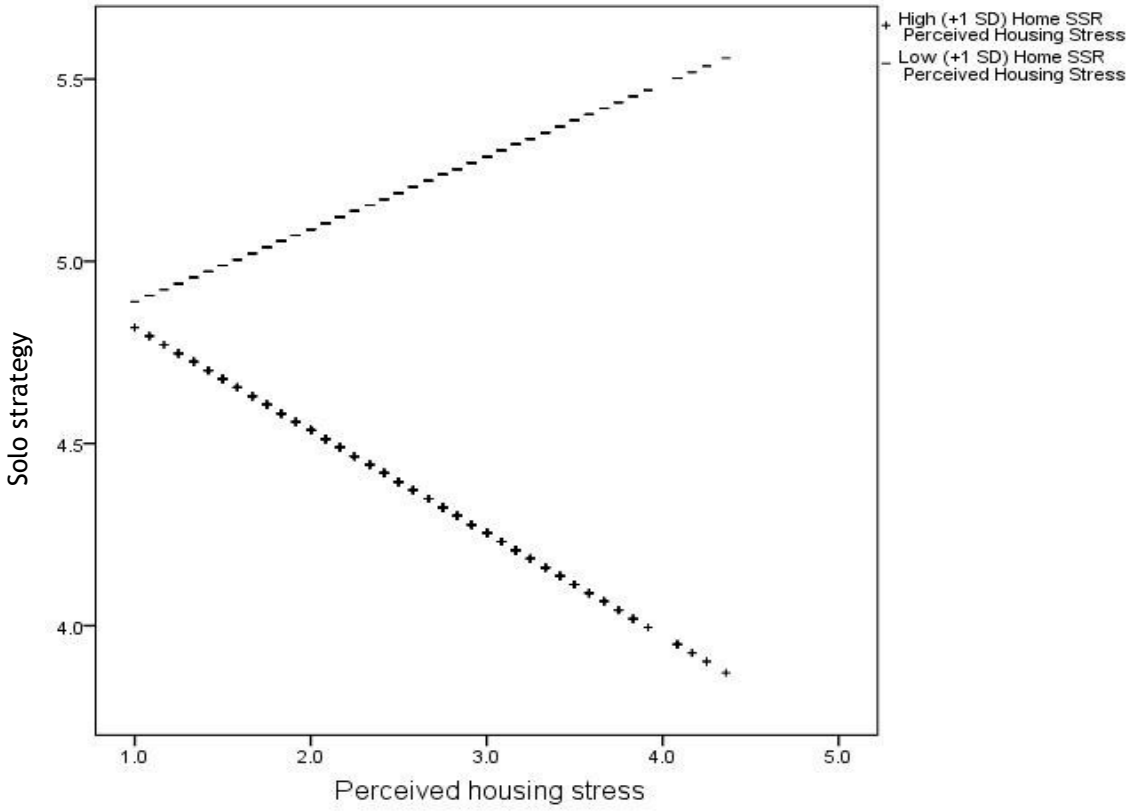
** p < .01 *** p < .001

Figure 21. Full mediation of Perceived housing stress by Home SSR in predicting Solo strategy.



In Step 2 of Table 35, the interaction term showed that Home SSR also moderated the effect of Perceived housing stress on Solo strategy. The F change from 12.71 (2,487) to 16.42 (3,486) was significant. Also, the parameter for Home SSR increased from Step 1 (B = 0.18, p < .01) to Step 2 (B = 0.25, p < .001), again suggesting that the interaction term suppressed the effect of some unspecified variable in predicting Solo strategy. The simple slopes regression equation for students with low Home SSR (-1 SD) is*: Solo strategy = 4.69 + 0.20 * Perceived housing stress*. The simple slopes regression equation for students with high Home SSR (+1 SD) is: *Solo strategy = 5.10 + -0.28 * Perceived housing stress*.

Figure 22. Interaction of high and low levels of Home SSR with Perceived housing stress in predicting Solo strategy.



In Figure 22, both levels of Home SSRs significantly predicted Solo strategy. Students with low Home SSR (–1 SD) reported higher overall Solo strategy than did students with high Home SSR (+1 *SD*). As Perceived housing stress increased, students with high Home SSR and students with low Home SSR increasingly diverged in their outcomes. For students with high Home SSR, as Perceived housing stress decreased (β = –0.24, p < .01), Solo strategy increased. For students with low Home SSR, as Perceived housing stress increased (β = 0.17, p < .05), Solo strategy increased. Thus, as Perceived housing stress increased, students who reported being more engaged in the home setting were less likely to make use of Solo strategy, while students who reported being less engaged in the home setting were more likely to make use of Solo strategy.

As in Figure 19, which showed the interaction of high and low Home SSR with Perceived housing stress in predicting Approach motivation, the results in Figure 22 do not have face-validity and are not

intuitively clear. As in the interaction model predicting Approach motivation in Table 33, Table 35 also shows that the parameter for Home SSR increased from Step 1 (β = 0.18, p < .01) to Step 2 (β = 0.25, p < .001). This suggested that the interaction term, Perceived housing stress * Home SSR, suppressed the effect of Perceived housing stress in predicting Solo strategy. Thus the interactions in Figure 22 actually modeled the effect of Home SSR in predicting Solo strategy, with no significant predictive role for Perceived housing stress. The high negative correlation between Perceived housing stress and Home SSR (r = –.68, p < .001) in Table 32 anticipated this suppression effect.

The next three sets of models test interaction effects for Campus SSR as moderator for Perceived housing stress in predicting Approach motivation, Avoidance motivation, and Solo strategy.

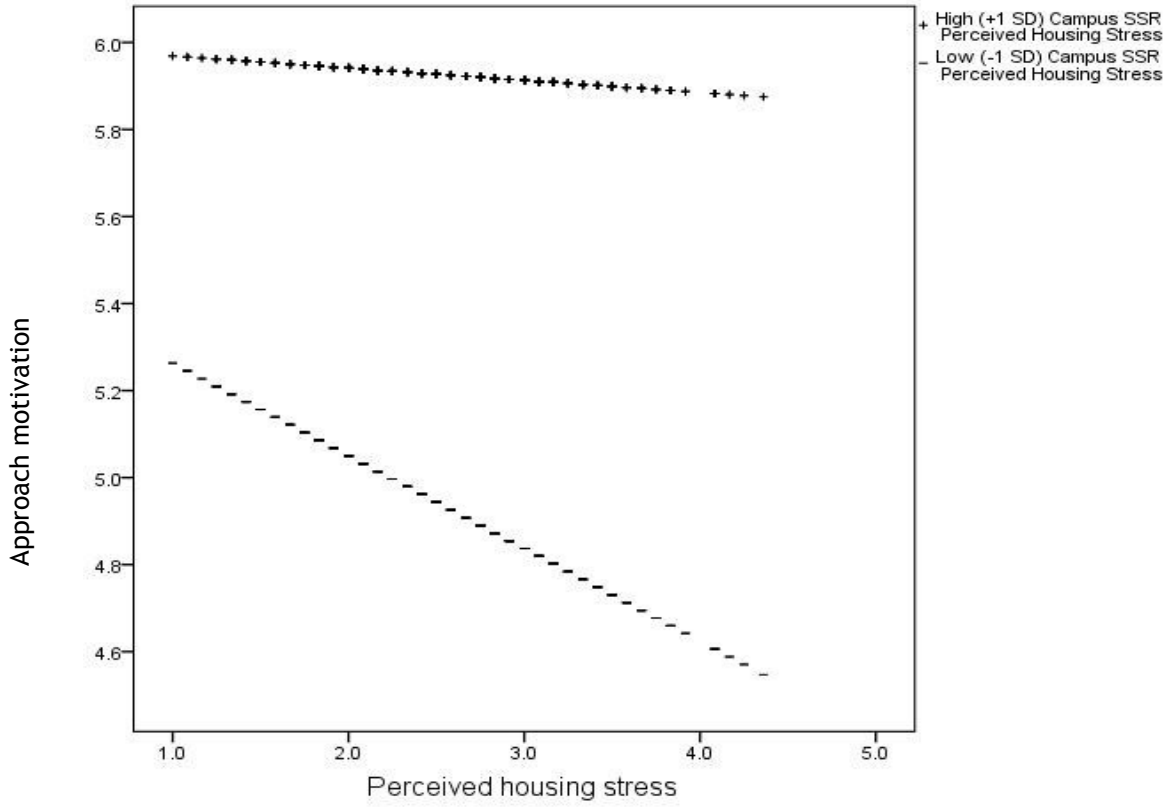
Table 36. Interaction test of Campus SSR in predicting Approach motivation from Perceived housing stress.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Perceived housing stress	–0.12	0.04	–.12**	.15***
Campus SSR	0.38	0.04	.38***	
Step 2				
Perceived housing stress	–0.12	0.04	–.12**	.16***
Campus SSR	0.38	0.04	.38***	
Perceived housing stress * Campus SSR	0.12	0.06	.09*	

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

In Table 36, Perceived housing stress and Campus SSR each predicted Approach motivation. As Perceived housing stress decreased and as Campus SSR increased, Approach motivation increased. In the Step 2 model, the interaction term moderated the effect of Perceived housing stress on Approach motivation. The *F* change from 43.93 (2, 487) to 30.88 (3, 486) was significant. The simple slopes regression equation for students with low Campus SSR (–1 *SD*) is: *Approach motivation = 5.48 + -0.21 Perceived housing stress*. The simple slopes regression equation for students with high Campus SSR (+1 SD) is: *Approach motivation = 6.00 + -0.03 Perceived housing stress*.

Figure 23. Interaction of high and low levels of Campus SSR with Perceived housing stress in predicting Approach motivation.



In Figure 23, students with high Campus SSR (+1 *SD)* had higher overall Approach motivation than did students with low Campus SSR (–1 SD). Students with low Campus SSR showed a significant decrease in Approach motivation (β = –0.22, p < .001) as Perceived housing stress increased. For students with high Campus SSR, the link between Perceived housing stress and Approach motivation was not significant. The negative effect of Perceived housing stress in predicting Approach motivation was stronger among students who reported lower levels of Campus SSR than among students who reported higher levels of Campus SSR.

In Table 37 below, Perceived housing stress predicted Avoidance motivation (as in Hypothesis 3) but Campus SSR did not. The results of Step 2 show that Avoidance motivation outcomes regressed on Perceived housing stress did not differ significantly at different levels of Campus SSR.

Table 37. Interaction test of Campus SSR in predicting Avoidance motivation from Perceived housing stress.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Perceived housing stress	0.41	0.10	.19***	.04***
Campus SSR	-0.08	0.10	-.04	
Step 2				
Perceived housing stress	0.41	0.10	.19***	.04**
Campus SSR	-0.08	0.10	-.04	
Perceived housing stress * Campus SSR	-0.01	0.14	.00	

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

Table 38. Interaction test of Campus SSR in predicting Solo strategy from Perceived housing stress.

Variable	*B*	*SE B*	*B*	Model R^2
Step 1				
Perceived housing stress	-0.24	0.05	-.20***	.08***
Campus SSR	0.27	0.05	.22***	
Step 2				
Perceived housing stress	-0.25	0.05	-.21***	.09***
Campus SSR	0.27	0.05	.22***	
Perceived housing stress * Campus SSR	0.14	0.08	.08†	

*** $p < .001$ † $p < .10$

In Table 38, Perceived housing stress and Campus SSR each predicted Solo strategy. As Perceived housing stress decreased and as Campus SSR increased, Solo strategy increased. In the Step 2 model, the interaction parameter showed that Campus SSR had only a marginally significant ($\beta = .08$, $p = .06$) moderating effect on Perceived housing stress in predicting Solo strategy.

Group differences in Self-regulated learning factors.

The previous section, Major Predictors, noted several group differences in the MSLQ factors. Appendix Table F.18 details demographic characteristics associated with significant differences in Approach and Avoidance motivations and Social and Solo strategies. *T*-tests of independent means gave lower mean Approach motivation for respondents in Filial households, and higher mean Approach motivation for immigrants. Avoidance motivation was higher for female respondents and those using all rooms for sleeping, and marginally higher among immigrants. Social strategy was significantly lower among respondents ages 18 to 21 and those living in Filial households, higher among immigrants, and marginally higher among those living in Primary households. Mean Solo strategy was higher among

female respondents and immigrants, and marginally higher among those living in Primary households. Mean Solo strategy was lower among respondents ages 18 to 21 and those living in Filial households.

Alternative models: Time orientation factors as mediators and moderators for Campus SSR in predicting Self-regulated learning factors.

Hypotheses 3e.4, 3e.5, and 3e.6 were retested to see whether any of the Time factors had a role in mediating or moderating Campus SSR in predicting Approach motivation, Avoidance motivation, or Solo strategy. Since the Time factors were not tested here for main effects, they were modeled indidually in a Step 3 hierarchical regression subsequent to the Step 2 interaction models.

Hypothesis 3e.4 stated that Campus SSR moderates the effect of Perceived housing stress in predicting Approach motivation. The results of that analysis found main effects for the predictor and moderator as well as a significant interaction effect. When Future orientation was added in a third hierarchical regression, it predicted Approach motivation (β = 0.29, p < .001) and also reduced the earlier parameter for the interaction term (β = 0.09, p < .05) so that it was no longer significant (β = 0.08, p = .05). When Present-fatalistic orientation was added in a third hierarchical regression, it predicted Approach motivation (β = -0.16, p < .001) and also reduced the earlier parameter for the interaction term (β = 0.09, p < .05) so that it was no longer significant (β = 0.08, p = .07). When Present-hedonistic orientation was added in a third hierarchical regression, it predicted Approach motivation (β = 0.10, p < .05) and also reduced the earlier parameter for the interaction term (β = 0.09, p < .05) so that it was no longer significant (β = 0.08, p = .05). Thus each of the three Time orientations fully mediated the interaction term, Perceived housing stress * Campus SSR, in predicting Approach motivation.

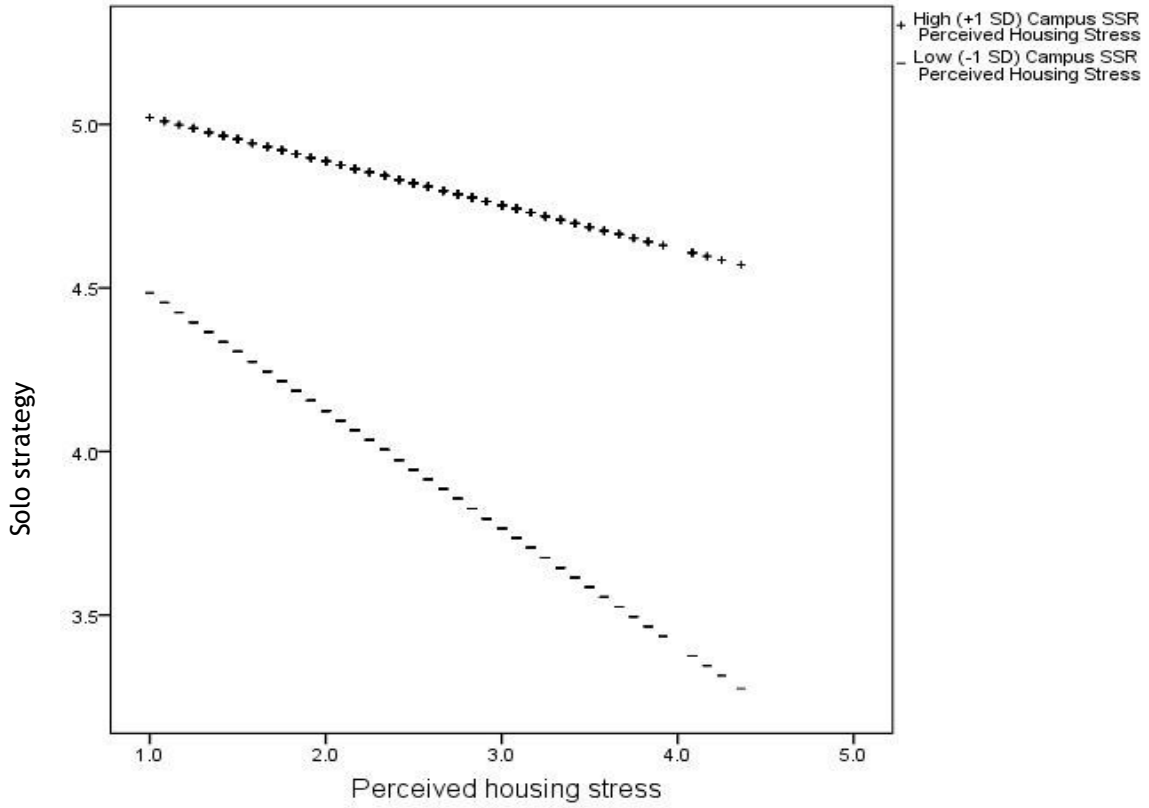
Hypothesis 3e.5 stated that Campus SSR moderates the effect of Perceived housing stress in predicting Avoidance motivation. The results of that analysis found a significant main effect only for Perceived housing stress but no significant moderation. When Future orientation was added in a third hierarchical regression, it did not predict Avoidance motivation nor did it alter the parameters neither for the main effects nor for the interaction term. When Present-fatalistic orientation was added in a third hierarchical regression, it predicted Avoidance motivation (β = 0.16, p < .01) but it did not alter

the parameters for the Step 1 main effects nor the Step 2 interaction term. When Present-hedonistic orientation was added in a third hierarchical regression, it did not predict Avoidance motivation nor did it alter the parameters for the Step 1 main effects, nor for the interaction term. Therefore, although Present-fatalistic orientation predicted Avoidance motivation independently of the other variables in the model, none of the three time orientations mediated the interaction term, Perceived housing stress * Campus SSR, in predicting Avoidance motivation.

Hypothesis 3e.6 stated that Campus SSR moderates the effect of Perceived housing stress in predicting Solo strategy. The results of that analysis found significant main effects for both predictor and moderator but only a marginally significant interaction effect. When Future orientation was added in a third hierarchical regression, it predicted Solo strategy (β = 0.36, p < .001) and it further reduced the marginally significant parameter for the interaction term (β = 0.08, p = .06; β' = 0.07, p' = .07). When Present-fatalistic orientation was added in a third hierarchical regression, it negatively predicted Solo strategy (β = -0.25, p < .001) and it further reduced the marginally significant parameter for the interaction term (β = 0.08, p = .06; β' = 0.07, p' > .10). When Present-hedonistic orientation was added in a third hierarchical regression, it negatively predicted Solo strategy (β = -0.12, p < .01), but it also increased the marginally significant parameter for the interaction term to a significant level (β = 0.08, p = .06; β' = 0.09, p' < .05). Thus all three Time factors predicted Solo strategy. Future orientation and Present fatalistic orientation weakened the marginally significant interaction term, but controlling for Present hedonistic orientation increased the moderating effect of Campus SSR on Perceived housing stress in predicting Solo strategy.

The simple slopes regression equation, controlled for Present-hedonistic orientation, for students with low Campus SSR (–1 *SD*) is: *Solo strategy = 4.80 + -0.36 Perceived housing stress*. The simple slopes regression equation, controlled for Present-hedonistic orientation, for students with high Campus SSR (+1 SD) is: *Solo strategy = 5.20 + -0.12 Perceived housing stress*.

Figure 24. Interaction of high and low levels of Campus SSR with Perceived housing stress in predicting Solo strategy, controlled for Present-hedonistic orientation.



In Figure 24, students with high Campus SSR (+1 *SD)* had higher overall Solo strategy than did students with low Campus SSR (-1 *SD*). The interaction for students with high Campus SSR was only marginally significant (β = –0.10, p = .08), but students with low Campus SSR showed a greater decrease in Solo strategy (β = –0.30, p < .001) as Perceived housing stress increased. The earlier test of Hypothesis 3e.6 found only a marginal difference *(*p = .08*)* between how high Campus SSR and low Campus SSR interacted with Perceived housing stress in predicting Solo strategy. Yet, when the effect of Present-hedonistic orientation is controlled, the negative effect of Perceived housing stress in predicting Solo strategy was stronger among students who reported a low level of Campus SSR than among students who reported a high level of Campus SSR.

SUMMARY OF RESULTS OF HYPOTHESES 3A TO 3E

Figure 25. Summary of significant findings for Hypotheses 3a to 3e.

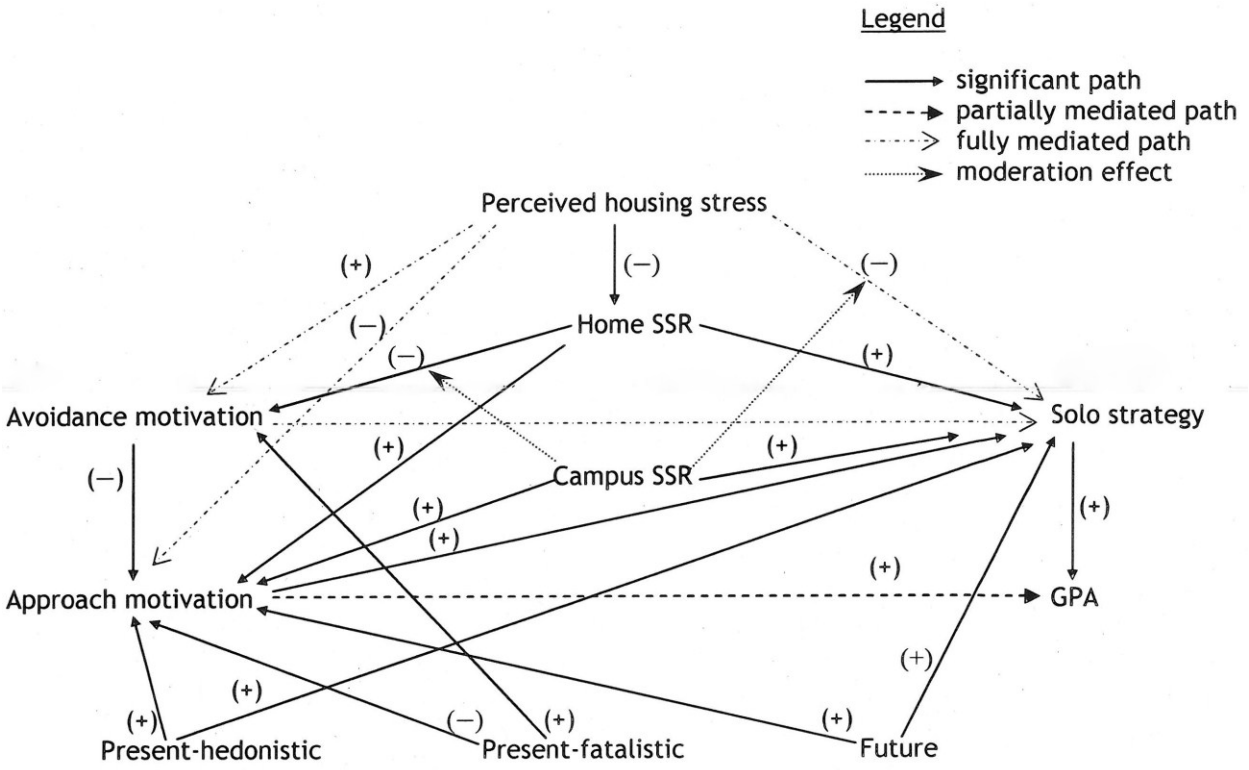


Figure 25 integrates the results of the tests of Hypotheses 3a through 3e, which linked Perceived housing stress to several academic outcomes. Perceived housing stress directly predicted lower Home SSR, and Home SSR in turn fully mediated the effects of Perceived housing stress on Avoidance motivation, Approach motivation, and Solo strategy. Home SSR was hypothesized, and found, to moderate the negative effect of Perceived housing stress on Approach motivation and Solo strategy. However, the simple slopes regressions indicated that a mediator role was more appropriate for Home SSR. Campus SSR moderated the negative effect of Perceived housing stress in predicting Approach motivation, but it only moderated the negative effect of Perceived housing stress in predicting Solo strategy when the model controlled for Present hedonistic orientation. Campus SSR directly predicted Approach motivation and Solo strategy. The three Time factors were hypothesized to

moderate several paths linking Perceived housing stress to academic outcomes, but none of the temporal interaction effects was significant. Instead the Time orientation factors only had main effects in predicting Self-regulated learning factors.

Figure 25 shows that all the endogenous variables downstream from Perceived housing stress lead to Solo strategy. Although Solo strategy only partially mediated the effect of Approach motivation in predicting GPA, Solo strategy was found to be the strongest endpoint predictor for GPA. However, the piecemeal process used to trace the numerous paths leading to Solo strategy obscures the interrelationships among the predictors upstream from Solo strategy (Edwards & Lambert, 2007). Structural equation modeling was used next to integrate the entire model, from Hypothesis 1 through Hypothesis 3e.

STRUCTURAL EQUATION MODELS

Structural equation modeling was done in two steps, a measurement model first and then a structural model (Anderson & Gerbing, 1988). The measurement model entailed retesting the factor structure of each of the seven measures, described in Chapter 2 and reported earlier in Chapter 3, and combining these into a single seven-factor CFA. Then, the structural model entailed specifying the paths among the factors and testing their mathematical interrelationships as well.

Some of the measures were split into lower-order factors in order to specify and test the hypothesized constructs and processes more precisely. The Perceived housing stress and Home SSR factors each consisted of both positive-valence and negative-valence items. Thus the Perceived housing stress factor was split into *Helplessness* and *Efficacy* (CFA 2 below), and the Home SSR factor was split into *Regulation* and *Dysregulation* (CFA 3 below). Also, the factor analyses and regressions of the MSLQ scale, described earlier in Chapters 2 and 3, relied on new composite measures, Approach motivation and Solo Strategy, because the factor structure of the original MSLQ scale could not be replicated in the current sample. However, in modeling learning motivations (CFA 5 below) and learning strategies (CFA 6 below), we returned to a smaller set of the original MSLQ factors most strongly associated with academic outcomes in the current sample. The chosen strategies, Effort regulation and Metacognitive self-regulation, were also found to have the strongest positive correlations with course grades in the

original research (Pintrich et al., 1993) as well as in a recent meta-analysis of 67 independent samples and 19,900 college student (Credé & Phillips, 2011). Appendix Table G details the parameters for the CFAs and SEMs.

Confirmatory Factor Analyses (CFAs)

The LISREL CFA results are shown below in the sequence of their appearance in the larger SEM later. Appendix Table G.1 gives item details for each CFA model. This sequence reflects a process-oriented causal logic that is elaborated in the full integrated structural model described afterward. Appendix Table G.2 lists the SEM factor loadings and Appendix Table G.3 summarizes the Goodness-of-fit indicators for all of the CFAs and SEMs described below.

CFA 1: Interior inadequacy

The seven difference scores for Interior inadequacy gave a three-factor CFA model with CFI = 1.00, RMSEA = 0.046 (0.017, 0.073), and p-value for Test of Close Fit = 0.60, indicating good fit. The three factors were labeled *xSTANDRD, xSPACE*, and *xRETREAT*. The xSTANDRD factor measured the inadequacy of basic concrete aspects of the home environment and included Item II.4, 24, "a place to live where I think the interior (walls, floor, furniture, etc.) is nice to look at," and Item II.6, 26, "a place to live where things work the way that they are supposed to (plumbing, electricity, etc.). The xSPACE factor measured the inadequacy of available space for collective household use, and included Item II.5, 25, "enough comfortable space inside the home to invite friends or relatives to visit," Item II.7, 27, enough places inside the household for storage, to put away the things that belong to me," and Item II.8, 28, "a place inside my home where everybody who lives there can be together comfortably." The xRETREAT factor measured the inadequacy of private spaces, and included Item II.9, 29, "a place inside the household where some of the people can have privacy together apart from others in the home," and Item II.10, 30, "a place inside my home where I can spend quiet time alone whenever I want to."

CFA 2: Perceived housing stress

All twelve scale items (Appendix B, Section III) were initially specified in a two-factor model with latent variables labeled *HELPLESS* and *EFFICACY*. CFI was 0.90 but RMSEA was 0.12 (0.11, 013) and

the *p*-value for Test of Close Fit was 0.00, the latter two figures indicating poor fit. Standardized residuals ranged from -5.76 to 11.51. Several alternate models were tested but the best fit was obtained by combining 11 of the 12 the items into five parcels, within the two latent factors, based on correlated errors and also the content of each question.[20] The resulting CFA had CFI = 0.99, RMSEA = 0.048 (0.0, 0.093), and *p*-value for Test of Close Fit = 0.46, indicating good fit.

CFA 3: Home SSR

The earlier exploratory factor analysis found that 10 of the 12 Home SSR items (Appendix B, Section V) made up two factors distinguished by the items' positive or negative valence. Here, the CFA was re-specified as a three-factor model, which split the positive-valence items according to whether they addressed self-regulation with regard to physical affordances or with regard to other household members. This initial three-factor model had CFI = 0.99, RMSEA = 0.076 (0.062, 0.090), and *p*-value for Test of Close Fit = 0.00, the latter two figures indicating poor fit. Standardized residuals ranged from -3.80 to 5.11. The CFA was rerun with one parcel combining a pair of items with the highest correlated errors; both items pertained to cooperating with other household members. The latter CFA gave a model with CFI = 0.99, RMSEA = 0.042 (0.002, 0.055), and *p*-value for Test of Close Fit = 0.60, indicating good fit.

CFA 4: Campus SSR

The 11-item Campus SSR scale (Appendix B, Section VII) contained eight positive-valence items and three negative-valence items. In the earlier EFA, two of the positive-valence items had inconsistent loadings. Since engagement with the campus environment was hypothesized to be an adaptive response to an inadequate or stressful home environment, the CFA for the Campus SSR latent factor used only the six strongest positive-valence items. The CFA gave a single-factor model with CFI = 0.97, but with RMSEA = 0.067 (0.040, 0.095) and *p*-value for Test of Close Fit = 0.14, the latter two figures indicating only adequate fit. All items were significant, but Item VII.1, "I have certain places on

[20] For example, Parcel 2 in the Helpless factor combined item III.3, "How often have you felt nervous and stressed by how crowded your home was?" and item III.9, "How often have you been angry because you didn't have enough personal 'space' for yourself at home?" In Appendix Table F.4, these items are significantly correlated ($r = .62$, $p < .001$), and in the earlier CFA with RMSEA = 0.12 described for Perceived housing stress, the standardized residual for these two items was 6.11. Appendix Table G.1 lists the five parcels used in the respecified CFA 2, and includes the text of each of the 11 items.

campus where I know I can focus on my school work," had two standardized residuals greater than 3.0 and one modification index greater than 10.0. Removing this item gave a single-factor model with CFI = 1.00, RMSEA = 0.006 (0.00, 0.063), and *p*-value for Test of Close Fit = 0.86, indicating good fit.

CFA 5: Learning motivations

The initial CFA used the three Task Value items and the four (of five) Self-efficacy items with highest factor loadings. Task Value items measured the respondent's belief that a learning activity is worthwhile and Self-Efficacy items measured the respondent's level of confidence about attaining academic outcomes. These two Learning motivation factors were chosen because they correlated most strongly with academic outcomes in both the original MSLQ (Pintrich et al., 1993) and in the current sample. (Appendix Table F.17 shows *r* values for both samples.) The resulting model had CFI = 0.96, RMSEA = 0.074 (0.057, 0.090), and *p*-value for Test of Close Fit = 0.07, the latter two figures indicating poor fit. One Self-efficacy item with high correlated errors both within and across factors was deleted. The resulting six-item, two-factor, CFA had CFI = 1.00, RMSEA = 0.027 (0.0, 0.064), and p-value for Test of Close Fit = 0.82, indicating good fit.

CFA 6: Learning Strategies

Three MSLQ latent factors made up the Solo strategies sub-factor identified in the Measures section earlier in Chapter 3. In their validation sample, Pintrich et al. (1993) found that Metacognitive Self-Regulation, Time and Study Environment Management, and Effort Regulation latent factors were each significantly correlated with course final grade. Yet here, Study Environment items were omitted from the second MSLQ latent factor because the new SSR scale measured in more detail students' study environment management strategies. Also, the MSLQ Time management items measured similar constructs as the ZTPI temporal factors. Therefore, the CFA here used only the Metacognitive Self-Regulation and Effort Regulation items from the current questionnaire. Metacognitive self-regulation entails awareness of one's own thought processes and the use of strategies to facilitate understanding. Effort regulation entails task persistence towards academic goals.

Regression using the six Metacognitive Self-regulations items found that only three significantly predicted GPA in the current sample:

VI.27. When I become confused about something I'm reading for a course, I go back and try to figure it out. (β = 0.16, p < .01.)

VI.36. I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for a course. (β = 0.10, p < .05).

VI.42. When studying for a course I try to determine which concepts I don't understand well. (β = 0.16, p < .01.)

Regression using the four Effort Regulation items found that only two significantly predicted GPA in the current sample:

VI.30. I work hard to do well in my courses even if I don't like what we're doing in them. (β = 0.18, p < .001.)
VI.40. Even when course materials are dull and uninteresting, I manage to keep working until I'm finished. (β = 0.22, p < .001.)

CFA using the three Metacognitive Self-Regulation items and the two Effort Regulation items together gave a single-factor model with CFI = 0.99, RMSEA = 0.045 (0.0, 0.086), and p-value for Test of Close Fit = 0.52, indicating good fit. A two-factor model had CFI = 0.99, RMSEA = 0.055 (0.009, 0.099), and p-value for Test of Close Fit = 0.36, the latter two figures indicating only adequate fit.

CFA 7: Time orientations

The latent factors for Future, Present-fatalistic, and Present-hedonistic orientations had been hypothesized to act as moderators at several points in the model. Hierarchical regressions found temporal interaction effects among the Interior inadequacy, Home SSR, and Perceived housing stress predictors. (However, with the Campus SSR, Learning motivations, and Learning strategies scales, the temporal factors had only main effects.) Since the items within these latent factors were to be used to calculate interaction indicators, the objective of the CFA for the temporal factors was to achieve a parsimonious model with fewest items, minimal correlated errors, and smallest modification indices. The best-fitting model had three items in each of three latent factors, no significant correlated errors nor modification indices, and good fit, with CFI = 0.96, RMSEA = 0.033 (0.007, 0.053), and p-value for Test of Close Fit = 0.91.

CFA 8: Consolidated Measurement Model

A CFA model with 44 items in 15 latent factors had adequate fit, with CFI = 0.91 and RMSEA = 0.059 (0.057, 0.062). However, the p-value for Test of Close Fit was 0.00, indicating that the

population RMSEA for this overall CFA was likely to differ significantly from zero. Ten pairs of items had correlated residuals with absolute values between 10.0 and 12.5, yet these all reflected meaningful similarities across latent constructs. For example, items about crowding in the Interior inadequacy scale had high correlated residuals with items about crowding on the Perceived housing stress scale.

Structural Models

Four smaller structural models for the four segments of the overall model were first tested. The first segment linked Household density and Interior inadequacy with Perceived Housing stress and also modeled an interaction effect for time orientation. The second segment linked Perceived housing stress with Home SSR and Campus SSR. The third segment linked Home SSR and Campus SSR with Learning motivations. The fourth segment linked Learning motivations with Learning strategies. An integrated structural model then tested the four segments together as a single combined path model and measurement model. Finally, the temporal factors were introduced at the points indicated by the results of regression models from earlier hypothesis testing. Appendix Table G.2 lists the factor loadings and diagnostic data and Appendix Table G.3 summarizes the Goodness-of-fit indicators for all of the SEMs described below.

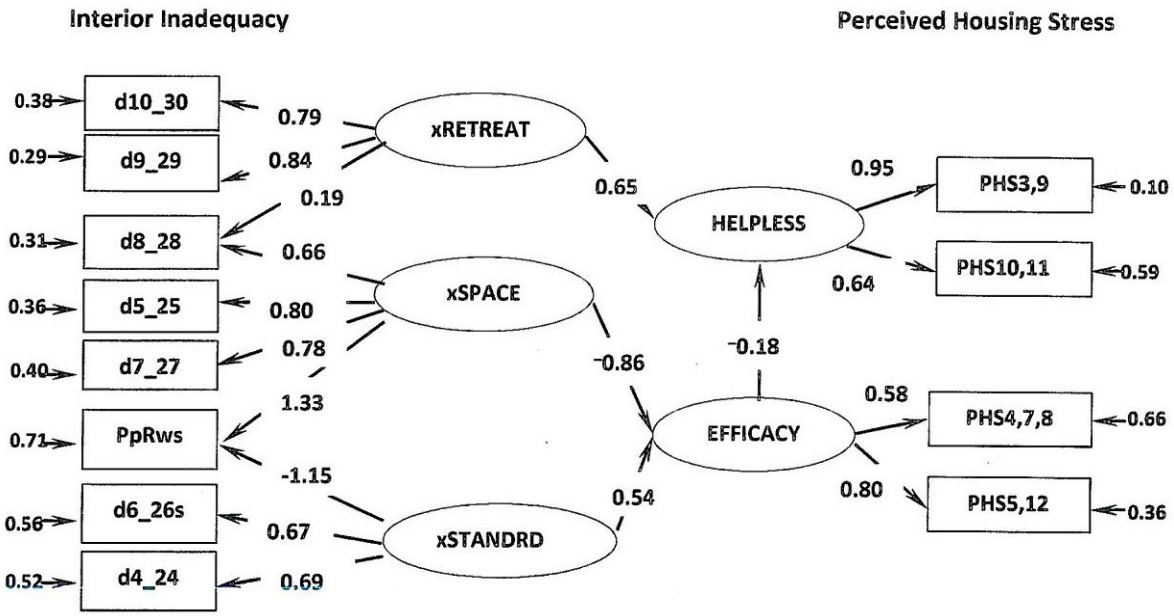
SEM 1: Linking Interior Inadequacy with Perceived Housing Stress.

The first segment linked Interior inadequacy and Perceived housing stress and later modeled an interaction effect for time orientation. One of the five Perceived housing stress parcels included in the earlier CFA had been calculated from items pertaining to the physical condition of the home (Appendix B, items III.2 and III.6). This parcel was excluded from the SEM for this segment because it had several highly correlated residuals (> 8.0) with items in the Interior inadequacy scale that also pertained to the physical condition of the home.

The model shown in Figure 26.a below had good fit, with CFI = 0.99, RMSEA = 0.036 (0.020, 0.050), and *p*-value for Test of Close Fit = 0.96. The inadequacy of retreat affordances, xRETREAT, was positively linked to the Helpless factor of Perceived housing stress, and the inadequacy of other spatial affordances, xSPACE, was negatively linked to the Efficacy factor of Perceived housing stress. The single indicator for Housing density, Persons per room (the γ item labeled “PpRws” in Figure 26.a)

loaded on both xSPACE (λ = 1.33, *t* = 3.93), the latent factor representing inadequacy of spatial affordances other than retreat, and xSTANDRD (λ = -1.15, *t* = -3.17), the latent factor representing inadequacy of the household's state of physical repair and furnishings. However, the latter negative loading was unexpected because it suggested that household density was inversely associated with inadequate state of repair and furnishings. Also, the xSTANDRD latent factor had a positive path coefficient (*β* = 0.54, *t* = 2.19) with relation to the Efficacy latent factor of the Perceived housing stress scale, which suggested that an inadequate state of repair and furnishings, xSTANDRD, was associated with higher perceptions of efficacy in the household; yet, the xSTANDRD latent factor of the Interior inadequacy scale was not significantly related to the Helpless latent factor of the Perceived housing stress scale.

Figure 26.a. Structural model for Interior inadequacy and Perceived housing stress.



Other versions of this SEM were tried. When the negative path between Persons per room and xSTANDRD was fixed, xSTANDRD had no significant path to either of the two Perceived housing stress latent factors, and model RMSEA increased to 0.050 (0.037, 0.063), with *p*-value for Test of Close Fit = 0.49. When the two remaining xSTANDRD items were re-specified to the xSPACE latent factor, RMSEA

remained at 0.050 (00.37, 0.063), with p-value for Test of Close Fit = 0.49. Omitting the xSTANDRD latent factor and its two original items improved model fit, with CFI = 0.99, RMSEA = 0.037 (0.017, 0.054), and *p*-value for Test of Close Fit = 0.89. Therefore, the two measures associated with the physical repair and furnishings of the household did not contribute to the goodness-of-fit for the SEM linking Interior Inadequacy to Perceived housing stress. It is not clear whether these two counterintuitive findings for xSTANDRD were due to a statistical suppression effect[21] for Persons per room[22], or instead to meaningful differences among groups of respondents within the sample. Possible interpretations of these unexpected effects are discussed later in Chapter 4.

For theoretical reasons, Persons per room was respecified to load on xRETREAT (λx = 0.33, t = 6.87 in Figure 26.b) rather than xSPACE (λx = 0.30, t = 6.23 in an earlier SEM). The earlier literature review suggests that the inadequacy of household affordances for retreat and cognitive restoration would be more directly relevant to Perceived housing stress than would the inadequacies represented by xSPACE. Finally, an item about gathering affordances (d8_28, "a place inside my home where everyone who lives there can be together comfortably") that had cross-loaded to both the xRETREAT and xSPACE factors was now constrained to load only on the latter. Figure 26.b shows the revised model, with CFI = 0.99, RMSEA = 0.037 (0.017, 0.054), and *p*-value for Test of Close Fit = 0.89.

Figure 26.b below shows that inadequacy of retreat affordances, xRETREAT, had a direct positive link to the HELPLESS latent factor while inadequacy of other spatial affordances, xSPACE, had a direct negative link only to the EFFICACY latent factor. Since lack of retreat affordances within the household are more detrimental to cognitive restoration than are lack of social gathering affordances, the hypothesized moderating role of time orientation was tested on the path between xRETREAT and Helpless, rather than the path between xSPACE and EFFICACY.

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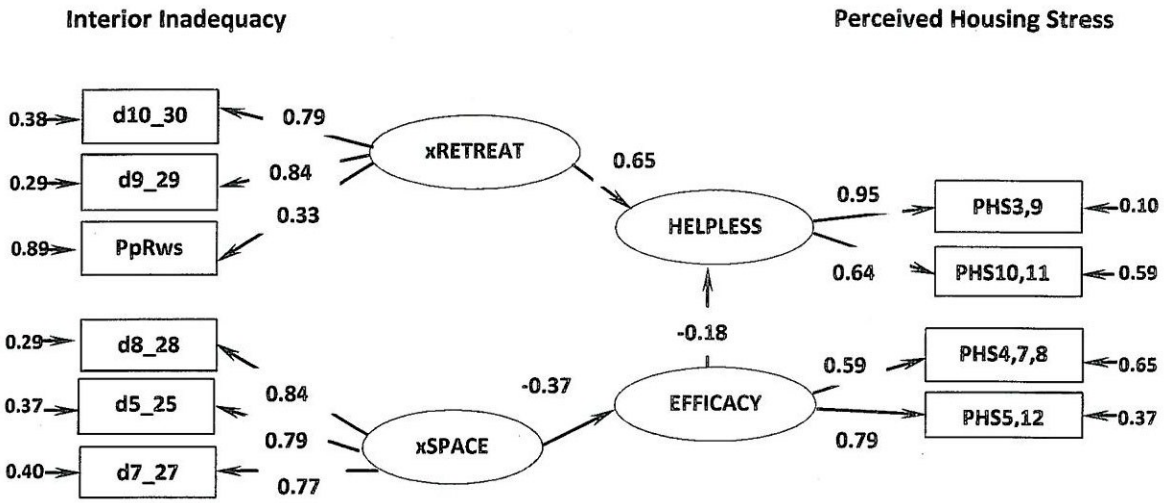
[21] Suppressors do not generally correlate with the outcome variable (Maassen & Bakker, 2001) yet in Figure 26.a, xSTANDARD did significantly predict the EFFICACY factor of Perceived housing stress.

[22] The loading for PpRws to xSPACE was λx = 1.33, t = 3.93 when also cross-loaded to xSTANDARD at λx = −1.15, t = −3.17, but λx = 0.30, t = 6.23 when specified only to xSPACE.

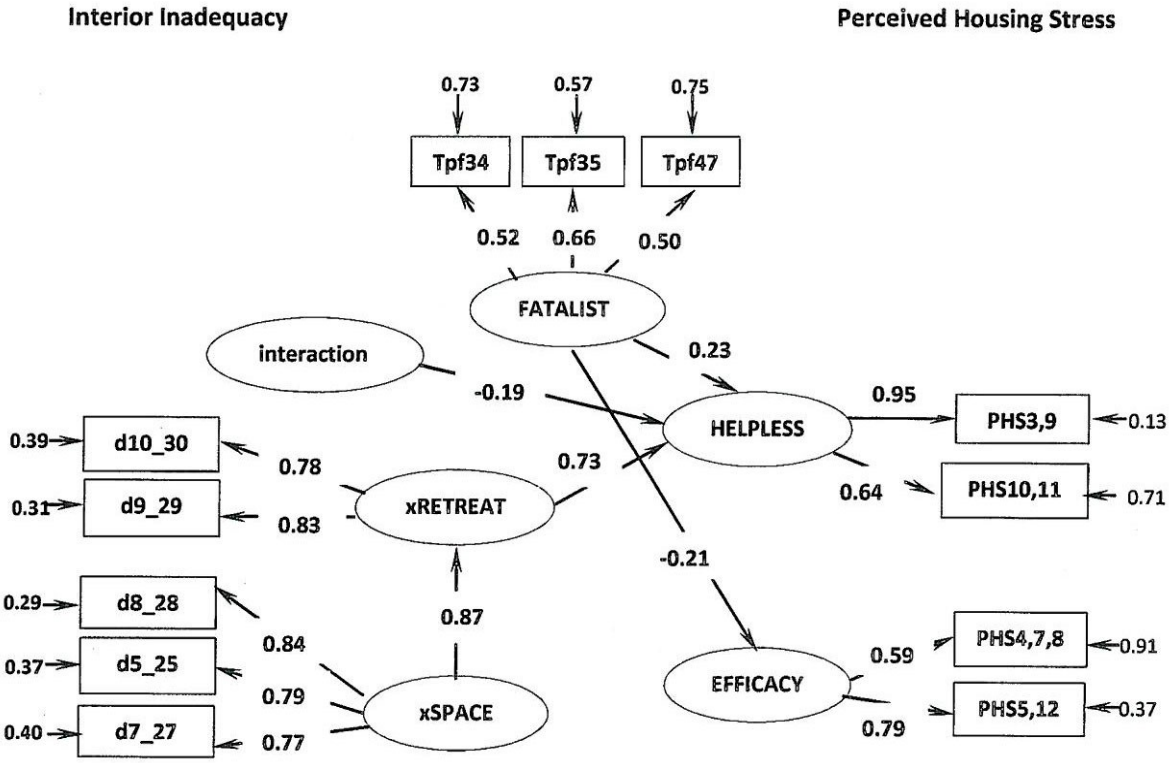
Figure 26.b. Respecified structural model for Interior inadequacy and Perceived housing stress.



Hypothesis 2d earlier stated that cases high in Future time orientation would have an attenuated association between housing inadequacy and Perceived housing stress. Yet, the interaction effect for Future orientation was found to be the opposite of that hypothesized. A high level of Future orientation amplified rather than attenuated the effect of Interior inadequacy on Perceived housing stress (Figure 7). In contrast, as Interior inadequacy increased, a high level of Present-fatalistic orientation was found to lessen the rate of increase in Perceived housing stress (Figure 8). Since the interaction effect found for Future time orientation in the test of Hypothesis 2d operated in the reverse direction of that expected and thus required more investigation, the Present-fatalistic orientation factor was tested as the temporal moderator in this model instead. The resulting SEM had good fit, with CFI = 0.96, RMSEA = 0.044 (0.037, 0.050), and *p*-value for Test of Close Fit = 0.52. However, the three orthogonalized residuals computed from the Persons per room measure did not have significant loadings onto the latent factor representing the interaction of xSPACE and Present-fatalistic orientation. Orthogonalized residuals were recomputed and the SEM rerun using only the two difference-score indicators for xRETREAT and the three indicators for Present-fatalistic orientation. The resulting interaction model (Figure 26.c) had good fit, with CFI = 0.97, RMSEA = 0.042(0.033, 0.050), and *p*-value for Test of Close Fit = 0.95. The path parameter from the Fatalist temporal factor to the Helpless factor was positive (β = 0.23, t = 4.32) and the path parameter from the interaction to

the Helpless factor was negative (β = -0.19, t = -3.19), consistent with the earlier findings in Figure 8. Higher Present fatalistic orientation was associated with greater perceived helplessness; yet, as the inadequacy of retreat affordances increased, a high level of Present-fatalistic orientation was found to lessen the rate of increase in perceived helplessness. Therefore, among students with higher Present fatalistic orientation, the increase in perceived helplessness was dampened as the ability to retreat within the household decreased. Possible interpretations of this finding and the relevance of group differences found earlier in Measures section of Chapter 2 are discussed later in Chapter 4.

Figure 26.c. SEM interaction effect of Present fatalistic orientation in predicting Perceived housing stress from Interior inadequacy.

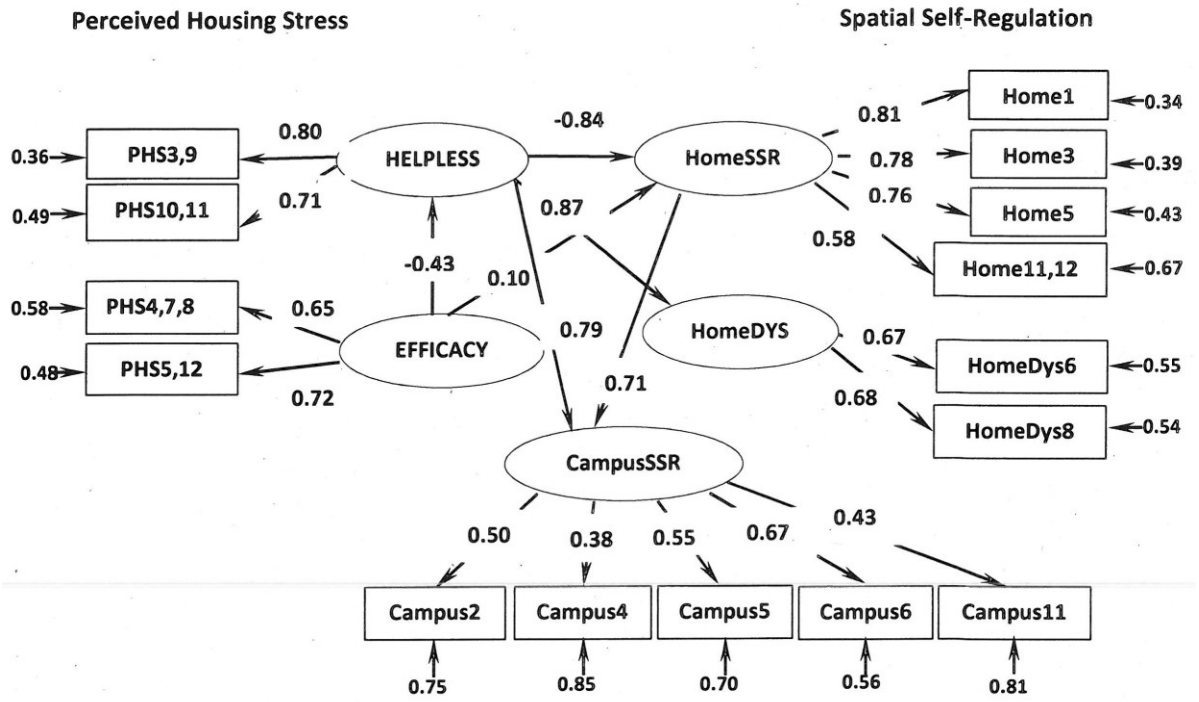


SEM 2: Linking Perceived housing stress with Home SSR and Campus SSR.

The second segment linking Perceived housing stress with both Home SSR and Campus SSR (Figure 27) had good fit (with CFI = 0.98, RMSEA = 0.044 (0.034, 0.054), and p-value for Test of Close Fit = 0.81). The HELPLESS latent factor of the Perceived housing stress scale was negatively associated

with Home SSR, positively associated with HomeDYSR (the home dysregulation latent factor), and positively associated with Campus SSR. The EFFICACY latent factor of the Perceived housing stress scale was positively associated with Home SSR but had no significant association with HomeDYS.

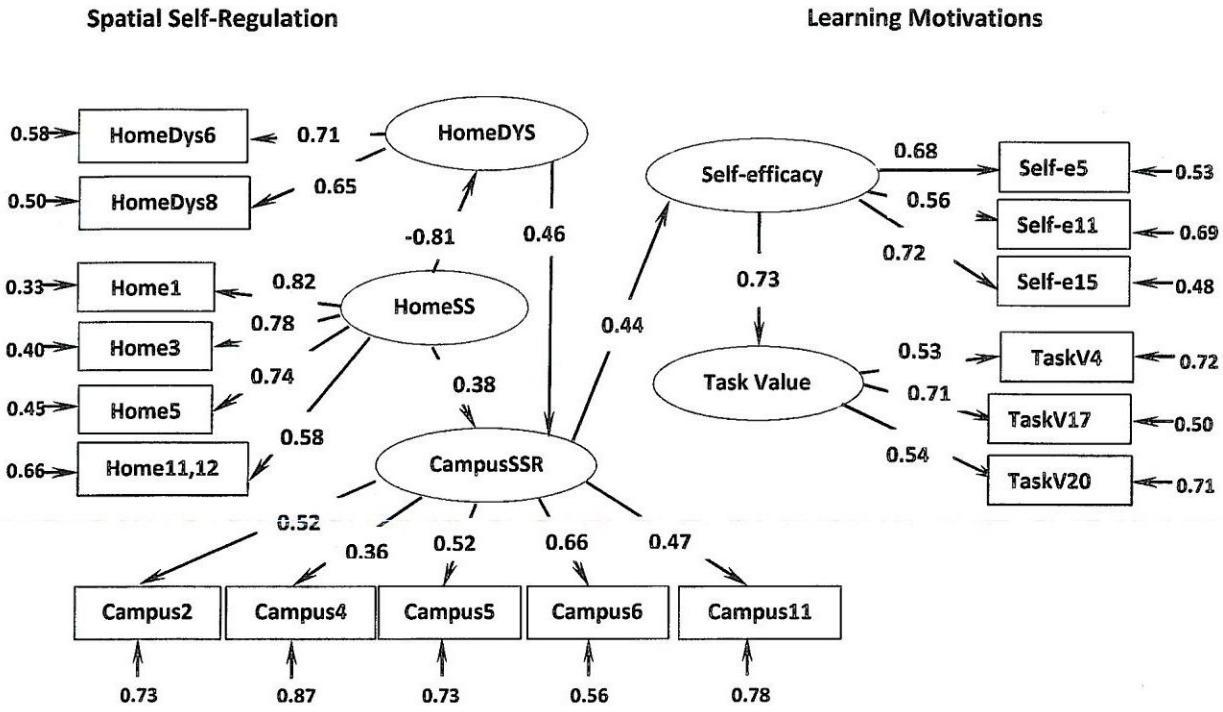
Figure 27. Structural model for Perceived housing stress and Spatial self-regulation.



SEM 3: Linking Home SSR and Campus SSR with Learning motivations.

The third segment linking Home SSR and Campus SSR with Learning motivations (Figure 28) had good fit, with CFI = 0.97, RMSEA = 0.042 (0.033, 0.050), and *p*-value for Test of Close Fit = 0.94. Home SSR and HomeDYS were both positively associated with Campus SSR. Campus SSR had a positive association with Self-efficacy but no significant link to Task value except indirectly working through Self-Efficacy. The path from Self-efficacy to Task value was positive.

Figure 28. Structural model for Spatial self-regulation and Learning motivations.

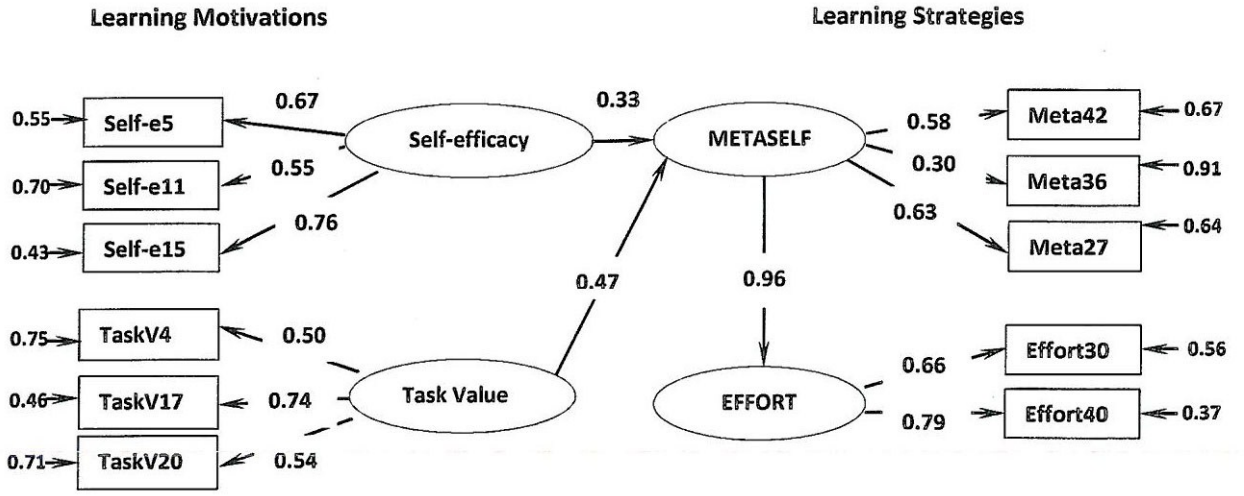


SEM 4: Linking Learning Motivations with Learning strategies.

The fourth segment linking Learning motivations with Learning strategies (Figure 29) had good fit, with CFI = 0.98, RMSEA = 0.049 (0.035, 0.063), and *p*-value for Test of Close Fit = 0.51. Self-efficacy and Task value were both positively associated with Metacognitive self-regulation but neither was significantly linked to Effort regulation except indirectly through Metacognitive self-regulation. The path from Metacognitive self-regulation to Effort regulation was positive. As well, Effort regulation was found to be the endpoint latent factor, as suggested in the earlier test of CFA 6, Learning strategies. Of the ten strategy items used in the survey instrument, the five strategies items included earlier in the test of CFA 6 were chosen because they were the only significant predictors of GPA in the study sample; of those five items, the two Effort regulation items were more significant predictors ($p < .001$) of GPA than were the three Metacognitive self-regulation items ($p < .05$). A further SEM was tested adding GPA as a single exogenous endpoint indicator measured without error. Goodness-of-fit improved, with CFI = 0.98, RMSEA = 0.043 (0.030, 0.056), and *p*-value for Test of Close Fit = 0.79. The

path coefficient from Effort to GPA was significant (β = 0.40, t = 7.60). However, all of the other λ, γ, and ß standardized coefficients were either identical to, or differed by only .01 from, the coefficients in Figure 26.c. Including GPA as the exogenous endpoint improved model fit, but it did not significantly affect any of the parameters shown in Figure 26.c. Therefore, in the fully integrated SEM shown later in Figure 31, the Effort latent factor will be considered a reliable precedent measure for GPA.[23]

Figure 29. Structural model for Learning motivations and Learning strategies.



Figures 30, 31, and 32 appear on the following pages. Figure 30 integrates the paths from Perceived housing stress to Learning strategies. Fit for this portion of the model was good, with CFI = 0.96, RMSEA = 0.047 (0.042, 0.053), and *p*-value for Test of Close Fit = 0.54. Yet as in Figure 28, no significant path linked HomeSSR or HomeDYSR to Campus SSR. Also, no significant paths linked the Perceived housing stress factors to Campus SSR.

Figure 31 adds temporal effects to the model shown in Figure 30. Earlier regression tests of Hypothesis 3d found that the temporal latent factors did not moderate any of the paths between Perceived housing stress and Learning strategies, though several significant main effects existed. Therefore, Figure 31 included no interaction terms. Fit for this portion of the model was good, with CFI = 0.95, RMSEA = 0.040 (0.036, 0.044), and *p*-value for Test of Close Fit = 0.99. Of the two Perceived

[23] A motivation for modeling the full SEM without GPA is to develop a framework that may be replicated in samples where student GPA may be not be available, for example, in anonymous surveys or in the initial measures of longitudinal studies where new students do not yet have a transcript record.

housing stress latent factors, Efficacy had positive significant paths to Home SSR (*β* = 0.93 *t* = 6.65) and to Campus SSR (β = 1.07, *t* = 2.11) but no direct path to HomeDYSR; Helpless had positive significant paths to HomeDYSR (*β* = 0.31, *t* = 2.54) and to Campus SSR (*β* = 1.03, *t* = 2.08) but no path to Home SSR. Of the three Spatial self-regulation latent factors, Home SSR had a negative path to HomeDYSR (*β* = -0.54, *t* = -4.44), but neither Home SSR nor HomeDYSR linked to Campus SSR nor to any of the Learning motivations or Learning strategies. Campus SSR linked only to Self-efficacy for learning (*β* = 0.58, *t* = 5.94), but not to any of the other Learning motivations or Learning strategies. The relationships among the Learning motivation and Learning strategy latent factor were preserved from those described earlier in Figure 29.

In the model shown in Figure 31, temporal latent factors had several main effects in the paths from Perceived housing stress to Learning strategies. Future orientation had a positive path to Campus SSR (*β* = 0.38, *t* = 3.26) and to the Learning strategy, EFFORT (β = 0.25, *t* = 3.17). Present-fatalistic orientation had a positive path to HomeDYSR (*β* = 0.28, *t* = 4.22) and negative paths to Self-efficacy for learning (*β* = –0.22, *t* = –3.14), Task value (*β* = –0.18, *t* = –2.59), and to Metacognitive self-regulation (*β* = –0.18, *t* = –2.69). Present-hedonistic orientation linked only to Campus SSR (*β* = 0.37, *t* = 3.88).

Introducing the temporal factors to this portion of the model served to link the housing factors in the Perceived housing stress and Spatial self-regulation constructs with the campus environment and downstream effects in Learning motivations and Learning strategies. EFFICACY linked positively to Campus SSR (β = 1.07, *t* = 2.11), and HELPLESS also linked positively to Campus SSR (β = 1.03, *t* = 2.08)

Figure 30. Structural model for paths from Perceived housing stress to Learning strategies.

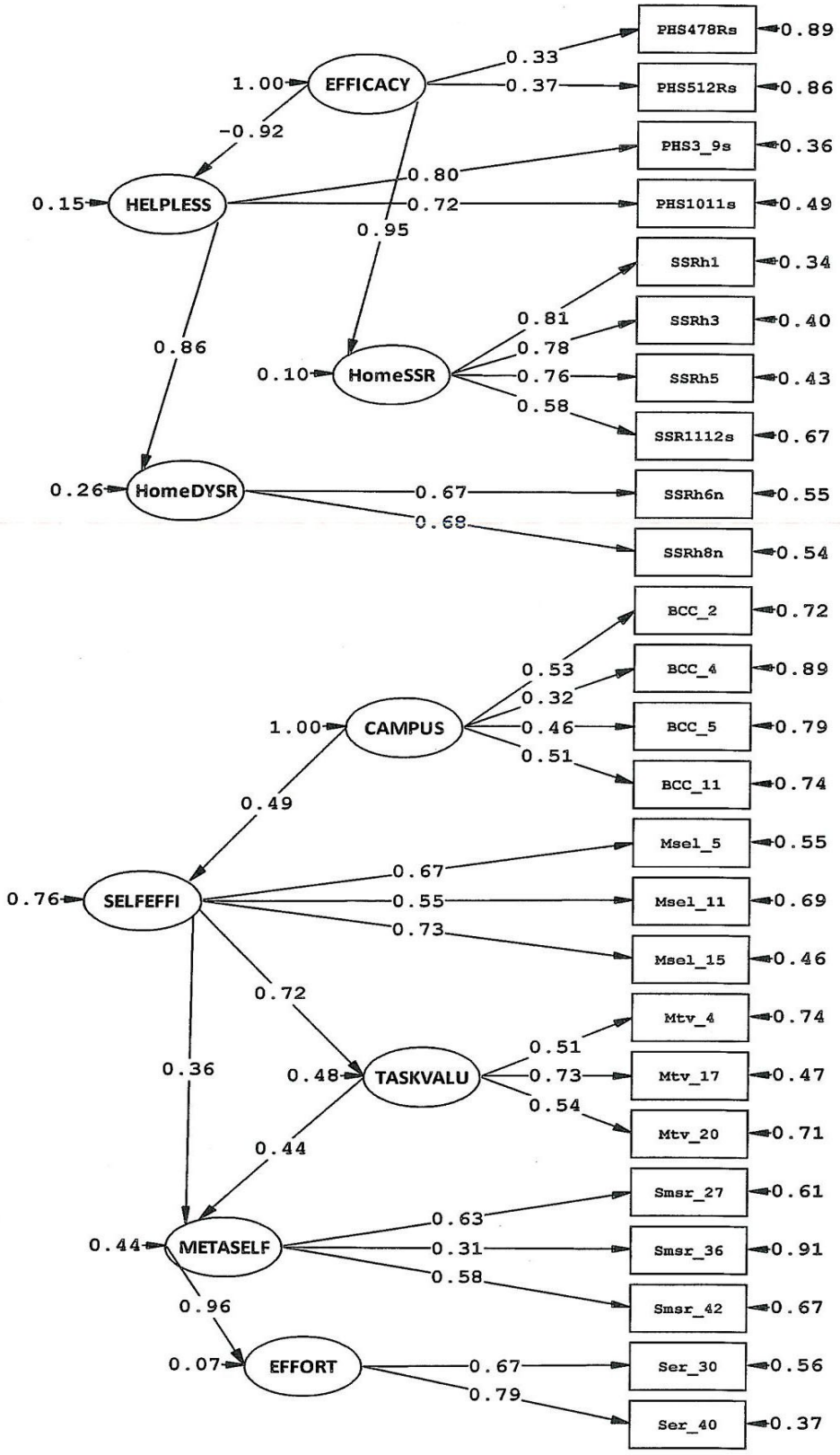
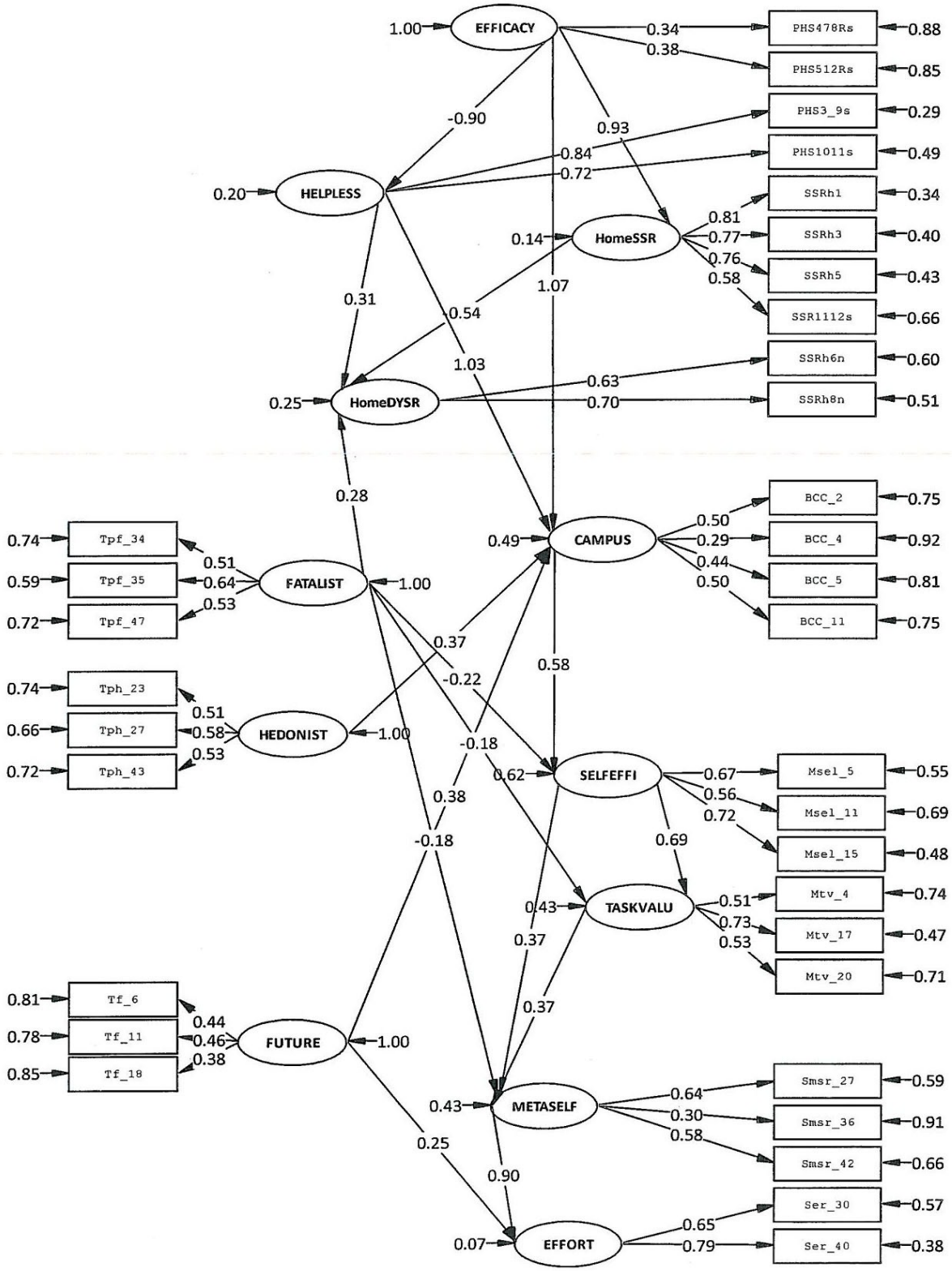


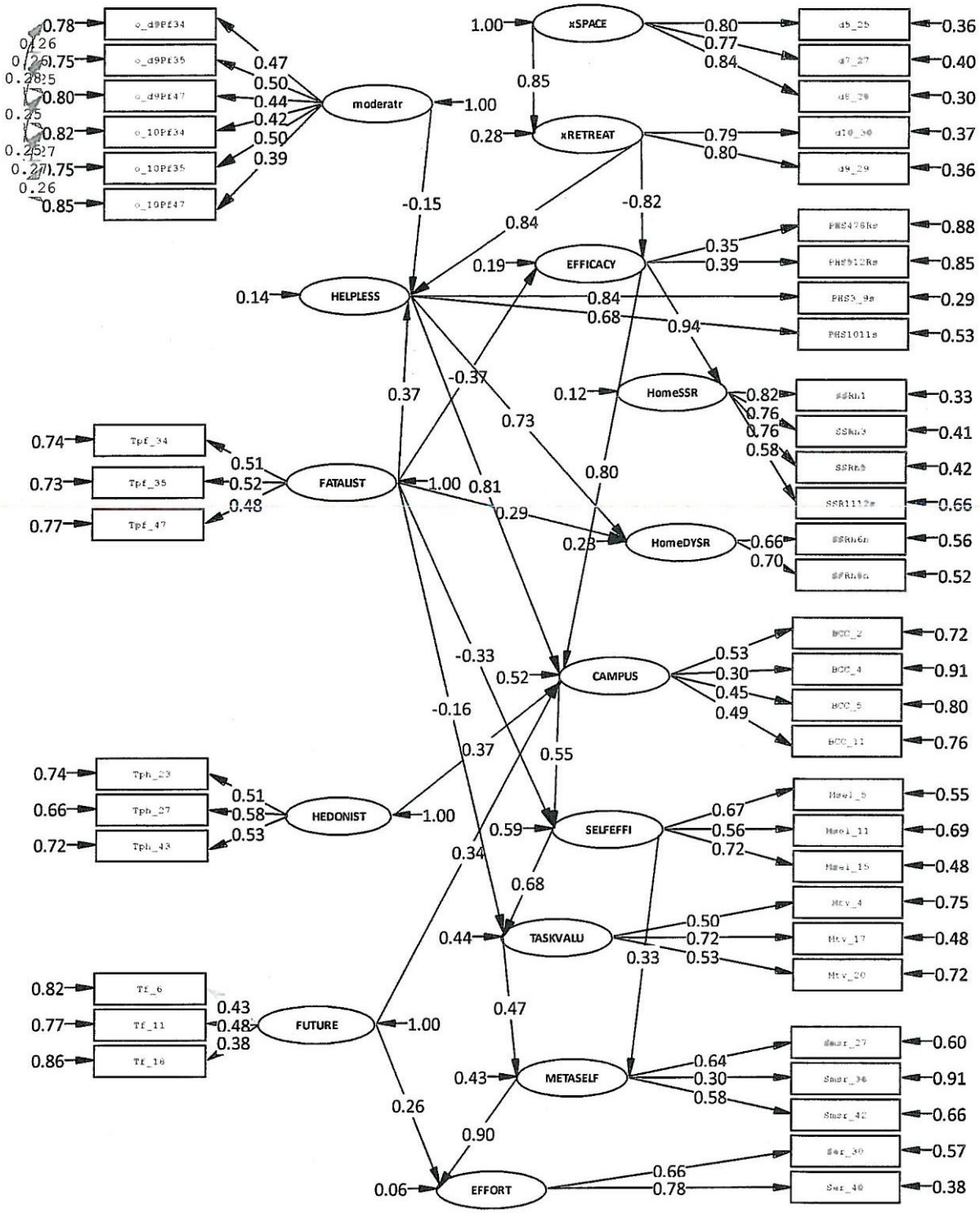
Figure 31. Structural model for paths from Perceived housing stress to Learning strategies, with main effects for temporal factors.



When the temporal factors were integrated into the model shown in Figure 31, high perceived stress (HELPLESS) and high perceived efficacy (EFFICACY) in the household were both associated with high engagement with the campus environment. However, adding all three temporal factors together obscured their respective contributions. The temporal effects were then fixed and freed one by one to isolate their effects in the change from Figure 30 to Figure 31. When FUTURE and HEDONIST were both fixed, the path to HomeDYSR and the three significant paths from FATALIST to the learning latent factors were not affected, with RMSEA = 0.042(0.038, 0.046) and *p*-value for Test of Close Fit = 1.00. Compared to Figure 30, the significance of the path parameter from EFFICACY to CAMPUS decreased slightly (ß = 1.11, *t* = 2.07), and the path parameter from HELPLESS to CAMPUS increased slightly (ß = 1.10, *t* = 2.10). When the path from HEDONIST to Campus SSR was freed, RMSEA = 0.041 (0.037, 0.045) and *p*-value for Test of Close Fit = 1.00; none of the path parameters from the preceding model were affected. Thus the link between Present-hedonistic orientation and Campus SSR is independent of the effects of Present-fatalistic and Future orientations. Also, compared to Figure 30, the paths between Campus SSR and the Perceived housing stress factors reached significance only through the introduction of Present-fatalistic orientation in Figure 31.

Figure 32 (next page) integrates all of the latent factors from Interior inadequacy to Learning strategies, including temporal effects. Fit is good, with CFI = 0.95, RMSEA = 0.039 (0.036, 0.042), and *p*-value for Test of Close Fit = 1.00. The interaction effect of Present-fatalistic orientation with the xRETREAT factor of Interior inadequacy in the path to the HELPLESS factor of the Perceived housing stress scale is significant and negative (*ß* = –0.15, *t* = -2.92). As in the regression model shown in Figure 8 earlier, high Present-fatalistic is associated with an attenuated increase in reported perceived helplessness. Here, the SEM focused more narrowly on deficient retreat affordances. The main effects for xRETREAT (*ß* = 0.84, *t* = 16.74) and Present-fatalistic orientation (*ß* = 0.37, *t* = 6.11) were positive and significant. One notable outcome is that HomeSSR and HomeDYSR are not linked, and neither variable has any significant paths to Campus SSR, nor to any Learning motivations, nor to any Learning strategies. Appendix Table G.2 summarizes factor loadings and other data for the SEM shown in Figure 32. Appendix Table G.4 shows the covariance matrix of *Eta* for the SEM shown in Figure 32.

Figure 32. Fully integrated structural model.



CHAPTER 4. DISCUSSION

The broader goal of the study was to explain student academic performance as the outcome of a complex interplay of environmental factors and individual perceptions and strategies. The methodology involved two parallel processes: testing several new constructs and modeling their effects within a larger framework of exogenous variables and previously validated constructs. The dataset and the statistical procedures used did support several of the hypotheses. However, no evidence was found for certain other hypotheses while still other findings were statistically significant but unexpected. Making sense of all of these findings requires us to have a pragmatic basis for our interpretations and to remain aware of the study's limitations.

Evaluation of new measures.

Three new measures were developed as part of this research, and assessment of their reliability and validity is needed before evaluating the results of the major hypotheses.

The first new measure, Housing inadequacy, gave a subjective assessment of domestic environments by comparing the availability of household features with their rated importance to individual students. Exploratory factor analysis found three factors that reliably measured inadequacy of, respectively, affordances in the interior of the household, conditions due to neighbors in the same or adjacent buildings, and affordances in the surrounding natural environment. The Interior inadequacy factor was utilized in structural equation models that further identified three lower-order factors reliably measuring inadequacy of: affordances for private retreat, furnishings and state of physical repair, and other more general spatial affordances such as social gathering space in the household. The Housing inadequacy measure includes items not unique to the needs of college students; thus the measure could be used to assess subjective housing quality in other populations. As well, the lower-order factor representing a lack of retreat affordances surfaced in the context of a SEM predicting Perceived housing stress, another new scale with items not unique to college students. Several sources in the literature have noted that the ability to occasionally separate spatially from other household

members within one's domestic space is conducive to a feeling of relaxation and to improvement in mental focus (Archea, 1977; Hartig et al, 2003; Pedersen, 1999; Proshansky et al., 1970).

However, the factor structure of the Housing inadequacy measure may have been determined in part because of the needs of the student sample from which it was derived. For young adults living in family households not oriented to the priorities of school work, and for young adults prolonging residence with their family-of-origin in order to complete their education, inadequacy of retreat affordances may indeed be a major source of stress. However, this linkage may not be as significant for other adults in the general population. As discussed in Chapter 1, different families construct different narratives about cohesion, mutual support, and use of shared space (Boss, 1992; Brown et al., 2006; Hemmens & Hoch, 1996; Morris & Winter, 1975; Priemus, 1986). Cultural differences are one set of variables that shape such family narratives (Angel & Tienda, 1982; Evans et al., 2000a; Glick & Hook, 2002), and persons who identify with collectivist rather than individualist cultural narratives may be less likely to express a desire for retreat affordances within the household.

Another weakness of the external validity of the Housing inadequacy measure is its range of sensitivity and specificity, that is, its ability to identify individuals who, respectively, are and are not experiencing housing inadequacy. As noted earlier in the report of the sample's characteristics, study participants were significantly younger and had significantly higher GPAs than the campus population. Therefore, on one hand, housing affordances for this student sample are likely better than for a sample of students at greater academic risk or who maybe experiencing more extreme housing stressors such as homelessness. For example, the description in Chapter 3 of how the Housing inadequacy measure was initially derived noted that responses to items measuring privacy of toilet and bathing affordances were excluded from the factor analysis due to very high kurtosis, comparably low means, and smallest standards deviations, all indicating lack of variance for these items. (See Appendix Table E.1.) Thus, few students reported inadequacy in these affordances. As well, during structural equation modeling, a lower order factor measuring inadequacy of household furnishings and state of repair was excluded from the Interior inadequacy factor because it did not contribute to the model's goodness of fit. (See Figures 26.a and 26.b.) Therefore, the factor structure and model parameters for the Housing

inadequacy measure may not be sensitive to finer gradations of inadequacy in more vulnerable populations living in substandard housing.

On the other hand, the factor structure and model parameters for this measure may overestimate inadequacy because of how students answered the items from which the measure was computed. Part II of the survey instrument, Items 21 to 38, asked about the importance of certain housing features. Most students reported that almost all, if not all, of these affordances were "very important" to them (See Appendix Table E.1). Since the Housing inadequacy measure was an aggregate difference score based on the gap between availability and importance of certain affordances, the tendency of some students to ascribe equally high importance to all housing features may have introduced measurement error into the data for this variable.

Finally, the Housing inadequacy items were written and responded to within an urban context. The content, factor structure, and parameters for this measure may not be relevant to college students or to other populations living in less densely built areas where other concerns, such as isolation and lack of access to public services, may be more significant sources of stress.

The second new measure, Perceived housing stress, was adapted from the Perceived Stress Scale (Cohen & Williamson, 1988), an existing validated measure of global appraised stress, in order to identify stressors specific to the home setting. As with the Housing inadequacy scale, the Perceived housing stress scale did not contain items unique to the experience of students and, thus, could be used with other populations. However, further study of item responses and factor structure is needed due to sample heterogeneity. The students who participated in this study are more similar to the general population in the surrounding community than would be, for example, students at a traditional residential college. Yet the mix of household types, cultural groups, and ages obscures differences in scale means for each subgroup. The current study did compute group comparisons. However, examining (in a much larger sample) the interaction of multiple individual attributes in predicting perceived housing stress might better clarify how demographic differences are associated with the helplessness and efficacy components of this measure.

A further issue regarding the new Perceived housing stress scale has to do with the complexity of the appraisal processes involved. The original Perceived Stress Scale (Cohen & Williamson, 1988)

elicits a self-report of one's general intrapersonal affective state. In contrast, the adapted Perceived stress scale relies on a transactional model of cognition, where respondents are asked to report their internal affective state with specific regard to certain spatial and interpersonal features of their home environment. On one hand, the new scale directs respondents to focus their individual appraisal processes on two targets, the self and the domestic environment; on the other hand, although the scale's items target household stressors, the new scale cannot completely filter out the effect of unknown confounds due to unspecified stressors.

The third new measure, Spatial self-regulation, introduced a construct with two components: the ability to recognize whether a setting is conducive to one's goals and the ability to engage or change that setting in order to move toward those goals. In the current study, the affective, behavioral, and cognitive aspects of Spatial self-regulation were measured in both home and campus settings. Unlike the previous two new scales, this measure contained items specific to the experience of being a student. (As such, this scale could be adapted as well to the particular spatial needs of other groups, e.g., individuals in work settings.) Spatial self-regulation was construed to be a person-level attribute operating across spatial domains, but the data indicated no correlation (r = –.04, p > .10) between home and campus settings. Several explanations are possible. The absence of any correlation at all was partly due to the process of scale construction. Each component was elicited in a separate subscale listing items of similar content in both settings; for example, both subscales included items about adapting to the presence of other persons in the same setting, the ability to predict times conducive to study in the setting, and engaging in restorative leisure activities in the setting. Yet, when items for both settings were combined in a single factor analysis, the home and campus factor items that appeared together in the same factor had in common only certain phrasing ("I can usually") not substantively pertinent to the perceptions and behaviors elicited by the items (see Appendix Tables F.7, F.9, and F.10). These items were eliminated to avoid spurious correlations.

A more substantive reason for the absence of correlation between the components is that, as shown in the earlier literature review, in a transactional model, intentional behavior arises not only from intrapersonal affect shaped by previous experiences but also through individual appraisal of current circumstances. Therefore, it would be unrealistic to expect an individual student to appraise

and engage in distinct settings in the exact same manner. The campus was a constant stimulus insofar as all students were asked to react to the same physical space; the *t*-tests of independent means found marginally greater Campus SSR among immigrant students but no significant differences in Campus SSR among other demographic groupings. At the same time, the campus in question encompasses a variety of spaces with different use values, each of which appeal to different students for different reasons. For example, the discussion below of the test of Hypothesis 2d elaborates how differences in individual time orientation lead to distinct motivations for use of the campus. Thus students high in Present-hedonistic orientation may be attracted to social gathering spaces, students high in Present-fatalistic orientation may be drawn to quiet or restful spaces that allow retreat, and students high in Future orientation may be most interested in spaces conducive to task-oriented work.

Furthermore, the uniform construct of spatial engagement assumed in Hypothesis 1 did not account for differences in home settings. For example, a student who appraises the home as a space that cannot be easily made conducive to studying may instead become more actively engaged in the campus space while a student who actively engages the home space may report little interest in using the campus. However, this example assumes an either-or model of spatial engagement, which would result in a significant negative correlation between the two settings. The more likely explanation is that the sample includes a mix of students who engage equally in both settings, students who maladaptively engage in neither setting, and students for whom one setting but not the other (as in the previous example), is used for study purposes. When no other control variables or moderator influences are considered, the statistical result is the absence of any significant correlation.

The students who participated in this research live in a variety of home settings, and thus individual expectancies about the use-value of different campus settings followed from different roles within the home. Here, the diversity of the participant sample is notable. Younger or full-time students may relate to the campus differently than do older or part-time students. Also, the study did not consider other settings, such as workplaces or the homes of friends and relatives, which may have mattered in the respondents' daily lives. As well, the study focused on the salience of the home and the campus for academic success. For some students, the home may have far more resonance as a

family setting than as a study setting while, for other students, the campus is as, if not more, appealing for the possibility of social interaction as it is for academically-oriented tasks.

Spatial self-regulation was proposed to have an interaction effect in several of the hypotheses discussed below. However, home Spatial self-regulation was found instead to function best as a mediator variable (see Figures 13 and 25), and campus Spatial self-regulation was found to moderate only the regression paths that were fully mediated by home Spatial self-regulation (see Figure 25).

In the full structural model (see Figure 32), home Spatial self-regulation was decomposed into two lower-order factors representing adaptive (HomeSSR) and maladaptive (HomeDYSR) elements. Neither had significant paths leading to campus Spatial self-regulation nor to other downstream learning-oriented factors in the model. In contrast, both the helplessness and efficacy components of the Perceived housing stress scale described above positively predicted engagement in the campus. As discussed below, the tests of Hypotheses 2.a to 2.d were complicated by the high negative correlation between Perceived housing stress and home Spatial self-regulation (r = –.68, p < .001). Therefore, further study of the two home-related measures together is needed to evaluate the extent to which they represent distinct latent constructs and to what extent they overlap.

Evaluation of results of hypotheses

Hypotheses were first tested through regression analysis and, then, structural equation modeling was used to refine, integrate, and confirm linkages among the major factors. Although no significant evidence existed for some hypotheses when the major predictors were decomposed into their lower-order factors, for other hypotheses, some significant linkages were identified through structural equation modeling. Also, when moderator variables were introduced into the regression analyses, some of the non-significant findings were found to be influenced by interaction effects. Finally, the study's methodology entailed screening for group differences among the major predictors. Although these exogenous variables were not incorporated into the hypotheses and structural models, their possible influences are discussed below in the context of other major findings.

The first hypothesis pertained to the relationship between Future time orientation and Spatial self-regulation. The former is a validated construct but the latter was newly developed and proposed

to operate across spatial domains. However, because Spatial self-regulation was not found to be a uniform construct, the first hypothesis was tested in two parts. Future orientation was found to correlate strongly with campus Spatial self-regulation but had no association with home Spatial self-regulation. Of the remaining two temporal factors, Present-fatalistic orientation correlated negatively with home Spatial self-regulation, while Present-hedonistic orientation was associated with higher use of and more favorable reactions to campus spaces. The issues raised regarding the Spatial self-regulation construct in the evaluation above of the study's new measures can also be used to assess the mixed findings in Hypothesis 1. However, when the variables in Hypothesis 1 were respecified in a moderation model, one of the temporal tendencies, Present-fatalistic orientation, did influence the relationship between the Spatial self-regulation factors. For students with low Present-fatalistic orientation, as their spatial engagement in the home increased, their engagement with the campus marginally decreased ($p = .05$). For students with high Present-fatalistic orientation, increased engagement in the home was associated with a non-significant increase in engagement with the campus. Neither low nor high Present-fatalistic orientation alone reached significance in explaining how students used home and campus spaces, but the difference between the two patterns was significant ($p < .05$; see Figure 3). This is consistent with the example given earlier of a student who actively engages the home space but has little interest in using the campus. Here, a temporal attribute elucidates a pattern in the data that was masked prior to the introduction of an interaction effect.

Hypothesis 2a linked housing density with perceived Housing inadequacy and Hypothesis 2b linked perceived Housing inadequacy with Perceived housing stress; Hypothesis 2c proposed that perceived Housing inadequacy mediated the relationship between the first and third variables. One component of perceived Housing inadequacy (Interior inadequacy) was used in these models. The data supported both Hypothesis 2a and 2b but the measure of housing density was only partially mediated by Interior inadequacy in predicting Perceived housing stress (see Figure 6). Complete mediation did not occur because the number of persons per room is often higher in households that included adult partners or young siblings. Each of these high-density situations is normative and expected in the general population. Such households are represented in the sample in that 18% of students reported living with an adult partner and 63% of the sample reported minors under age 18 in the household.

(Appendix Table D.2 gives further details as to household composition,) Also, contrasting patterns of housing density, reported Interior inadequacy, and Perceived housing stress (see Appendix Tables D.2, F.3, and F.6, respectively) in the two subgroups with highest mean persons per room, students in filial households[24] (M = 1.51, t = 3.55, p < .001) and students who are immigrants (M = 1.53, t = 4.58, p < .001), suggest that unspecified effects are masked in the results of Hypotheses 2a, 2b, and 2c. Group comparisons showed that students in filial households reported marginally lower Interior inadequacy and no significant difference in mean Perceived housing stress. However, while immigrant students had no significant difference in mean Interior inadequacy, their mean Perceived housing stress (M = 2.65, t = 2.09, p < .05) was exceeded only[25] by that of caregivers (M = 2.73, t = 3.49, p < .01), who reported the highest mean Interior inadequacy (M = 4.02, t = 3.83, p < .001) as well as significantly higher Persons per room (M = 1.47, t = 2.06, p < .05). For caregivers, however, Perceived housing stress may be influenced more by perceived Interior inadequacy in the context of their greater sensitivity to children's needs rather than to any adverse effects of household density.

The test of Hypothesis 2d found no evidence that Future orientation alleviated the effect of Housing inadequacy on Perceived housing stress. Rather, though all students reported greater Perceived housing stress as Interior inadequacy increased, the increase in Perceived housing stress was significantly steeper among students with higher Future orientation than among students with lower Future orientation (see Figure 7). This unanticipated finding must be considered in the context of group differences found for Perceived housing stress as well as in group differences in Future orientation. Caregivers also reported the highest mean Future orientation (M = 3.72, t = 4.10, p < .001), while students in filial households (M = 3.45, t = -3.83, p < .001) and students ages 18 to 21 (M = 3.48, t = -3.32, p < .001) reported the lowest Future orientation. Younger students presumably spend more time outside the home in a variety of other settings while caregivers may be constrained to the home by their role demands. However, mean campus Spatial self-regulation did not differ significantly

[24] In Table 2, Filial households were defined as students living with parents and siblings only. Immigrants were defined as any student born outside the US.

[25] For students in households using all rooms for sleeping, mean perceived housing stress was 2.66 (t = 2.21, p < .05), yet this group is defined by their high utilization of household space rather than by a demographic attribute. Notably, 50% of immigrant students lived in such households (X^2 = 10.32, p < .01).

for caregivers compared to non-caregivers. Thus, compared to other groups of students both at home and on campus, caregivers have greater expectations bother as to their home settings as well as of their own capacity to manage their home settings.

Alternative tests of other temporal effects in Hypothesis 2d found a significant interaction for Present-fatalistic orientation (in addition to the main effect in Hypothesis 1) but no interaction for Present-hedonistic orientation. Students with higher Present-fatalistic orientation reported not only less Perceived housing stress but also a lower rate of increase in Perceived housing stress as Interior inadequacy increased (see Figure 8). This dampening effect may reflect a learned helplessness response resulting from students' inability to repurpose household affordances to support not only study activity but also daily domestic needs (Abrahamson et al., 1978; Baum et al., 1978). This finding is consistent with maladaptive suppression of affective responses when more proactive strategies had not been used or when reappraisal fails to identify alternative responses following prior ineffective strategies (Gross & John, 2003). From a lifespan perspective, this finding is also consistent with recent research suggesting lower reactivity, yet also longer recovery time, in laboratory measures of physiological indicators among children living with multiple chronic life stressors (Evans, 2012).

However, as home Spatial self-regulation decreased, students with higher Present-fatalistic orientation reported greater engagement with the campus than did students with lower Present-fatalistic orientation (see Figure 3). Though no correlation between home Spatial self-regulation and campus Spatial self-regulation existed for the sample as a whole, Present-fatalistic orientation did moderate the link between the two settings. This suggests that these students were using the campus as a restorative setting or a refuge from home. However, later findings in the structural equation models discussed below suggest that caution is needed in concluding that use of the campus is in itself conducive to purposeful academic activity.

However, the Present-fatalist construct may not be consistent for the entire sample. For example, *t*-tests of independent means showed that immigrant students reported marginally higher campus engagement ($M = 3.64$, $t = 1.70$, $p < .10$), both higher Present-fatalistic orientation ($M = 2.54$, $t = 3.16$, $p < .01$) and higher Future orientation ($M = 3.65$, $t = 2.88$, $p < .01$), higher mean Approach motivations ($M = 5.84$, $t = 3.00$, $p < .001$), and higher mean Solo strategies ($M = 5.10$, $t = 2.26$, $p < .05$)

(see Appendix Tables F.12, F.15, and F.18, respectively). Yet, in the sample as a whole, Future orientation and Present-fatalistic orientation correlated negatively (r = -.24, p < .001) while Present-fatalistic orientation and Present-hedonistic orientation (the latter a positive correlate of campus engagement) correlated positively (r = .35, p < .001). These contradictory findings point to a need to parse the connections among the main variables, and the effect of group differences upon those variables, more carefully and in more detail.

The effects of group differences may matter most in the interpretation of temporal interactions because, given the current framework, it may not be possible to assess whether certain self-reported data are grounded in actual behavior or arise from role-influenced or culturally-influenced perceptions. An example of role effects involves caregivers who report that they do not self-regulate in the home environment; yet, this may be a subjective statement arising from the conflict between role demands and perceived inadequacy of household affordances. To an outside observer, a caregiver may appear to make consistent efforts to engage the home setting, but to the caregiver, daily frustrations may diminish her appraisal of her own actions. An example of cultural effects involves immigrant students for whom a range of group norms as to Present-fatalistic orientation and Future orientation may be an expression of cultural schema rather than a self-report of observable behavior. Although Table 5 earlier noted a strong negative correlation between Future orientation and Present-fatalistic orientation in the sample as a whole (r = -.24, p < .001), among immigrant students, attitudes about working diligently toward future goals may intersect with fatalistic attitudes that preclude claiming individual agency toward those future goals.

Hypothesis 2e proposed a moderating role for Spatial self-regulation in alleviating the effect of perceived Housing inadequacy on Perceived housing stress. Two interaction models were tested for the home and campus components, respectively, but neither had a significant moderating effect. Rather, Figure 13 displays a mediating role for HomeSSR only. (This unexpected effect for Home SSR is assessed below in the discussion of Study Limitations.)

Hypothesis 3a stated that greater Perceived housing stress is associated with lower self-regulated learning and Hypothesis 3b stated that lower self-regulated learning is associated with lower GPA. Hypothesis 3c stated that self-regulated learning mediated the negative association between the

first and third measures. Since self-regulated learning included two motivation factors and two strategy factors, Hypotheses 3a and 3b were tested along multiple paths. No significant correlation was found between Perceived housing stress and GPA (r = .01, p > .10) so a mediation test was not possible. Nonetheless, Figure 17 shows significant direct paths from Perceived housing stress to Avoidance motivation and to Solo strategy and, among other direct and indirect paths, to GPA. Figure 17 also shows various significant mediational paths, other than those proposed in Hypothesis 3b, that guided the later process of path specification in the integrated SEM. The results of Hypothesis 3b also guided the selection of five Solo strategy items that were significant predictors of GPA. (See Chapter 3's description of CFA 6 for details and justification of the items chosen.) The final SEM, shown in Figure 32, utilized these items as proxies for GPA so that the model could be replicated in anonymous samples where student GPA would not be verifiable.

Hypotheses 3d and 3e proposed moderating roles for Future time orientation and for Spatial self-regulation, respectively, in the path from Perceived housing stress to self-regulated learning. Multiple interaction effects were tested because self-regulated learning entailed two motivation factors and two strategy factors. No interaction effect was found for Future orientation or for the other two temporal factors. Hypothesis 3e was tested separately for the home and campus components of Spatial self-regulation but no interaction was found for the home component, and the campus component moderated only the paths that were fully mediated by the home component. (Figure 25 elaborates all of the paths tested.)

The final iteration of the full structural model (Figure 32) connects Housing inadequacy, along various paths through the Perceived housing stress and Spatial self-regulation factors, to learning motivations and strategies. Earlier iterations are shown in Figure 30 and 31.

Before the introduction of the temporal factors, Figure 30 showed no paths linking home and campus environments. In Figure 31, introducing the temporal factors results in paths from the Perceived housing stress factors, HELPLESS and EFFICACY, to the campus spatial engagement factor, CAMPUS; both of these paths are positive yet suggest different motivations for being on campus. Students high in reported feelings of helplessness at home may be using the campus as a refuge, while students high in reported feelings of efficacy at home may be reporting efficacy across settings. The

end of Chapter 3 details how the temporal factors were introduced one by one to verify that the link between home and campus settings came about through the effect of Present-fatalistic orientation, not Future or Present-hedonistic orientations. However, high Present-fatalistic orientation had adverse effects across spatial domains. It was positively associated with HomeDYSR (the dysregulation component of Home SSR), and negatively associated with both Learning strategies, Self-efficacy and Task value, as well as negatively associated with the Metacognitive self-regulation strategy factor. The findings as to Present-fatalistic orientation are consistent with findings in the literature as to the adverse effects of maladaptive self-regulation across life domains (Baumeister & Hetherton, 1996; Compas et al., 1997; Evans & Schamberg, 2009; Gallo et al., 2005; Luecken et al., 2006).

Future orientation and Present-hedonistic orientation also had main effects in Figure 31. Each had positive paths to campus Spatial self-regulation but, of the two temporal factors, only Future orientation directly influenced Effort regulation, the learning strategy most closely associated with GPA in the earlier regressions and confirmatory factor analyses. Campus SSR linked positively only to the Self-efficacy learning motivation, but not to the Task value motivation nor to either of the Learning strategies. Thus the structural model in Figure 31 confirmed that students' engagement in the campus space was not in itself a direct predictor of academic success. The paths from Future orientation show that students high in Future orientation use the campus for study purposes, but students high in Present-fatalistic or Present-hedonistic orientations do not do so.

The moderating role of Present-fatalistic orientation appears in Figure 32 in predicting Perceived housing stress from Interior inadequacy. As shown earlier in Figure 8, as Interior inadequacy increases, high Present-fatalistic orientation again dampens the reported rate of increase in Perceived housing stress. The structural model here distinguishes between the two lower-order factors within Perceived housing stress and isolates the dampening effect to the HELPLESS element but shows no link to the EFFICACY element. Yet Inadequacy of retreat affordances retains a negative path to the EFFICACY element.

Inadequacy of retreat affordances completely mediated the effect of other spatial inadequacies in the household in predicting the Perceived housing stress components. The exogenous single-item household density measure, Persons per Room, had been specified to the Interior

inadequacy factor in an earlier version of the full structural model, but it was omitted in Figure 32 because it did not contribute to model fit. Since this study examined housing stressors in the context of attending college while living in a family household, the primacy of retreat affordances is salient to experiences of students, whose academic role requires a place within the home that affords selective attention and cognitive restoration (Dill & Henley, 1998).

In the fully integrated structural model, Spatial self-regulation was found to have no moderating effect, and the earlier mediating role of the home component in the regression analyses between Perceived housing stress and learning factors was no longer significant. Also, HomeSSR and HomeDYSR, representing the adaptive and maladaptive aspects of the home component, had no downstream paths to any other model factors, nor were they linked anymore to each other. The EFFICACY factor of Perceived housing stress now linked directly, and the HELPLESS factor now linked indirectly, through CampusSSR, to the learning motivation factors, self-efficacy and task value, which in turn predicted metacognitive self-regulation and effort, the two learning strategy factors.

Present-fatalist orientation was the only temporal factor with a moderating role in Figure 32. The change in paths for the two Home SSR factors, HomeSSR and HomeDYSR, from Figure 31 to Figure 32 suggest that Present-fatalistic orientation is a person-level attribute that supersedes the hypothesized effects of individual spatial engagement in the home.

STUDY LIMITATIONS

The main areas of limitation in this study arose from the characteristics of the sample, the reliability and validity of the measures used, and the internal validity of the research framework.

Findings may not generalize to other student populations whether at different campuses or even to other non-participant students from the same campus. Lack of generalizability, in this case, was due both to sample restriction and to sample diversity. Participation in the research requirement, in itself, selected for students more likely to complete the Introduction to Psychology course. Participation also selected for students more willing to give personal details and to allow the researcher to access their official academic records. Therefore, participants were the more academically-successful students; this was borne out by the sample's significantly higher mean GPA

compared both to all students enrolled in the course and to all students on campus. Almost all of the data collection sessions occurred midweek, midday. Not only was the sample more heavily full-time than the campus population, the age distribution was also lower. The availability of a written option to satisfy the course research requirement may have lead older students with outside commitments, or who preferred not to disclose personal information, to self-select out of this sample. Students often arrived at survey sessions in small groups and waited for each other to finish before leaving together. Thus, it is possible that the decision to participate was enabled socially, whether by mutually encouraging compliance or by making the task seem more appealing. Another element was the effect of individual instructors in reminding their sections to complete the task or in their approach to explaining survey research methods in the initial lessons of the semester.

Lack of generalizability also stems from the space of the campus itself. BCC differs from other local community colleges because it is a 43-acre site with extensive open green spaces and a secured perimeter within a densely built urban context. Thus, the contrast between the campus and the immediate environment of students' homes may be more pronounced and therefore atypical of the experience of community college students elsewhere in New York City and other similar urban areas.

The overall research model was strong enough to permit several significant findings, but sample heterogeneity may have confounded some outcomes. Other patterns in the data may have been weakened or masked and could instead reach significance in a less diverse group. Demographic differences raise the question of whether the measures in the study tapped into a range of group norms that manifested themselves in larger standard errors and narrower confidence intervals (Crocker & Algina, 1986). Chapter 1 earlier discussed differing cultural attitudes and practices around the use of home spaces. Time orientation is known to differ by ethnic groups, with Asians and Latinos scoring higher for present-fatalistic orientation and, by age, with older respondents scoring higher for future orientation (Zimbardo & Boyd, 1999). While maturation understandably leads to a longer-term perspective, group norms as to present-fatalistic orientation and future orientation may be an expressed cultural schema rather than an indicator of actual behavioral differences. Different ethnic group norms are further complicated by notable distinctions within ethnic groups and by variations in the experiences of immigrants. The campus Latino population includes students from the Caribbean

and from Central and South America as well as US-born students. The African-American population includes students with forbears in the United States as well as immigrants from the Caribbean and from distinct cultures in Africa. Time elapsed since immigration and the circumstances of immigration are relevant as well. Furthermore, at a community college, different kinds of students have distinct expectancies as to the purpose of their education. Some are employed adults seeking retraining toward a licensed profession while others are recent high school graduates with less clearly defined objectives. As such, one assumes, they may utilize the campus differently.

Socioeconomic status cannot easily be inferred from the above group differences. Since the campus draws students from all over the Bronx and, to a lesser extent, from other counties, neighborhood economic correlates cannot be inferred either. One variable that may have potential as a proxy for socioeconomic status is the binomial Room ratio measure described in Chapter 2. Since this variable measured whether households used all habitable rooms as sleeping spaces, and since the chi-square statistic had highest significance for students living with parents and siblings, the Room ratio measure may point to financial constraints preventing the household unit, or individual members, from moving to more adequate housing.

Between-group differences noted above were not the only possible confounds in the study. The measures used included several newly developed scales as well as existing validated scales that were shortened in order to reduce response fatigue. The latter scales included the Zimbardo Time Perspective Inventory, or ZTPI (Zimbardo & Boyd, 1999), and the Motivated Strategies for Learning Questionnaire, or MSLQ (Pintrich et al., 1993). Usable factors were obtained using the items from these two scales, but their factor structures did not fully match those of the original instruments. A possible explanation for differences in MSLQ and ZTPI factor structures has to do with the demographic characteristics of the study sample compared to those of the participants used to validate the original published scales in that the former sample has greater variability in age and ethnicity than did the latter samples. Another difference relevant to the MSLQ is the current prevalence of technology in higher education, which may make the now 20-year old instrument less relevant to the cognitive and practical strategies students now report using (Credé & Phillips, 2011). For these reasons, the findings

of the current research cannot be reliably compared to other published research based on the ZTPI and MSLQ scales.

The newly written scales for Housing inadequacy, Perceived housing stress, and Spatial self-regulation each had methodological and conceptual limitations. All contained Likert-type items that assumed equivalence of their intervals. For the Housing inadequacy scale especially, such an assumption may not have ecological validity. The Perceived housing stress scale and the Spatial self-regulation scale each included both positive-valence and negative-valence items. Analyzing the results of mixed-valence scales can be compromised if some opposite-valence items are found to be at the far ends of the same vector while other items are found to be perpendicular or oblique to that factor. In the former situation, items can be reverse-coded and considered to measure a single latent factor, while in the latter situation, distinct or weakly-defined factors exist.

Where a path model maps a process-oriented sequence of latent factors measuring self-reported perceptions and behaviors, correlated errors and non-recursiveness may compromise model fit. Each of these methodological issues conflicts with the ecological validity of the iterative nature of feedback loops between individual perception and behavior and the transactional linkages between persons and environments. Numerous correlated errors were found for items across the three new scales, as well as across their component factors, especially for Perceived housing stress and Spatial self-regulation. Several reverse-causality paths were found, but the significance of the hypothesized path was, in each case, stronger than that of the reversed path. Thus, addressing methodological problems may help to improve construct validity and discriminant validity among latent factors.

The internal validity of the research framework relies on three assumptions: Valid correlations exist among the variables, causal assumptions are consistent with a temporal sequence of effects, and no other plausible explanations exist for the findings. Many significant correlations were found in the model, yet the temporal sequence of the variables' effects proposed in the research model (Figures 1 and 32) is an artificial representation of how community college students perceive and use their homes and campuses. Rather, the relevant literature on appraisal processes emphasizes the nonlinear and recursive aspects of affective and cognitive self-regulation with regard to person-environment transactions (Brown et al., 2006; Gottlieb, 1997; Kohn, 1996).

The cross-sectional design of the research also affected the internal validity of the findings. Relying on a single set of self-reported responses gives too much credence to a snapshot of a student's life that may not be accurate at other points in time. This reliance relates as well to a methodological issue having to do with the choice and definition of constructs not grounded in the broader constraints of the research question. For example, students were asked first whether various housing features were available; then, they were asked about perceived stress arising from housing stressors; finally they were asked what they did at home to improve their ability to study. This line of questioning assumes that students are able to engage and manipulate their environments. The plan of data analysis in this study did not fully account for individual differences constraining these abilities. For example, students living with parents may not feel free to ask for accommodations, and students living with small children may put the needs of other above their own. Yet within these constraints, a repeated-measures study design may still capture differences in perceptions and behaviors within the household as interpersonal interactions and interactions with the concrete setting of the home vary over time.

The quantitative approach permitted complex modeling using numerous indicators but it lacked the grounded detail of daily experiences that is obtained through qualitative methods. Several of the unexpected findings in this study could have been clarified had students provided open-ended comments as to their concerns. For example, one third of the sample were caregivers; this group had the highest mean Future orientation, but also the highest mean Interior inadequacy and Perceived housing stress, and the lowest reported Spatial self-regulation in the home. These results were counter to the hypothesized effect of Future orientation in alleviating the perception of housing stressors. Parsing the item responses for the above measures and for household composition might elucidate why this is so, yet the immediacy of the student perspective is still missing.

Other limitations of the cross-sectional design have to do with the arc of experiences of being a student. Students' semester of enrollment was not recorded. Newer students may relate to the campus and to their peers differently from longer-term students. Students who took part in the study at the beginning, middle, or end of the semester may have expressed different sets of motivations and strategies driven by greater or lesser academic stressors. Even the season of the year may have influenced responses to at least some questions about student use of this particular campus.

The plausibility of the model's explanations is also limited by the research design's reliance on self-reported information. We do not know how other family members assess the concrete conditions and interpersonal dynamics of the household, particularly with regard to the student informant. Dyadic methods, which elicit alternate perspectives about the same affordances and transactions, may provide more nuanced and ecologically valid analyses.

Finally, the number and complexity of model variables and hypotheses make it difficult to test the multiple counterfactual claims implicit in the research design. For example, one counterfactual claim was the assumption of the importance of the exogenous measures of household density. The sample had considerable variance both in the measure of Persons per Room and in the newly-defined measure of spatial utilization, Rooms ratio. The latter measure was among the binomial variables screened through *t*-tests of independent means. Partitioning the sample to examine only students living in households using all rooms for sleeping serves to hold constant this measure of density, and thus it may allow for more clarity in examining the effects of the inadequacy of concrete affordances, interpersonal stressors, and differences in personal engagement with the home and campus spaces.

FUTURE RESEARCH DIRECTIONS

Several areas of further inquiry are possible using the existing dataset while other issues require revised instruments or larger samples.

One set of further research is the validation of three new measures developed for this study. As discussed above, the main area of interest for the Housing inadequacy measure is whether it generalizes reliably to other populations. The main concern for the Perceived housing stress measure and the Spatial self-regulation measure, particularly the home component of the latter, is their respective construct validity and content validity and their discriminant validity with respect to each other. Of the two housing-related measures, Perceived housing stress may have stronger construct validity because it was modeled on an existing scale. Content validity for both scales could be improved through additional review of relevant literature and supplementing the current research instrument with validated scales known to accurately measure relevant person-level variables (such as optimism, self-efficacy, or depressive systems) that may serve as further selection variables for the

major predictors and outcomes in the model. Discriminant validity for the Spatial self-regulation scales may be improved through more precise definition of the relevant appraisal processes, interpersonal transactions, and management of physical environments. In particular, the five-stage process model of cognitive adaptation proposed by Gross and John (2003) and described in Chapter 1 may be examined more closely as a prototype for the reassessment and respecification of the home and campus Spatial self-regulation scales. Alternatively, further research may lead Perceived housing stress and Spatial self-regulation to be construed as elements of the same larger process model.

Another set of research includes further investigation of possible effects of sample heterogeneity for the constructs used in the model. The current study merely screened for between-group differences in means for each major variable but did not model the effects of these control and selection factors within the regressions and structural equation models. Some of these effects may reach significance in the existing dataset while other between-group differences will need to be tested with many more cases in order to attain an adequate effect size. Furthermore, several of the between-group differences may collapse more complex gradations within groups. The questionnaire used in this study collected additional information about household structure and immigration that was not analyzed. More fine-grained findings about the experiences of sample subgroups, such as caregivers and students from different immigrant communities, may be obtained in this manner.

Future research should also focus on the unique needs of different subgroups in the sample. Students who are caregivers experience role strain and role conflict, the causes and effects of which differ from the stressors experienced by students who are not caregivers. The experiences of caregivers may also be an appropriate subject for the application of dyadic methods of inquiry, especially as to such phenomena as the effects of social supports among adults within the household. Also, future research should target greater numbers of at-risk students less likely to self-select into the sample. The hypotheses in the current research conformed to a strengths model of student engagement and achievement. However, the findings of a dataset obtained from students experiencing greater academic and housing stressors may be more useful in understanding the adverse processes involved and in formulating effective interventions for vulnerable campus populations.

APPENDIX A

RECRUITMENT FLYER AND INFORMED CONSENT

Recruitment Flyer for Research Participation Requirement

ATTENTION PSY 11 STUDENTS:

Study Title: Household Density and Academic Standing Among Community College Students:
The Effects of Time Orientation and Spatial Self-Regulation

Did you know that students' grades might have something to do with their reactions, feelings, and habits about time and place?

Did you know that the ways that students use spaces at home and on campus might affect the ways that they study?

The format of this study is a questionnaire that you yourself complete. There is no experiment involved.
The time needed is between 30 and 45 minutes.
This will fulfill the Research Requirement for PSY 11.

There is no deception involved.
The level of possible discomfort that you could reasonably expect is no more than what you would experience from participating in your PSY 11 class.

Please note: The researcher will look up participants' course grades after the end of the semester.
All results will be kept completely confidential.

Sessions will take place at these dates and times: See Sign-Up Sheet

To be part of this study, you can sign up in the Social Sciences Department, in Colston, near the 3rd floor elevator.

Thank you.

INFORMED CONSENT

Title of Research Study: Household Density and Academic Standing Among Community College Students: The Effects of Time Orientation and Spatial Self-Regulation

To the Participant:

The purpose of this research is to find out how student grades are affected by students' housing environments, their attitudes and habits about time, the way that they use their home and campus spaces to study, and their specific study habits.

The format of this study is a questionnaire that you yourself complete. There is no experiment involved. The time needed is approximately 30 to 45 minutes.

The possible discomfort and risks you could reasonably expect are no more than what you would experience from participating in an Introduction to Psychology course.

You will be asked to look at lists of various features of housing, and to respond as to whether these features are available to you, and are important to you. You will also be asked whether you think that the spaces in your house and on campus are helpful or stressful for doing schoolwork. Another part of the study has to do with questions about your attitudes about the past, present, and future. Another part of the study asks for more details about your study habits. You also will be asked for some background information such as your gender, age, and geographic origin. After the end of the semester, the researcher will look up your current grade point average and other relevant academic information in BCC's computerized student records system. All of this information will be used to see how certain responses that students provide in the questionnaire "correlate," or match up with, their academic results at the end of the semester. All of the answers you give will be kept completely confidential and will not be shared by the researcher with anyone else.

Survey research does not look for details about any one person, but instead tries to discover patterns about large groups of people. This semester, hundreds of PSY 11 students are expected to participate in this research study. The answers you and your classmates give, together, will help to show how students, in general, feel the types of housing in which they live, how they feel about the BCC campus, and how all of this affects students' academic performance. The results of this study also may help professionals such as educational policy makers, urban planners, and other social scientists to understand how certain housing characteristics affect people's lives.

Your participation is completely voluntary. You may choose not to participate, or if you start the study, you can choose not to answer certain questions, or you can decide at any time that you do not want to continue. These choices have no effect at all on your grades.

You may decide to participate in a totally different study, or instead to complete a written assignment. (For more instructions, please also read the handout, "Research Participation Requirement for Psychology 11" which is available from your PSY-11 instructor, or from the researcher.)

(continued on reverse side)

If the researcher running this study is also your PSY-11 instructor, your participation has no effect at all, better or worse, on how you are graded or treated in the course. The data that is collected will not be opened until after grades have been entered at the end of this semester.

Your participation is completely confidential. After you finish the questionnaire, you yourself will place it in a covered box together with the questionnaires of other students. After grades are entered at the end of this semester, the researcher will look up your latest Grade Point Average and other relevant academic information in BCC's computerized student records system. The purpose of checking student final grades is to find a statistical connection between the other questions on the survey and how students do academically. Individual student records will not be used by the researcher for any other purposes than those described here. The questionnaire you completed will be coded only so that the researcher can link your responses to your final grades, but no one else will be able to know who you are, or what answers you gave.

If you would like more information about the goals, methods or results of this research study, please contact the Principal Investigator, Grace Campagna, in Room 311, Colston Hall, or at grace.campagna@bcc.cuny.edu.

If for any reason you feel that you were not treated fairly and with respect, or that your confidentiality was not maintained, you may report this to your professor, or to the Psychology Coordinator, Randi Shane, in Colston Room 314A (phone number 718-289-5697), or to the chair of the BCC Institutional Review Board (IRB) for the Protection of Human Subjects, Martin Pulver, in Meister Room 813 (phone number 718-289-5555).

* * * * * * * * * * * * *

TO BE COMPLETED BEFORE BEGINNING THE STUDY:

I have been informed of the possible risks of participating in this study. I understand that I can choose not to participate, to not answer any question that I do not want to answer, or to end my participation at any time. I understand that my decision will have no effect on my grade or how I am treated with regard to the PSY 11- course.

If the person running this study is also my PSY 11- instructor, I understand that I will not be treated differently in any way, for better or worse.

I understand that the researcher will look up my BCC academic record after the end of this semester. I understand that my academic record and all answers I give on the questionnaire are completely confidential.

As of today's date, I am at least 18 years of age.

_____ _____

Participant's Name (please print) Participant's PSY 11 Section #

_____ _____

Participant's Signature Today's Date

APPENDIX B

QUESTIONNAIRE

Questionnaire
Section I

1. What is your gender? _____ Male _____ Female

2. As of today's date, how old are you? _____

3. Do you have a steady job right now? _____ No _____ Yes

If YES, how many hours do you usually work per week? _____

The following questions are about where you now live. Your "household" is an apartment if you live in an apartment, or a house if you live in a house.

4. Do you live alone or with others? _____ Alone (*Please continue on the next side >>>>)*

_____ With others *(Please answer the rest of this page first.)*

5. Including yourself, how many people live in your household? _____
(Please count anyone who stays there more than they stay anyplace else.)

6. How are these people connected to you? *Check as many as apply*.

_____ my spouse/long-term partner
_____ my parent(s)
_____ my sibling(s) (brother/sister)
_____ my child / children
_____ my grandparent(s)
_____ my other relatives (such as aunt, uncle, cousin, stepchild, niece, nephew, grandchild, etc.)
_____ someone not related to anyone in the household

7. Are there children under age 18 in your household? _____ No _____ Yes

If yes, How many? _____

Please check (√) their age ranges: _____ up to age 5 _____ ages 6-12 _____ ages 13-17

8a. "I spend a lot of time taking care of one or more of the children who live with me." (Please √ below:)

_____ very true _____ a little true _____ not really _____ not at all

8b. "I spend a lot of time taking care of an elderly or disabled adult who lives with me." (Please √ below:)

_____ very true _____ a little true _____ not really _____ not at all

9. Which is the closest way to describe your monthly housing costs (rent, electricity, etc.) *Check one*:

_____ I pay all the household monthly costs.
_____ Everything (or almost) is in my name, but the people I live with give me some money for it.
_____ Everything (or almost) is in someone else's name, and I give them some money for it.
_____ I don't contribute any money for my monthly housing costs.

10. Not counting hallways and bathrooms, how many rooms in total are in your home/apartment? _____
(Count the kitchen only if it is big enough for a table and chairs, and people can sit there.)

11. How many of these rooms usually have somebody sleeping there at night? _____

12. Which of the following statements best describes your geographic background?

_____ I was born and grew up only in the USA.
_____ I was born outside the USA and moved to this country over 10 years ago.
_____ I was born outside the USA and moved to this country between 5 and 10 years ago.
_____ I was born outside the USA and moved to this country between 1 and 5 years ago.
_____ I was born outside the USA and moved to this country in the past 12 months.

13. In which one of the following places did you spend MOST of your childhood (up to age 17)?

_____ Northeastern USA
_____ Southern part of the USA
_____ Some other part of the USA
_____ Central or South America
_____ One of the Caribbean islands
_____ Africa (south of the Sahara)
_____ The Middle East or North Africa
_____ Europe
_____ East Asia or a Pacific Island
_____ South or Central Asia

14. Was the place where you spent most or all of your childhood a:

_____ large city
_____ village or small town where most people knew each other
_____ medium-sized city or town
_____ rural area where the houses were far apart.

15. How strongly do you identify yourself NOW as a person from this part of the world?

_____ very much _____ somewhat _____ not really _____ not at all

16. Please think of the place you would LIKE to live when you finish your education, and check it below:

_____ Northeastern USA
_____ Southern part of the USA
_____ Some other part of the USA
_____ Central or South America
_____ One of the Caribbean islands
_____ Africa (south of the Sahara)
_____ The Middle East or North Africa
_____ Europe
_____ East Asia or a Pacific Island
_____ South or Central Asia

17. Is the place where you would like to live in the future a:

_____ large city
_____ village or small town where most people know each other
_____ medium-sized city or town
_____ rural area where the houses are far apart.

18. How important is it to you NOW to be able to live in that part of the world when you finish your education?

_____ very much _____ somewhat _____ not really _____ not at all

19. As of now, how do you define "finishing your education"?

_____ graduating from BCC
_____ completing a Master's degree or higher
_____ graduating from a 4-year college
_____ I'm not sure how much more education I'm planning.

Section II

For Questions 1 through 18, <u>Please think about the housing you live in now, and indicate whether each of these situations, items, etc. is AVAILABLE to you.</u> *(If you live alone, you can skip questions 8 to 15.)*

"Right now, I have …:

1) a comfortable and safe outdoor place near my home where I can spend leisure time with others.

_____ all of the time _____ most of the time _____ some of the time _____ never

2) a comfortable and safe outdoor place near my home where I can spend quiet time alone.

_____ all of the time _____ most of the time _____ some of the time _____ never

3) a view of nature (trees, gardens, parks, rivers, etc.) from inside my home.

_____ all of the time _____ most of the time _____ some of the time _____ never

4) a place to live where I think that the interior (walls, floors, furniture, etc.) is nice to look at.

_____ all of the time _____ most of the time _____ some of the time _____ never

5) enough comfortable space inside the home to invite friends or relatives to visit.

_____ all of the time _____ most of the time _____ some of the time _____ never

6) a place to live where things work the way that they are supposed to (plumbing, electricity, etc.)

_____ all of the time _____ most of the time _____ some of the time _____ never

7) enough places inside the household for storage, to put away the things that belong to me.

_____ all of the time _____ most of the time _____ some of the time _____ never

8) a place inside my home where everybody who lives there can be together comfortably.

_____ all of the time _____ most of the time _____ some of the time _____ never

9) a place inside the household where some of the people can have privacy together apart from others in the home.

_____ all of the time _____ most of the time _____ some of the time _____ never

10) a place inside my home where I can spend quiet time alone whenever I want to.

_____ all of the time _____ most of the time _____ some of the time _____ never

11) separate sleeping areas for each person who lives there (not counting the adult couples).

_____ all of the time _____ most of the time _____ some of the time _____ never _____ n/a – adult couple only

12) separate sleeping areas for the adults and the children.

_____ all of the time _____ most of the time _____ some of the time _____ never _____ n/a – no children

13) separate sleeping areas for males and females (not counting the adult couples).

_____ all of the time _____ most of the time _____ some of the time _____ never _____ n/a – same gender only

14) a place inside the household where someone can use the toilet comfortably and in privacy.

_____ all of the time _____ most of the time _____ some of the time _____ never

15) a place inside the household where a person can wash or bathe comfortably and in privacy.

_____ all of the time _____ most of the time _____ some of the time _____ never

16) when inside my home, no unwanted noise from neighbors or other people outside.

_____ all of the time _____ most of the time _____ some of the time _____ never

17) when inside my home, no unpleasant smells, dirt, etc. from neighbors or other people outside.

_____ all of the time _____ most of the time _____ some of the time _____ never

18) when inside my home, no worry about the actions of neighbors or other people outside.

_____ all of the time _____ most of the time _____ some of the time _____ never

19) Now, please think of where you live compared to most of the other people living near you in your area. Compared to your neighbors, would you say that the housing that you now have is:

____ much better ____ a little better ____ about the same ____ a little worse ____ much worse

20) For how long have you lived in the housing about which you're answering these questions?

____ less than one month ____ 1 – 3 months ____ 3 – 12 months ____ more than one year

For Questions 20 through 38, p<u>lease indicate how IMPORTANT to you each of these situations or things are to you , whether or not it's actually available to you in the housing you have right now.</u>

"Right now, it's important for me to have …: *(If you live alone, you can skip questions 28 to 35.)*

21) a comfortable and safe outdoor place near my home where I can spend leisure time with others.

_____ very important _____ a little important _____ not too important _____ not at all important

22) a comfortable and safe outdoor place near my home where I can spend quiet time alone.

_____ very important _____ a little important _____ not too important _____ not at all important

23) a view of nature (trees, gardens, parks, rivers, etc.) from inside my home.

_____ very important _____ a little important _____ not too important _____ not at all important

24) a place to live where I think that the interior (walls, floors, furniture, etc.) is nice to look at.

_____ very important _____ a little important _____ not too important _____ not at all important

25) enough comfortable space inside the home to invite friends or relatives to visit.

_____ very important _____ a little important _____ not too important _____ not at all important

26) a place to live where things work the way that they are supposed to (plumbing, electricity, etc.)

_____ very important _____ a little important _____ not too important _____ not at all important

27) enough places inside the household for storage, to put away the things that belong to me.

_____ very important _____ a little important _____ not too important _____ not at all important

28) a place inside my home where everybody who lives there can be together comfortably.

_____ very important _____ a little important _____ not too important _____ not at all important

29) a place inside the household where some of the people can have privacy together apart from others in the home.

_____ very important _____ a little important _____ not too important _____ not at all important

30) a place inside my home where I can spend quiet time alone whenever I want to.

_____ very important _____ a little important _____ not too important _____ not at all important

31) separate sleeping areas for each person who lives there (not counting the adult couples).

_____ n/a – adult couple only

_____ very important _____ a little important _____ not too important _____ not at all important

32) separate sleeping areas for the adults and the children.

_____ n/a – no children

_____ very important _____ a little important _____ not too important _____ not at all important

33) separate sleeping areas for males and females (not counting the adult couples).

_____ n/a – one gender only

_____ very important _____ a little important _____ not too important _____ not at all important

34) a place inside the household where someone can use the toilet comfortably and in privacy.

_____ very important _____ a little important _____ not too important _____ not at all important

35) a place inside the household where a person can wash or bathe comfortably and in privacy.

_____ very important _____ a little important _____ not too important _____ not at all important

36) when inside the home, no unwanted noise from neighbors or other people outside.

_____ very important _____ a little important _____ not too important _____ not at all important

37) when inside the home, no unpleasant smells, dirt, etc. from neighbors or other people outside.

_____ very important _____ a little important _____ not too important _____ not at all important

38) when inside the home, no worry about the actions of neighbors or other people outside.

_____ very important _____ a little important _____ not too important _____ not at all important

39) Overall, how satisfied are you with the interior of the home or apartment where you live right now?

_____ very satisfied _____ a little satisfied _____ not too satisfied _____ not at all satisfied

40) Overall, how satisfied are you with the interior of the building where you live right now? (Please skip if it's a house.)

_____ very satisfied _____ a little satisfied _____ not too satisfied _____ not at all satisfied

41) Compared to how other people living in your community feel about their housing, is your satisfaction level:

_____ much higher _____ a little higher _____ about the same _____ a little lower _____ much lower

Section III

The questions in this section ask you about your feelings and thoughts during the last month. In each case, please check (√) how often you felt or thought a certain way.

1. How often have you been upset because of some unexpected problem with the physical condition of your home?
_____ *never* _____ *almost never* _____ *sometimes* _____*fairly often*_____ *very often*

2. How often have you felt that you were unable to do anything about the physical condition of the inside of your home?
_____ *never* _____ *almost never* _____ *sometimes* _____*fairly often*_____ *very often*

3. How often have you felt nervous and stressed by how crowded your home is?
_____ *never* _____ *almost never* _____ *sometimes* _____*fairly often*_____ *very often*

4. How often have you felt confident about your ability to deal with noise or other irritating distraction inside your home?
_____ *never* _____ *almost never* _____ *sometimes* _____*fairly often*_____ *very often*

5. How often have you felt satisfied that things were going your way in how you use the space inside your home?
_____ *never* _____ *almost never* _____ *sometimes* _____*fairly often*_____ *very often*

6. How often have you felt that you could not manage everything you had to do to take care of the place where you live?
_____ *never* _____ *almost never* _____ *sometimes* _____*fairly often*_____ *very often*

7. How often have you felt confident about your ability to deal with noise or other irritating distractions from neighbors in your building or from nearby buildings?

_____ *never* _____ *almost never* _____ *sometimes* _____*fairly often*_____ *very often*

8. How often have you felt that you were able to keep the places in your home comfortable enough for yourself?

_____ *never* _____ *almost never* _____ *sometimes* _____*fairly often*_____ *very often*

9. How often have you been angry because you didn't have enough privacy or personal "space" for yourself at home?
_____ *never* _____ *almost never* _____ *sometimes* _____*fairly often*_____ *very often*

10. How often have you felt that your responsibilities at home were piling up so high that you could not overcome them?
_____ *never* _____ *almost never* _____ *sometimes* _____*fairly often* _____ *very often*

11. How often have you found yourself withdrawing from or trying to ignore what was going at home?

_____ *never* _____ *almost never* _____ *sometimes* _____*fairly often* _____ *very often*

12. How often have you felt comfortable that could predict how things would happen at home each day?

_____ *never* _____ *almost never* _____ *sometimes* _____*fairly often* _____ *very often*

Section IV[26]

For each statement below, please answer (as honestly as possible) how typical the description is of you.

1. I believe that getting together with one's friends to party is one of life's important pleasures.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

2. Familiar childhood sights, sounds, smells often bring back a flood of wonderful memories.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

3. Fate determines much in my life.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

4. I often think of what I should have done differently in my life.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

5. My decisions are mostly influenced by people and things around me.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

6. I believe that a person's day should be planned ahead each morning.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

7. It gives me pleasure to think about my past.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

8. I do things impulsively.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

9. On balance, there is much more good than bad to recall in my past.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

10. When listening to my favorite music, I often lose all track of time.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

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[26] :

Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual-differences metric. *Journal of Personality and Social Psychology, 77,* 1277 – 1288.

11. Meeting tomorrow's deadlines and doing other necessary work comes before tonight's play.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

12. Since whatever will be will be, it doesn't really matter what I do.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

13.1 enjoy stories about how things used to be in the "good old times."

____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

14. Painful past experiences keep being replayed in my mind.

____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

15. I try to live my life as fully as possible, one day at a time.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

16. It upsets me to be late for appointments.

____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

17. Happy memories of good times spring readily to mind.

____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

18. I meet my obligations to friends and authorities on time.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

19. I've taken my share of abuse and rejection in the past.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

20. I make decisions on the spur of the moment.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

21. I take each day as it is rather than try to plan it out.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

22. The past has too many unpleasant memories that I prefer not to think about.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

23. It is important to put excitement in my life.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

24. I've made mistakes in the past that I wish I could undo.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

25. I feel that it's more important to enjoy what you're doing than to get work done on time.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

26. I get nostalgic about my childhood.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

27. Taking risks keeps my life from becoming boring.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

28. Things rarely work out as I expected.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

29. It's hard for me to forget unpleasant images of my youth.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

30. It takes joy out of the process and flow of my activities, if I have to think about goals and outcomes.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

31. Even when I am enjoying the present, I am drawn back to comparisons with similar past experiences.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

32. You can't really plan for the future because things change so much.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

34. My life path is controlled by forces I cannot influence.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

35. It doesn't make sense to worry about the future, since there is nothing that I can do about it anyway.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

36. I find myself tuning out when family members talk about the way things used to be.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

37. I take risks to put excitement in my life.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

38. I make lists of things to do.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

39. I often follow my heart more than my head.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

40. I am able to resist temptations when I know that there is work to be done.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

41. I find myself getting swept up in the excitement of the moment.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

42. Life today is too complicated; I would prefer the simpler life of the past.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

43. I prefer friends who are spontaneous rather than predictable.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

44. I like family rituals and traditions that are regularly repeated.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

45. I think about the bad things that have happened to me in the past.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

46. Spending what I earn on pleasures today is better than saving for tomorrow's security.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

47. Often luck pays off better than hard work.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

48. I think about the good things that I have missed out on in my life.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

49. I like my close relationships to be passionate.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

50. There will always be time to catch up on my work.
____ *very untypical* ____ *untypical* ____ *neutral* ____ *typical* ____ *very typical*

Section V

Please think about your experiences at home and check (√) how much you agree or disagree with each:

1) I have a place for myself at home where I know that I can focus on my school work.

_____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

2) I have a place for myself at home where I can keep my books and school things from day to day.

_____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

3) I'm satisfied that the people I live with are considerate when I need to pay attention to doing school work at home.

_____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

4) My home is a good place for me to relax with leisure activities that I like.

_____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

5) I feel free to rearrange my home environment from day to day so that it's a good place to do my school work.

_____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

6) When I try to do school work at home it takes a lot of effort to avoid getting distracted by the people I live with.

____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

7) I prefer to be at home as little as possible.

____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

8) The way that my home is makes me give up when I try to do my school work at home.

____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

9) I can usually push myself to concentrate so that I can do my school work at home.

____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

10) I can usually predict when during the day or week is a good or bad time at home to get my school work done.

_____ disagree a lot _____ disagree a little _____ neither agree nor disagree _____ agree a little _____ agree a lot

11) I'm good at being flexible in doing my school work around the needs and schedules of the people I live with.

_____ disagree a lot _____ disagree a little _____ neither agree nor disagree _____ agree a little _____ agree a lot

12) I'm comfortable asking the people I live with to share daily responsibilities so that I have time to be a good student.

_____ disagree a lot _____ disagree a little _____ neither agree nor disagree _____ agree a little _____ agree a lot

Section VI

For each statement in this section about how students study and learn, please circle the number ranging from 1, "not at all true of me," to 4,"neutral," to 7, "very true of me," that best describes you.

1. I prefer course material that really challenges me so I can learn new things.
"*Not at all true about me*" **1 2 3 4 5 6 7** "*Very true about me*"
neutral

2. If I study in appropriate ways, then I will be able to learn the material in a particular course.
"*Not at all true about me*" **1 2 3 4 5 6 7** "*Very true about me*"

3. When I take a test, I think about how poorly I am doing compared with other students.
"*Not at all true about me*" **1 2 3 4 5 6 7** "*Very true about me*"

4. I think I will be able to use what I learn in one course in other courses I take.
"*Not at all true about me*" **1 2 3 4 5 6 7** "*Very true about me*"

5. I believe I will receive an excellent grade in any particular course.
"*Not at all true about me*" **1 2 3 4 5 6 7** "*Very true about me*"

6. Getting good grades in my courses is the most satisfying thing for me right now.
"*Not at all true about me*" **1 2 3 4 5 6 7** "*Very true about me*"

7. It is my own fault if I don't learn the material in a course.
"*Not at all true about me*" **1 2 3 4 5 6 7** "*Very true about me*"

8. I'm confident that I can learn the basic concepts taught in a course.
"*Not at all true about me*" **1 2 3 4 5 6 7** "*Very true about me*"

9. If I can, I want to get better grades in my courses than most of the other students.
"*Not at all true about me*" **1 2 3 4 5 6 7** "*Very true about me*"

10. When I take tests, I think of the consequences of failing.
"*Not at all true about me*" **1 2 3 4 5 6 7** "*Very true about me*"

11. I'm confident that I can understand the most complex material in a course.
"*Not at all true about me*" **1 2 3 4 5 6 7** "*Very true about me*"

12. I prefer course material that arouses my curiosity, even if it is difficult to learn.
"*Not at all true about me*" **1 2 3 4 5 6 7** "*Very true about me*"

13. If I try hard enough, then I will understand course material.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

14. I have an uneasy, upset feeling when I take an exam.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

15. I'm confident that I can do an excellent job on the assignments and tests in my courses.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

16. I expect to do well in my courses.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

17. I think the material in my courses is generally useful for me to learn.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

18. When I have the opportunity, I choose course assignments that I can learn from, even if they don't guarantee a good grade.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

19. If I don't understand the course material, it is because I didn't try hard enough.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

20. I generally like the material covered in my courses.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

21. I feel my heart beating fast when I take an exam.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

22. I want to do well in my courses because it is important to show my ability to my family, friends, employer, or others.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

23. During class time I often miss important points because I'm thinking of other things.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

24. When studying for a course, I often try to explain the material to a classmate or friend.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

25. I often feel so lazy or bored when I study for a course that I quit before I finish what I planned to do.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

26. Even if I have trouble learning the material in a course, I try to do the work on my own, without help from anyone.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

27. When I become confused about something I'm reading for a course, I go back and try to figure it out.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

28. I make good use of my study time for my courses.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

29. I try to work with other students from my courses to complete assignments.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

30. I work hard to do well in my courses even if I don't like what we're doing in them.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

31. When studying for a course, I often set aside time to discuss course material with a group of students from the class.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

32. I find it hard to stick to a study schedule.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

33. I often find that I have been reading for a course but don't know what it was all about.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

34. I ask the instructor to clarify concepts I don't understand well.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

35. When course work is difficult, I either give up or only study the easy parts.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

36. I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for a course.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

37. When I can't understand the material in a course, I ask another student in the course for help.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

38. I make sure that I keep up with the weekly readings and assignments for my courses.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

39. I attend my courses regularly.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

40. Even when course materials are dull and uninteresting, I manage to keep working until I'm finished.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

41. I try to identify students in my courses whom I can ask for help if necessary.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

42. When studying for a course I try to determine which concepts I don't understand well.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

43. I often find that I don't spend very much time on a course because of other activities.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

44. If I get confused taking notes in class, I make sure to sort it out afterwards.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

45. I rarely find time to review my notes or readings before an exam.
"*Not at all true about me*" **1** **2** **3** **4** **5** **6** **7** "*Very true about me*"

Section VII

Please think about your experiences at BCC and check (√) how much you agree or disagree with each:

1) I have certain places on campus where I know I can focus on my school work.

_____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

2) When I am on campus I feel free from demands and expectations from outside (from family, friends, work, etc.)

_____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

3) I don't have other good places besides the BCC campus to study and do my homework.

_____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

4) The BCC campus environment gives me the opportunity to do non-academic activities that I like.

_____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

5) When the weather is good I like to read or study outdoors on campus.

____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

6) Being around other students on campus helps me to focus on getting my school work done.

____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

7) I prefer to be on campus as little as possible.

____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

8) The way that the campus is makes me give up when I try to do my school work at BCC.

____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

9) I can usually push myself to concentrate so that I can do my school work while I'm on campus.

____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

10) I can usually predict when during the day or week is a good or bad time around campus to get my school work done.

____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

11) I'm good at being flexible in doing my school work in different places on campus if I have to.

____ _____ _____ _____ _____
disagree a lot disagree a little neither agree nor disagree agree a little agree a lot

Thank you.

You have reached the end of the questionnaire for the PSY 11 Research Study.

APPENDIX C. Sample Academic Data

Table C.1. Student sample academic data.

Item	min	max	*M*	*SD*
Semester GPA	0.00	4.00	2.65	0.94
Semester credits	3	20	11.93	2.97
Remediation courses other than ESL	0	6	1.56	1.17

Note. Academic data for the 490 cases were obtained directly from official campus records.

Table C.2. *T* tests of independent means for sample demographic differences in semester GPA.

	Group	Dummy-coded *M (SD)*		
Binomial variable	1 n	1	0	*t*
Female gender	319	2.67 (0.94)	2.60 (0.96)	0.77
Age 18 to 21	248	2.47 (0.97)	2.83 (0.88)	-4.35***
Primary household	139	2.78 (0.87)	2.59 (0.97)	1.99*
Filial household	210	2.55 (0.91)	2.72 (0.96)	-1.95†
Caregiver	162	2.73 (0.91)	2.61 (0.96)	1.34
Immigrant	226	2.81 (0.91)	2.50 (0.95)	3.68***
Room ratio = 1	207	2.58 (0.98)	2.71 (0.91)	-1.76†

* $p < .05$ *** $p < .001$ † $p < .10$

Table C.3. Enrollment level comparison, sample versus campus population.

	Full time	Part time	X^2 value
Fall 2010			
Sample	212 (66%)	109 (34%)	9.26**
Campus	6,192 (58%)	4,548 (42%)	
Spring 2011			
Sample	117 (69%)	52 (31%)	15.03***
Campus	6,015 (54%)	5,047 (46%)	

** $p < .01$ *** $p < .001$

Table C.4. Age distribution comparison: Sample versus campus population.

Age range:	up to age 18	19 to 21	22 to 24	25 to 29	30 to 39	40 and over	Total	X^2 value
Fall 2010								
Sample	55 (17%)	112 (35%)	51 (16%)	60 (19%)	36 (11%)	7 (2%)	321	
Campus	1,017 (9%)	3,717 (35%)	2,265 (21%)	1,655 (15%)	1,351 (13%)	735 (7%)	10,740	36.96***
Spring 2011								
Sample	19 (11%)	62 (37%)	29 (17%)	23 (14%)	26 (15%)	10 (6%)	169	
Campus	375 (3%)	3 594 (32%)	2,888 (26%)	1,972 (18%)	1,456 (13%)	777 (7%)	11,062	39.45***

Note. Minimum age for participation in the sample was 18.

*** $p < .001$

Table C.5. Sample cross-tabulation for self-reported age and gender.

	Actual		Expected		
Gender	Ages 18 to 21	Ages 22 and over	Ages 18 to 21	Ages 22 and over	X^2 value
Female	148 (30%)	171 (35%)	162 (33%)	157 (32%)	6.50 *
Male	100 (20%)	71 (14%)	88 (18%)	85 (17%)	
Total	248 (51%)	242 (49%)	248 (51%)	242 (49%)	

Note. Campus population for Fall 2010 was 59% (n = 6,378) female and 41% (n = 4,362) male. Campus population for Spring 2011 was 58% (n = 6,446) female and 42% (n = 4,616) male.

* $p < .05$

APPENDIX D. Demographic data and household characteristics.

Table D.1. Self-reported individual and household data from Questionnaire page 1, with *t*-tests of independent means for gender and age.

Item	min	max	*M*	*SD*	skewness	kurtosis	*t* value	
							Gender = female	Age = 18-21
Age	18	58	24.33	7.43	1.76	3.12	1.41	n/a
Hours worked per week								
All respondents	0	60	12.76	16.32	0.79	-0.83	-1.08[a]	-4.21 *** [a]
Employed respondents (n = 208)	5	60	30.05	10.34	0.15	0.01	-2.54 *	-5.00 ***
Household size	2	10	4.00	1.58	0.81	0.51	-1.60	3.97 ***
Children under 18 in household								
All households	0	5	1.09	1.10	0.99	0.78	2.83 **	-1.34
Households with children (n = 308)	1	5	1.73	0.90	1.36	1.82	1.52	-0.33
Total number of rooms	1	12	3.36	1.57	1.66	5.50	0.93	1.20
Number of rooms used for sleeping	1	7	2.38	0.99	1.21	3.39	-1.93† [a]	2.97 **
Persons per room	0.33	6.00	1.37	0.72	1.90	6.40	-2.29 *	1.64
Percent of rooms used for sleeping	20	100	76	22.94	-0.32	-1.20	-3.75 ***	2.25 * [a]

Table D.2. *T* tests of independent means for *Persons per room* (untransformed) and X^2 comparisons for *Room ratio=1*.

Binomial variable	Group 1 n	*Persons per room* Dummy-coded *M (SD)*			*Room ratio=1* coded "yes" [b]		
		1	0	*t*	*% of* Group 1	*% of* Group 0	X^2 value
Female gender	319	1.32 (0.69)	1.47 (0.76)	-2.29 *	38%	53%	11.61**
Age 18 to 21	248	1.43 (0.75)	1.32 (0.68)	1.64	51%	44%	0.35
Primary household	139	1.37 (0.68)	1.38 (0.73)	-0.17	37%	44%	1.86
Filial household	210	1.51 (0.74)	1.28 (0.68)	3.55***	49%	38%	6.03*
Caregiver	162	1.47 (0.73)	1.33 (0.71)	2.06*	41%	43%	0.22
Immigrant	226	1.53 (0.80)	1.23 (0.61)	4.58*** [a]	50%	36%	10.34**
Room ratio=1	207	1.83 (0.76)	1.04 (0.46)	13.24*** [a]	n/a	n/a	n/a

[a] n. Levene's test for equality of variances is significant ($p < .05$). Variance around the mean is not equivalent across groups for this comparison.

[b] *n.* Of the sample of 490 students, 207 (42%) reported using all rooms for sleeping.

* $p < .05$ ** $p < .05$ *** $p < .001$ † $p < .10$

Table D.3. Self-reported household composition with cross-tabulations by gender and age group.

Relationship to respondent	Gender		X^2 value	Age group		X^2 value	All respondents
	female	male		18 - 21	22 and over		
Spouse/long-term partner	64	22	3.99 *	6	80	79.45 ***	86 (18%)
Parent(s)	178	120	9.66 **	213	85	132.45 ***	298 (61%)
Sibling(s)	141	113	21.35 ***	187	67	111.70 ***	254 (52%)
Own child(ren)	121	20	37.39 ***	9	132	154.93 ***	141 (29%)
Any child(ren) in household	213	95	6.00 *	148	160	2.18	308 (63%)
Up to age 5	101	32	9.44 **	42	91	26.46 ***	133 (27%)
Age 6 – 12	107	38	6.85 **	66	79	2.14	145 (30%)
Ages 13 – 17	88	53	0.63	97	44	26.18 ***	141 (29%)
Grandparent(s)	25	17	0.63	26	16	2.34	42 (9%)
Other relative	62	43	2.16	48	57	1.28	105 (21%)
Other non-relative	25	20	1.99	25	20	0.48	45 (9%)

* $p < .05$ ** $p < .05$ *** $p < .001$

Table D.4. Self-reported caregiving responsibility.

Item response: Question 8	Very true	A little	Not really	Not at all	X^2 value Female	X^2 value Age 22+
"I spend a lot of time taking care of one or more children who live with me."	152	58	58	222	54.60 ***	76.81 ***
"I spend a lot of time taking care of an elderly or disabled adult who lives with me."	15	32	28	415	17.11 **	8.62 †

** $p < .05$ *** $p < .001$ † $p < .10$

Table D.5. Self-reported household expenses

Item response: Question 9	Gender		X^2 value	Age range		X^2 value	All respondents
	female	male		18 - 21	22 +		
"I pay all the monthly household costs."	64	12		5	71		76 (16%)
"Everything (or almost) is in my name, but the people I live with give me some money for it.	25	13		3	35		38 (8%)
"Everything (or almost) in in somebody else's name, and I give them some money for it."	104	70	15.06 **	81	93	151.65 ***	174 (36%)
"I don't contribute any money for my monthly household costs."	126	76		159	43		202 (41%)

** $p < .05$ *** $p < .001$

Table D.6. Immigration and geographic origin.

Item 12: Which of the following statements best describes your geographic background? [a]	n (%)
"I was born and grew up only in the USA."	264 (54%)
"I was born outside the USA and moved to this country over 10 years ago."	95 (19%)
"I was born outside the USA and moved to this country between 5 and 10 years ago."	53 (11%)
"I was born outside the USA and moved to this country between 1 and 5 years ago."	66 (13%)
"I was born outside the USA and moved to this country in the past 12 months."	12 (2%)

Item 13: In which one of the following places did you spend MOST of your childhood (up to age 17)?	n (%)
Northeastern USA	288 (59%)
Southern part of the USA	8 (2%)
Some other part of the USA	16 (4%)
Central or South America	14 (3%)
One of the Caribbean islands	108 (22%)
Africa (south of the Sahara)	48 (10%)
Other non-US	8 (2%)

Item 14: Was the place you spent most or all of your childhood a:	n (%)
Large city	336 (69%)
Medium-sized city or town	97 (20%)
Village or small town where most people knew each other	47 (10%)
Rural area where the houses were far apart	10 (2%)

[a] *n.* Approximately 5 respondents indicated verbally that they were born in the USA, grew up elsewhere, and later returned to the USA. The researcher instructed them to select the response that most closely matched their duration of residence outside the USA.

APPENDIX E. Item analyses

Table E.1. Item analysis for Questionnaire Section II: Availability and importance of housing features.

Items measuring availability of housing features "*Right now, I have…*:	0: all of the time.	1: Most of the time.	2: Some of the time.	3: Never.	*M*	*SD*	skewness	kurtosis
1) a comfortable and safe outdoor place near my home where I can spend leisure time with others.	113	112	173	92	-1.50	1.04	0.11	-1.18
2) a comfortable and safe outdoor place near my home where I can spend quiet time alone.	86	93	162	149	-1.76	1.-7	0.39	-1.10
3) a view of nature (trees, gardens, parks, rivers, etc.) from inside my home.	134	58	122	176	-1.69	1.22	0.31	-1.48
4) a place to live where I think that the interior (walls, floors, furniture, etc.) is nice to look at.	168	133	133	56	-1.16	1.02	-0.32	-1.11
5) enough comfortable space inside the home to invite friends or relatives to visit.	207	105	121	57	-1.06	1.07	-0.47	-1.14
6) a place to live where things work the way that they are supposed to (plumbing, electricity, etc.)	225	167	86	12	-0.77	0.82	-0.72	-0.43
7) enough places inside the household for storage, to put away the things that belong to me.	167	125	138	60	-1.19	1.04	-0.28	-1.17
8) a place inside my home where everybody who lives there can be together comfortably.	253	116	88	33	-0.80	0.96	-0.87	-0.46
9) a place inside the household where some of the people can have privacy together apart from others in the home.	184	106	136	64	-1.16	1.07	-0.31	-1.25
10) a place inside my home where I can spend quiet time alone whenever I want to.	155	94	152	89	-1.36	1.11	-0.07	-1.37
14) a place inside the household where someone can use the toilet comfortably and in privacy.	399	61	22	8	-0.26	0.62	-2.57	6.40
15) a place inside the household where a person can wash or bathe comfortably and in privacy.	402	64	18	6	-0.24	0.58	-2.66	7.25
16) when inside my home, no unwanted noise from neighbors or other people outside.	111	135	179	65	-1.41	0.98	0.03	-1.04
17) when inside my home, no unpleasant smells, dirt, etc. from neighbors or other people outside	192	130	91	77	-1.11	1.09	-0.51	-1.09
18) when inside my home, no worry about the actions of neighbors or other people outside.	178	140	117	55	-1.10	1.02	-0.44	-1.01

(*table continues)*

Item	1: Much better.	2: A little better.	3: About the same.	4: A little worse.	5: Much worse.	*M*	*SD*	skewness	kurtosis
19) Now, please think of where you live compared to most of the other people living near you in your area. Compared to your neighbors, would you say that the housing that you now have is:	136	115	196	30	13	2.32	1.03	0.25	-0.50

Item	less than one month	1 – 3 months	3 – 12 months	more than one year
20) For how long have you lived in the housing about which you're answering these questions?	10	20	51	409

"*Right now, it's important for me to have…*:	3: very important	2: A little important	1: Not too important	0: Not at all important	*M*	*SD*	skewness	kurtosis
21) a comfortable and safe outdoor place near my home where I can spend leisure time with others.	278	116	76	20	2.33	0.88	-1.06	0.10
22) a comfortable and safe outdoor place near my home where I can spend quiet time alone.	290	104	79	17	2.36	0.87	-1.09	0.00
23) a view of nature (trees, gardens, parks, rivers, etc.) from inside my home.	215	152	104	19	2.15	0.89	-0.63	-0.67
24) a place to live where I think that the interior (walls, floors, furniture, etc.) is nice to look at.	319	109	54	8	2.51	0.76	-1.38	0.95
25) enough comfortable space inside the home to invite friends or relatives to visit.	354	96	33	7	2.63	0.68	-1.83	2.83
26) a place to live where things work the way that they are supposed to (plumbing, electricity, etc.)	447	31	6	6	2.88	0.45	-4.40	21.19
27) enough places inside the household for storage, to put away the things that belong to me.	371	95	21	3	2.70	0.58	-1.99	3.77
28) a place inside my home where everybody who lives there can be together comfortably.	434	37	14	5	2.84	0.51	-3.51	12.89
29) a place inside the household where some of the people can have privacy together apart from others in the home.	415	61	8	6	2.81	0.51	-3.18	11.46
30) a place inside my home where I can spend quiet time alone whenever I want to.	413	59	14	4	2.80	0.52	-2.90	8.98

(*table continues*)

"*Right now, it's important for me to have…:*	3: very important.	2: A little important.	1: Not too important.	0: Not at all important.	*M*	*SD*	skewness	kurtosis
34) a place inside the household where someone can use the toilet comfortably and in privacy.	440	29	15	6	2.84	0.52	-3.67	13.73
35) a place inside the household where a person can wash or bathe comfortably and in privacy.	442	28	16	4	2.85	0.49	-3.68	13.81
36) when inside my home, no unwanted noise from neighbors or other people outside.	349	114	25	2	2.65	0.60	-1.63	2.13
37) when inside my home, no unpleasant smells, dirt, etc. from neighbors or other people outside	430	47	11	2	2.85	0.45	-3.29	11.75
38) when inside my home, no worry about the actions of neighbors or other people outside.	392	75	17	6	2.74	0.58	-2.50	6.53

Item	1:Very satisfied.	2: A little satisfied.	3: Not too satisfied.	4: Not at all satisfied:.	*M*	*SD*	skewness	kurtosis
39) Overall, how satisfied are you with the *interior* of the home or apartment where you live right now?	196	191	75	28	1.87	0.88	0.82	0.03
40) Overall, how satisfied are you with the *interior* of the *building* where you live right now? (Please *skip* if it's a *house*.) (n = 433)	130	156	108	39	2.13	0.95	0.38	-0.82

Item	1: Much higher.	2: A little better.	3: About the same.	4: A little lower.	5: Much lower.	*M*	*SD*	skewness	kurtosis
41) Compared to how other people living in your community feel about *their* housing, is *your* satisfaction level:	106	115	192	53	24	2.54	1.09	0.22	-0.50

Note. Reasons for exclusion of items 11 to 13 and 31 to 33 are described in the Measures section of the Methods chapter.

Table E.2. Item analysis for Perceived housing stress (Questionnaire section III).

Item	1: never.	2: almost never.	3: sometimes.	4: fairly often.	5: very often.	*M*	*SD*	Skewness	Kurtosis
1. How often have you been upset because of some unexpected problem with the physical condition of your home?	93	120	190	56	31	2.62	1.11	0.24	-0.46
2. How often have you felt that you were unable to do anything about the physical condition of the inside of your home?	149	110	120	73	38	2.47	1.27	0.40	-0.93
3. How often have you felt nervous and stressed by how crowded your home is?	207	80	103	52	48	2.29	1.36	0.65	-0.84
4. How often have you felt confident about your ability to deal with noise or other irritating distraction inside your home?	52	82	168	116	72	3.15	1.18	-0.15	-0.73
5. How often have you felt satisfied that things were going your way in how you use the space inside your home?	28	74	159	1125	104	3.41	1.15	-0.24	-0.71
6. How often have you felt that you could not manage everything you had to do to take care of the place where you live?	99	128	151	70	42	2.65	1.20	0.29	-0.73
7. How often have you felt confident about your ability to deal with noise or other irritating distractions from neighbors in your building or from nearby buildings?	51	83	153	132	71	3.18	1.19	-0.21	-0.76
8. How often have you felt that you were able to keep the places in your home comfortable enough for yourself?	25	42	114	145	164	3.78	1.15	-0.71	-0.28
9. How often have you been angry because you didn’t have enough privacy or personal “space” for yourself at home?	128	100	118	68	76	2.72	1.39	0.27	-1.15
10. How often have you felt that your responsibilities at home were piling up so high that you could not overcome them?	129	118	152	55	36	2.49	1.20	0.40	-0.67
11. How often have you found yourself withdrawing from or trying to ignore what was going at home?	112	92	147	85	54	2.75	1.29	0.14	-1.00
12. How often have you felt comfortable that could predict how things would happen at home each day?	32	53	143	162	100	3.50	1.13	-0.49	-0.39

Table E.3. Item analysis for Time orientation (Questionnaire section IV).

Item	1: very untypical	2: untypical	3: neutral.	4: typical.	5: very typical.	*M*	*SD*	Skewness	Kurtosis
1. I believe that getting together with one's friends to party is one of life's important pleasures.	59	87	185	115	44	3.00	1.12	-0.12	-0.59
3. Fate determines much in my life.	45	69	212	97	67	3.15	1.11	-0.10	-0.41
6. I believe a person's day should be planned ahead each morning.	28	55	159	159	89	3.46	1.09	-0.41	-0.35
8. I do things impulsively.	55	113	200	96	26	2.85	1.03	-0.01	-0.42
10. When listening to my favorite music, I often lose all track of time.	45	117	113	153	62	3.14	1.19	-0.15	-0.96
11. Meeting tomorrow's deadlines and doing other necessary work comes before tonight's play.	19	46	116	168	141	3.75	1.09	-0.65	-0.24
12. Since whatever will be will be, it doesn't really matter what I do.	151	167	107	47	18	2.21	1.10	0.69	-0.23
15. I try to live my life as fully as possible, one day at a time.	7	27	111	170	175	3.98	0.97	-0.71	-0.04
16. It upsets me to be late for appointments.	17	22	105	168	178	3.96	1.03	-0.91	0.45
18. I meet my obligations to friends and authorities on time.	9	27	125	213	116	3.82	0.92	-0.63	0.29
20. I make decisions on the spur of the moment.	40	124	193	104	29	2.91	1.01	0.04	-0.42
21. I take each day as it is rather than try to plan it out.	45	122	171	103	49	2.98	1.11	0.08	-0.64
23. It is important to put excitement in my life.	13	18	88	197	174	4.02	0.96	-1.02	0.98
25. I feel that it's more important to enjoy what you're doing than to get work done on time.	112	177	113	55	33	2.43	1.16	0.61	-0.38
27. Taking risks keeps my life from becoming boring.	50	136	167	99	38	2.88	1.09	0.13	-0.61
30. It takes the joy out of the process and flow of my activities, if I have to think about goals and outcomes.	75	144	124	108	39	2.78	1.18	0.17	-0.91

(*table continues*)

Item	1: very untypical	2: untypical	3: neutral.	4: typical.	5: very typical.	*M*	*SD*	Skewness	Kurtosis
32. You can't really plan for the future because things change so much.	48	140	141	104	57	2.96	1.17	0.14	-0.84
34. My life path is controlled by forces I cannot influence.	103	202	136	33	16	2.30	0.98	0.63	-0.23
35. It doesn't make sense to worry about the future, since there is nothing I can do about it anyway.	178	180	82	35	15	2.04	1.05	0.95	0.36
37. I take risks to put excitement in my life.	74	127	147	97	45	2.82	1.18	0.14	-0.83
38. I make lists of things to do.	50	85	113	138	104	3.33	1.27	-0.31	-0.96
39. I often follow my heart more than my head.	21	94	181	116	78	3.28	1.08	-0.01	-0.67
40. I am able to resist temptations when I know that there is work to be done.	13	50	146	180	101	3.62	1.01	-0.43	-0.29
41. I find myself getting swept up in the excitement of the moment.	26	92	200	132	40	3.14	0.99	-0.10	-0.31
42. Life today is too complicated; I would prefer the simpler life of the past.	72	129	146	88	55	2.85	1.21	0.18	-0.84
43. I prefer friends who are spontaneous rather than predictable.	34	81	210	110	55	3.14	1.05	-0.07	-0.32
46. Spending what I earn on pleasures today is better than saving for tomorrow's security.	132	165	123	42	28	2.32	1.13	0.66	-0.22
47. Often luck pays off better than hard work.	156	175	105	38	16	2.15	1.06	0.76	0.19
49. I like my close relationships to be passionate.	10	33	125	191	131	3.82	0.97	-0.61	0.01
50. There will always be time to catch up on my work.	67	162	147	88	26	2.68	1.08	0.26	-0.62

Note. Items for Past negative and Past positive orientations are excluded from the analysis.

Table E.4. Item analysis for Home spatial self-regulation (Questionnaire section V).

Item	1: disagree a lot.	2: disagree a little.	3: neither agree nor disagree.	4: agree a little.	5: agree a lot.	*M*	*SD*	Skewness	Kurtosis
1) I have a place for myself at home where I know that I can focus on my school work.	58	67	37	136	192	3.69	1.41	-0.75	-0.84
2) I have a place for myself at home where I can keep my books and my school things from day to day.	25	33	22	128	282	4.24	1.14	-1.60	1.62
3) I'm satisfied that the people I live with are considerate when I need to pay attention to school work at home.	31	57	59	126	217	3.90	1.26	-0.92	-0.33
4) My home is a good place for me to relax with leisure activities that I like.	42	51	59	127	211	3.84	1.31	-0.91	-0.39
5) I feel free to rearrange my home environment from day to day so that it's a good place to do my school work.	57	53	70	130	180	3.66	1.37	-0.71	-0.76
6) When I try to do school work at home it takes a lot of effort to avoid getting distracted by the people I live with.	98	84	61	125	122	3.18	1.48	-0.22	-1.40
7) I prefer to be home as little as possible.	127	111	93	88	71	2,72	1.40	0.25	-1.23
8) The way that my home is makes me give up when I try to do my school work at home.	192	98	76	87	37	2.34	1.35	0.53	-1.06
9) I can usually push myself to concentrate so that I can do my school work at home.	33	37	70	172	178	3.87	1.18	-1.00	0.17
10) I can usually predict when during the day or week is a good or bad time to get my school work done.	65	44	119	147	115	3.41	1.30	-0.52	-0.75
11) I'm good at being flexible in doing my school work around the needs and schedules of the people I live with.	25	49	100	165	151	3.75	1.15	-0.72	-0.26
12) I'm comfortable asking the people I live with to share daily responsibilities so that I have time to be a good student.	50	47	102	112	179	3.66	1.33	-0.66	-0.72

Table E.5. Item analysis for Motivated strategies for learning (Questionnaire section VI).

Motivation item	1 Not at all true about me	2	3	4	5	6	7 Very true about me	*M*	*SD*	skewness	kurtosis
1. I prefer course material that really challenges me so I can learn new things.	16	13	26	67	119	118	131	5.32	1.52	-0.93	0.51
2. If I study in appropriate ways, then I will be able to learn the material in a particular course.	3	2	7	32	73	154	219	6.08	1.10	-1.47	2.77
3. When I take a test, I think about how poorly I am doing compared with other students.	161	85	48	55	48	39	54	3.16	2.11	0.56	-1.09
4. I think I will be able to use what I learn in one course in other courses I take.	5	11	17	41	82	138	196	5.82	1.34	-1.29	1.45
5. I believe I will receive an excellent grade in any particular course.	5	11	20	74	104	132	144	5.52	1.36	-0.84	0.37
6. Getting good grades in my courses is the most satisfying thing for me right now.	3	1	7	18	43	88	330	6.43	1.02	-2.29	6.20
7. It is my own fault if I don't learn the material in a course.	17	20	17	80	85	100	171	5.41	1.63	-0.95	0.23
8. I'm confident that I can learn the basic concepts taught in a course.	3	2	7	24	66	137	251	6.19	1.08	-1.69	3.66
9. If I can, I want to get better grades in my courses than most of the other students.	8	4	4	28	65	96	285	6.20	1.23	-1.98	4.50
10. When I take tests, I think of the consequences of failing.	58	28	32	61	69	77	165	4.93	2.07	-0.68	-0.83
11. I'm confident that I can understand the most complex material in a course.	4	13	25	71	129	124	124	5.40	1.35	-0.72	0.19
12. I prefer course material that arouses my curiosity, even if it is difficult to learn.	10	6	15	62	88	115	194	5.72	1.41	-1.17	1.18
13. If I try hard enough, then I will understand course material.	4	2	9	23	65	137	250	6.17	1.11	-1.76	3.90
14. I have an uneasy, upset feeling when I take an exam.	85	48	45	78	117	63	54	4.02	1.95	-0.21	-1.11
15. I'm confident that I can do an excellent job on the assignments and tests in my courses.	2	2	13	60	106	149	158	5.74	1.17	-0.81	0.42

(*table continues*)

Motivation item	Not at all true about me..... 1	2	3	4	5	6	...Very true about me 7	*M*	*SD*	skewness	kurtosis
16. I expect to do well in my courses.	1	0	13	28	62	137	248	6.18	1.06	-1.39	1.75
17. I think the material in my courses is generally useful for me to learn.	2	3	12	38	70	145	220	6.03	1.15	-1.33	1.72
18. When I have the opportunity, I choose course assignments that I can learn from, even if they don't guarantee a good grade.	29	26	33	75	135	103	89	4.89	1.67	-0.72	-0.11
19. If I don't understand the course material, it is because I didn't try hard enough.	36	30	50	101	97	79	97	4.67	1.79	-0.43	-0.67
20. I generally like the material covered in my courses.	6	5	25	73	118	145	118	5.45	1.31	-0.80	0.53
21. I feel my heart beating fast when I take an exam.	76	44	41	50	91	72	116	4.46	2.13	-0.38	-1.22
22. I want to do well in my courses because it is important to show my ability to my family, friends, employer, or others.	28	19	12	43	67	95	226	5.63	1.76	-1.34	0.86
Strategy item											
23. During class time I often miss important points because I'm thinking of other things.	100	77	58	71	89	53	42	3.61	1.96	0.13	-1.21
24. When studying for a course, I often try to explain the material to a classmate or friend.	48	34	40	87	114	93	74	4.55	1.82	-0.51	-0.66
25. I often feel so lazy or bored when I study for a course that I quit before I finish what I planned to do.	123	77	60	80	75	43	32	3.33	1.92	-.30	-1.11
26. Even if I have trouble learning the material in a course, I try to do the work on my own, without help from anyone.	35	26	44	55	103	110	117	4.97	1.81	-0.74	-0.42
27. When I become confused about something I'm reading for a course, I go back and try to figure it out.	3	2	12	29	63	158	223	6.09	1.12	-1.55	2.84
28. I make good use of my study time for my courses.	17	19	37	90	103	97	127	5.13	1.62	-0.66	-0.21
29. I try to work with other students from my courses to complete assignments.	97	47	51	60	79	75	81	4.07	2.13	-0.14	-1.36
30. I work hard to do well in my courses even if I don't like what we're doing in them.	5	5	15	43	83	149	190	5.86	1.26	-1.29	1.74

(*table continues*)

Strategy item	1 Not at all true about me.....	2	3	4	5	6	7 ...Very true about me	*M*	*SD*	skewness	kurtosis
31. When studying for a course, I often set aside time to discuss course material with a group of students from the class.	101	67	52	84	78	57	51	3.71	2.00	0.09	-1.23
32. I find it hard to stick to a study schedule.	60	48	50	82	114	59	77	4.28	1.91	-0.26	-0.98
33. I often find that I have been reading for a course but don't know what it was all about.	68	72	67	98	92	60	33	3.79	1.79	-0.00	-1.02
34. I ask the instructor to clarify concepts I don't understand well.	21	27	36	59	77	111	159	5.27	1.75	-0.87	-0.21
35. When course work is difficult, I either give up or only study the easy parts.	175	70	61	84	55	29	16	2.84	1.80	0.57	-0.83
36. I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for a course.	26	30	29	92	126	88	99	4.88	1.68	-0.63	-0.25
37. When I can't understand the material in a course, I ask another student in the course for help.	62	47	33	60	96	96	96	4.54	2.01	-0.48	-1.03
38. I make sure that I keep up with the weekly readings and assignments for my courses.	12	12	25	63	99	118	161	5.50	1.50	-1.00	0.56
39. I attend my courses regularly.	3	1	9	32	36	96	313	6.34	1.10	-1.98	-1.50
40. Even when course materials are dull and uninteresting, I manage to keep working until I'm finished.	5	6	10	42	65	138	224	5.99	1.25	-1.50	2.34
41. I try to identify students in my courses whom I can ask for help if necessary.	52	32	25	64	80	95	142	4.92	1.99	-0.72	-0.69
42. When studying for a course I try to determine which concepts I don't understand well	6	6	11	59	94	152	162	5.72	1.28	-1.14	1.41
43. I often find that I don't spend very much time on a course because of other activities.	89	58	50	73	112	61	47	3.88	1.95	-0.11	-1.19
44. If I get confused taking notes in class, I make sure to sort it out afterwards.	22	23	30	62	115	98	140	5.20	1.68	-0.85	0.01
45. I rarely find time to review my notes or readings before an exam.	67	47	126	79	52	55	64	3.86	1.90	0.19	-1.00

Table E.6. Item analysis for Campus spatial self-regulation (Questionnaire section VII).

Item	1: disagree a lot.	2: disagree a little.	3: neither agree nor disagree.	4: agree a little.	5: agree a lot.	*M*	*SD*	Skewness	Kurtosis
1) I have certain places on campus where I know I can focus on my school work.	21	23	61	128	257	4.18	1.09	-1.37	1.19
2) When I am on campus I feel free from demands and expectations from outside (from family, friends, work, etc.)	19	36	86	158	191	3.95	1.10	-0.94	0.19
3) I don't have other good places besides the BCC campus to study and do my homework.	165	113	75	78	59	2.50	1.40	0.47	-1.12
4) The BCC campus environment gives me the opportunity to do non-academic activities that I like.	49	68	206	107	60	3.12	1.11	-0.15	-0.42
5) When the weather is good I like to read or study outdoors on campus.	69	62	138	123	98	3.24	1.30	-0.30	-0.93
6) Being around other students on campus helps me to focus on getting my school work done.	51	45	139	141	114	3.45	1.24	-0.50	-0.60
7) I prefer to be on campus as little as possible.	86	134	155	69	46	2.71	1.19	0.31	-0.63
8) The way that the campus is makes me give up when I try to do my school work at BCC.	228	119	91	36	16	1.97	1.13	1.06	-0.59
9) I can usually push myself to concentrate so that I can do my school work while I'm on campus.	30	28	104	175	153	3.80	1.13	-0.88	0.21
10) I can usually predict when during the day or week is a good or bad time around campus to get my school work done.	55	45	200	106	84	3.24	1.18	-0.26	-0.50
11) I'm good at being flexible in doing my school work in different places on campus if I have to.	20	29	114	168	159	3.85	1.07	-0.80	0.16

APPENDIX F. Factor analyses and *t*-tests of group differences for major predictors

Table F.1. Descriptive statistics and final factor loadings for Housing inadequacy.

Item pair	*M*	*SD*	skewness	kurtosis	Factor 1	Factor 2	Factor 3
(1, 21) a comfortable and safe outdoor place near my home where I can spend leisure time with others.	3.83	1.24	-0.14	-0.31	.24	.19	.71
(2, 22) a comfortable and safe outdoor place near my home where I can spend quiet time alone.	4.11	1.33	-0.44	-0.19	.24	.20	.81
(3, 23) a view of nature (trees, gardens, parks, rivers, etc.) from inside my home.	3.84	1.42	-0.19	-0.58	.33	.31	.42
(4, 24) a place to live where I think that the interior (walls, floors, furniture, etc.) is nice to look at.	3.66	1.20	0.07	-0.07	.51	.31	.26
(5, 25) enough comfortable space inside the home to invite friends or relatives to visit.	3.68	1.26	0.12	-0.33	.73	.20	.21
(6, 26) a place to live where things work the way that they are supposed to (plumbing, electricity, etc.)	3.64	0.92	0.15	1.02	.51	.38	.13
(7, 27) enough places inside the household for storage to put away things that belong to me.	3.88	1.18	-0.01	-0.34	.71	.21	.20
(8, 28) a place inside my home where everybody who lives there can be together comfortably.	3.64	1.08	0.37	0.23	.80	.21	.15
(9, 29) a place inside the household where some of the people can have privacy together apart from others in the home.	3.97	1.19	0.00	-0.37	.74	.08	.22
(10, 30) a place inside my home where I can spend quiet time alone whenever I want to.	4.15	1.22	-0.17	-0.42	.64	.11	.32
(14, 34) a place inside the household where someone can use the toilet comfortably and in privacy.	3.10	0.79	0.24	5.63			
(15, 35) a place inside the household where a person can wash or bathe comfortably and in privacy.	3.09	0.72	0.14	7.11			
(16, 36) when inside my home, no unwanted noise from neighbors or other people outside.	4.05	1.12	0.01	-0.64	.23	.67	.17
(17, 37) when inside my home, no unpleasant smells, dirt, etc. from neighbors or other people outside	3.95	1.11	0.54	-0.72	.13	.69	.16
(18, 38) when inside my home, no worry about the actions of neighbors or other people outside.	3.83	1.12	0.15	-0.08	.16	.70	.14

Note. Difference scores ranged from zero to six. Computation of difference scores, reasons for excluding difference scores for Items 11 to 13 and 21 to 23, and reasons for excluding items 14 and 15 from the re-specified factor analysis are described in the Measures section of the Methods chapter.

Table F.2. Descriptive statistics and correlations for Housing inadequacy factors. (Questionnaire section II).

Factor	Eigenvalue	% of variance explained	Correlations 1	2	min	max	*M (SD)*	n items	Coefficient *a*
1. Interior inadequacy	3.45	26.53			0.00	6.00	3.80 (0.89)	7	.88
2. Neighbors inadequacy	1.89	14.57	.45***		0.67	6.00	3.94 (0.92)	3	.77
3. Outdoors inadequacy	1.76	13.54	.57***	.41***	1.00	6.00	3.93 (1.09)	3	.75

*** $p < .001$

Table F.3. *T* tests of independent means for demographic differences by Housing inadequacy factors.

Binomial variable	Group 1 n	Interior inadequacy Dummy-coded *M (SD)* 1	0	*t*	Neighbors inadequacy Dummy-coded *M (SD)* 1	0	*t*	Outdoors inadequacy Dummy-coded *M (SD)* 1	0	*t*
Female gender	319	3.81 (0.83)	3.82 (0.88)	-0.16	3.97 (0.91)	3.89 (0.95)	0.88	3.92 (1.10)	3.95 (1.08)	-0.27
Age 18 to 21	248	3.78 (0.86)	3.85 (0.86)	-1.04	3.85 (0.82)	4.03 (1.01)	-2.20* [a]	3.82 (1.06)	4.03 (1.12)	-2.13*
Primary household	139	3.98 (0.80)	3.75 (0.86)	2.73**	4.15 (0.96)	3.86 (0.89)	-2.47* [a]	4.29 (1.03)	3.78 (1.08)	4.70***
Filial household	210	3.74 (0.84)	3.87 (0.85)	-1.75†	3.83 (0.81)	4.03 (0.99)	-2.40* [a]	3.75 (1.07)	4.06 (1.09)	-3.10**
Caregiver	162	4.02 (0.87)	3.71 (0.82)	3.83***	4.10 (0.91)	3.87 (0.92)	2.61 **	4.15 (1.07)	3.82 (1.09)	3.18**
Immigrant	226	3.87 (0.89)	3.77 (0.81)	1.23	4.00 (0.96)	3.90 (0.89)	1.13	4.10 (1.09)	3.78 (1.07)	3.28**
Room ratio=1	207	3.87 (0.90)	3.77 (0.81)	1.23	3.96 (0.91)	3.93 (0.94)	0.30	3.96 (1.06)	3.90 (1.12)	0.62

[a] *n.* Levene's test for equality of variances is significant ($p < .05$). Variance around the mean is not equivalent across groups for this comparison.

* $p < .05$ ** $p < .05$ *** $p < .001$ † $p < .10$

Table F.4. Item correlations and factor loadings for Perceived housing stress (Questionnaire section III).

Item	Correlations											Factor	
	1	2	3	4	5	6	7	8	9	10	11	1	2
1												.71	-.04
2	.71***											.71	-.10
3	.48***	.52***										.71	-.22
4	-.02	-.02	-.04									.08	.59
5	-.23***	-.34***	-.42 ***	.25***								-.37	.55
6	.45***	.45***	.36 ***	.06	-.13**							.57	.04
7	-.10*	-.11*	-.15 **	.44***	.28***	-.04						-.06	.59
8	-.24***	-.26***	-.39 ***	.27***	.50***	-.17***	.33***					-.33	.57
9	.40***	.41***	.62***	.03	-.38***	.38***	-.06	-.28***				.70	-.10
10	.43***	.40***	.40***	.03	-.18***	.38***	-.11 *	-.22***	.45***			.62	-.02
11	.44***	.39***	.48***	.01	-.30***	.39***	-.11*	-.25***	.56***	.54***		.68	-.06
12	.00	-.03	-.03	.25***	.23***	-.05	.27***	.20***	.01	-.02	.06	.04	.41

Note. Items 1, 2, 3, 6, 9, 10, and 11 were phrased with a negative valence. Items 4, 5, 7, 8, and 12 were phrased with a positive valence.

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

Table F.5. Descriptive statistics and reliability for Perceived housing stress.

Factor	*r*	min	max	*M (SD)*	n items	Coefficient *a*
1. Helplessness	-.27 ***	1.00	4.86	2.57 (0.92)	7	.86
2. Efficacy		1.00	5.00	3.40 (0.77)	5	.69
Total [a]		1.00	4.36	2.59 (0.69)	12	.89

[a] *n.* Total scale was computed with reverse-coded Efficacy items. Maximum is from recoding outliers as described in the Measures section of the Methods chapter.

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

Table F.6. *T* tests of independent means for demographic differences in Perceived housing stress.

Binomial variable	Group 1 n	Dummy-coded *M (SD)*		
		1	0	*t*
Female gender	319	2.59 (0.70)	2.57 (0.69)	0.27
Age 18 to 21	248	2.57 (0.67)	2.59 (0.73)	-0.22
Primary household	139	2.63 (0.70)	2.56 (0.69)	1.09
Filial household	210	2.60 (0.68)	2.57 (0.71)	0.46
Caregiver	162	2.73 (0.72)	2.50 (0.67)	3.49 **
Immigrant	226	2.65 (0.71)	2.52 (0.68)	2.09 *
Room ratio = 1	207	2.66 (0.69)	2.52 (0.70)	2.21 *

[a] n. Levene's test for equality of variances is significant ($p < .05$). Variance around the mean is not equivalent across groups for this comparison.

* p < .05 ** $p < .05$ *** $p < .001$ [†] $p < .10$

Figure F.1. Scree plot for Perceived housing stress items.

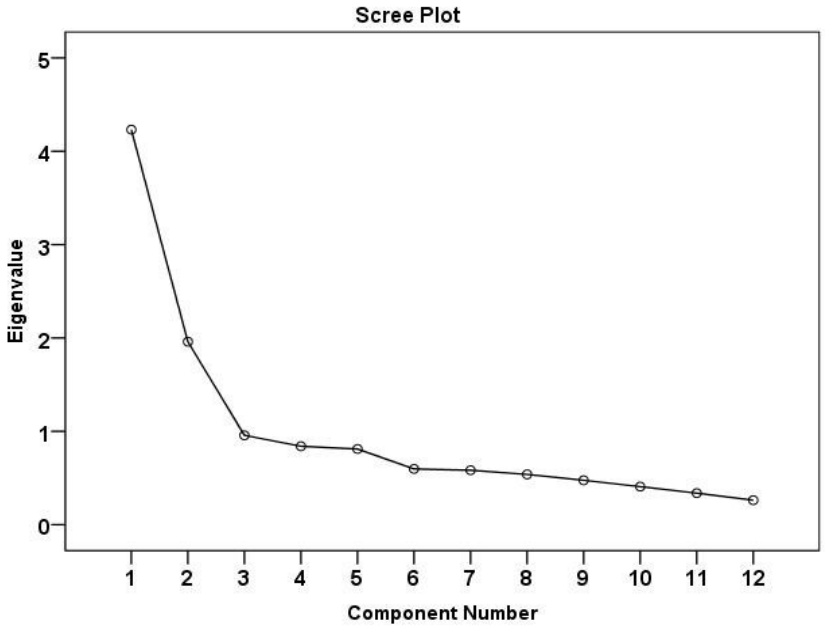


Figure F.2. Rotated factor plot for Perceived housing stress.

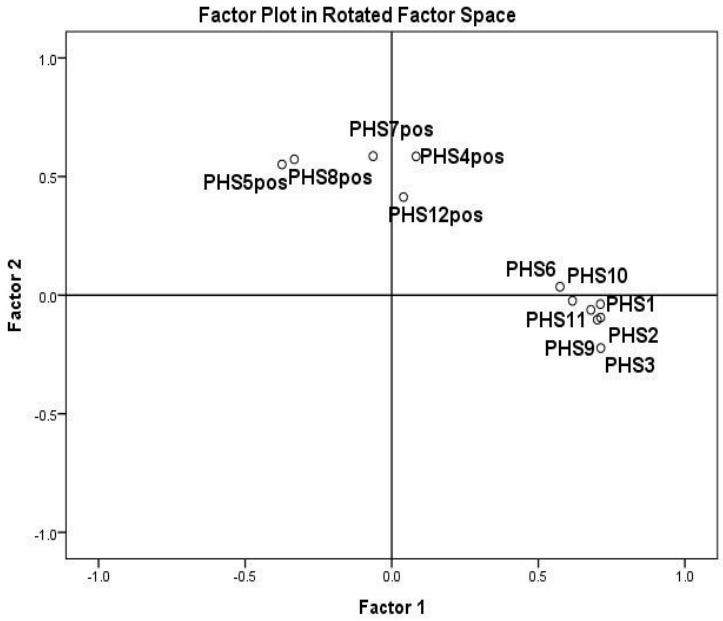


Table F.7. Results of initial factor analysis for Home SSR and Campus SSR combined.

Item	Initial factors [a]				
	1	2	3	4	5
Home					
1) I have a place for myself at home where I know that I can focus on my school work.	.81	.02	-.05	.01	.04
2) I have a place for myself at home where I can keep my books and my school things from day to day.	.64	.06	-.01	-.05	.29
3) I'm satisfied that the people I live with are considerate when I need to pay attention to school work at home.	.77	.02	-.01	.06	-.01
4) My home is a good place for me to relax with leisure activities that I like.	.75	-.03	-.02	.10	.22
5) I feel free to rearrange my home environment from day to day so that it's a good place to do my school work.	.75	.03	.03	.10	.12
6) When I try to do school work at home it takes a lot of effort to avoid getting distracted by the people I live with.	-.54	.10	.19	.03	.36
7) I prefer to be home as little as possible.	-.45	.18	.14	.03	.14
8) The way that my home is makes me give up when I try to do my school work at home.	-.61	.08	.15	.25	.18
9) I can usually push myself to concentrate so that I can do my school work at home.	.03	.00	.59	-.11	.10
10) I can usually predict when during the day or week is a good or bad time to get my school work done.	-.06	-.06	.63	.01	.05
11) I'm good at being flexible in doing my school work around the needs and schedules of the people I live with.	.44	.07	.27	.03	-.16
12) I'm comfortable asking the people I live with to share daily responsibilities so that I have time to be a good student.	.55	.07	.16	.04	-.16
Campus					
1) I have certain places on campus where I know I can focus on my school work.	.08	.58	.13	-.16	.09
2) When I am on campus I feel free from demands and expectations from outside (from family, friends, work, etc.)	-.05	.51	.13	-.18	.10
3) I don't have other good places besides the BCC campus to study and do my homework.	-.58	.17	.11	.18	.16
4) The BCC campus environment gives me the opportunity to do non-academic activities that I like.	.01	.35	-.03	.03	-.04
5) When the weather is good I like to read or study outdoors on campus.	-.01	.53	.03	.01	-.02
6) Being around other students on campus helps me to focus on getting my school work done.	-.06	.62	.01	-.01	.05
7) I prefer to be on campus as little as possible.	.12	-.38	-.02	.44	-.08
8) The way that the campus is makes me give up when I try to do my school work at BCC.	-.05	-.10	.02	.77	.05
9) I can usually push myself to concentrate so that I can do my school work while I'm on campus.	-.07	.25	.42	.03	-.06
10) I can usually predict when during the day or week is a good or bad time around campus to get my school work done.	-.02	.25	.49	.15	-.11
11) I'm good at being flexible in doing my school work in different places on campus if I have to.	.09	.50	.26	-.07	-.24
Principal components analysis: Initial Eigenvalues	5.06	3.04	1.85	1.34	1.07
Maximum likelihood: Varimax rotation SS loadings % of variance explained	20%	9%	6%	4%	2%

Table F.8. Item cross-correlations between Home SSR (Questionnaire section V) and Campus SSR (Questionnaire section VII).

Home	Campus										
	1	2	3	4	5	6	7	8	9	10	11
1	.06	-.03	-.48***	.00	.02	-.03	.18**	-.03	-.06	-.05	.04
2	.19***	.02	-.32***	-.06	.01	-.02	.01	-.05	-.06	-.03	.03
3	.06	-.07	-.43***	.01	-.01	-.02	.13**	.00	-.03	-.01	.07
4	.05	-.07	-.39***	-.07	-.04	-.03	.13**	.03	-.05	-.04	-.01
5	.05	-.02	-.38***	-.06	.05	-.02	.07	.04	-.10*	.04	.05
6	.07	.12**	.40***	.07	.06	.12**	-.15**	.06	.12**	.05	-.02
7	.13**	.16***	.29***	.11*	.11*	.12*	-.02	.01	.15**	.11*	.03
8	-.01	.05	.47***	.01	.01	.10*	-.01	.22***	.12**	.13**	-.01
9	.09*	.11*	.03	.03	.03	.00	-.06	-.05	.32***	.22***	.09*
10	.04	.09*	.11*	-.04	-.04	.02	.01	.03	.17***	.33***	.09
11	.06	.01	-.19***	.01	.04	.00	.00	.00	.07	.11*	.23***
12	.10*	.02	-.30***	.04	.07	-.06	.07	-.03	-.02	.07	.17***

Note. Home items 1 to 5 and 9 to 11 had positive valence. Home items 6 to 8 had negative valence. Campus items 1 to 4, 6, and 9 to 11 had positive valence. Campus items 6 to 8 had negative valence.

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

Figure F.3. Scree plot of Home and Campus SSR items combined.

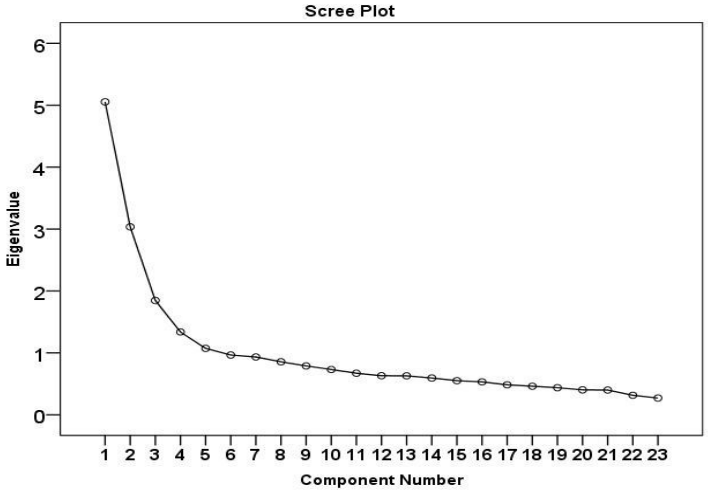


Figure F.4. Rotated 2-factor plot for Home SSR.

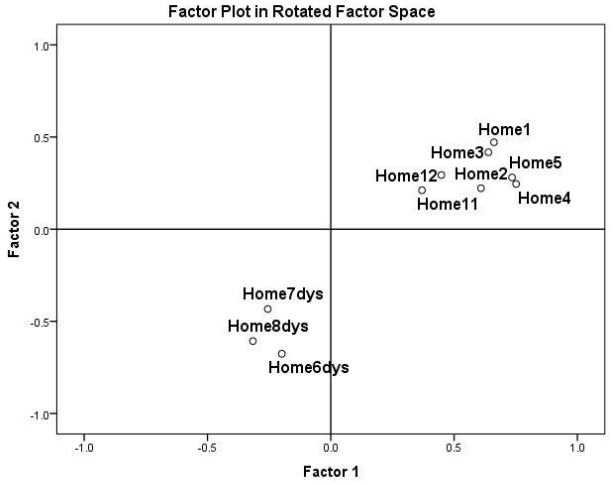


Table F.9. Item correlations and re-specified Maximum likelihood rotated factor loadings for Home SSR (Questionnaire section V).

Item	Correlations											Factor	
	1	2	3	4	5	6	7	8	9	10	11	1	2
1												.66	.47
2	.58***											.61	.22
3	.63***	.50***										.64	.42
4	.59***	.53***	.56***									.75	.25
5	.61***	.44***	.58***	.66***								.74	.28
6	-.47***	-.24***	-.42***	-.32***	-.33***							.20	.68
7	-.30***	-.21***	-.32***	-.38***	-.32***	.35***						.26	.43
8	-.50***	-.35***	-.44***	-.37***	-.42***	.48***	.41***					.32	.61
9[a]	.04	.06	.02	-.01	.01	.14**	.10*	.03					
10[a]	-.09*	-.05	-.06	-.05	-.01	.18***	.08	.13**	.39***				
11	.31***	.22***	.34***	.31***	.36***	-.21**	-.18***	-.23***	.15**	.13**		.37	.21
12	.44***	.29***	.43***	.38***	.41***	-.30***	-.24***	-.27***	.07	.07	.41***	.45	.29

[a] *n.* Items 9 and 10 initially loaded together on a second factor with loadings .57 and .64, respectively. No other items loaded on that second factor. The Home SSR model was re-run excluding items 9 and 10. The resulting model gave two factors distinguished by positive and negative valence, as shown in this Table.

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

Table F.10. Item correlations and re-specified Maximum likelihood rotated factor loadings for Campus SSR (Questionnaire section VII).

Item	Correlations										Factor
	1	2	3	4	5	6	7	8	9	10	1
1											.61
2	.41***										.57
3[a]	.08	.12**									
4	.18***	.23***	.12**								.34
5	.29***	.24***	.07	.22***							.51
6	.31***	.32***	.13**	.24***	.28***						.61
7[b]	-.24***	-.27***	-.13**	-.05	-.21***	-.30***					
8[b]	-.18***	-.17***	.17***	-.02	-.04	-.05	.38***				
9[c]	.18***	.15**	.10*	.04	.14**	.19***	-.05	.00			
10[c]	.20***	.15**	.12**	.04	.18***	.13**	-.05	.11*	.34**		
11	.38***	.23***	-.01	.12**	.24***	.31***	-.20***	-.10*	.25***	.26***	.49

(*table continues*)

[a] *n.* Item 3, "I don't have other good places besides the BCC campus to study and do my homework," was excluded from the Campus SSR scale because it had loaded together with the Home SSR items in the prior combined model.

[b] *n.* Items 7 and 8 were worded to have negative valence in the questionnaire.

[c] *n.* Items 9 and 10 were excluded because they earlier loaded with similarly phrased items ("I can usually…") from the Home SSR in the prior combined model.

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

Table F.11. Descriptive statistics and subscale reliability for SSR factors.

Factor	*r*	min	max	*M (SD)*	n items	Coefficient *a*
1. Home	-.04	1.30	5.00	3.65 (0.89)	10	.87
2. Campus		1.71	5.00	3.59 (0.68)	6	.69

Table F.12. *T* tests of independent means for demographic differences by Spatial self-regulation factors.

Binomial variable	Group 1 n	Home Dummy-coded *M (SD)*			Campus Dummy-coded *M (SD)*		
		1	0	*t*	1	0	*t*
Female gender	319	3.68 (0.90)	3.59 (0.87)	1.13	3.61 (0.68)	3.56 (0.69)	0.72
Age 18 to 21	248	3.63 (0.88)	3.67 (0.90)	-0.59	3.58 (0.68)	3.60 (0.68)	-0.35
Primary household	139	3.64 (0.85)	3.65 (0.90)	-0.12	3.59 (0.72)	3.59 (0.67)	0.08
Filial household	210	3.59 (0.88)	3.69 (0.90)	-1.23	3.57 (0.67)	3.61 (0.69)	-0.58
Caregiver	162	3.41 (0.96)	3.77 (0.83)	-4.04*** [a]	3.59 (0.70)	3.59 (0.69)	0.01
Immigrant	226	3.59 (0.93)	3.70 (0.85)	-1.42	3.64 (0.63)	3.53 (0.69)	1.70[†]
Room ratio = 1	207	3.51 (0.91)	3.75 (0.86)	-2.92**	3.64 (0.69)	3.55 (0.67)	1.50

[a] n. Levene's test for equality of variances is significant ($p < .05$). Variance around the mean is not equivalent across groups for this comparison.

* p < .05 ** $p < .05$ *** $p < .001$ [†] $p < .10$

Figure F.5. Scree plot for Time orientation items.

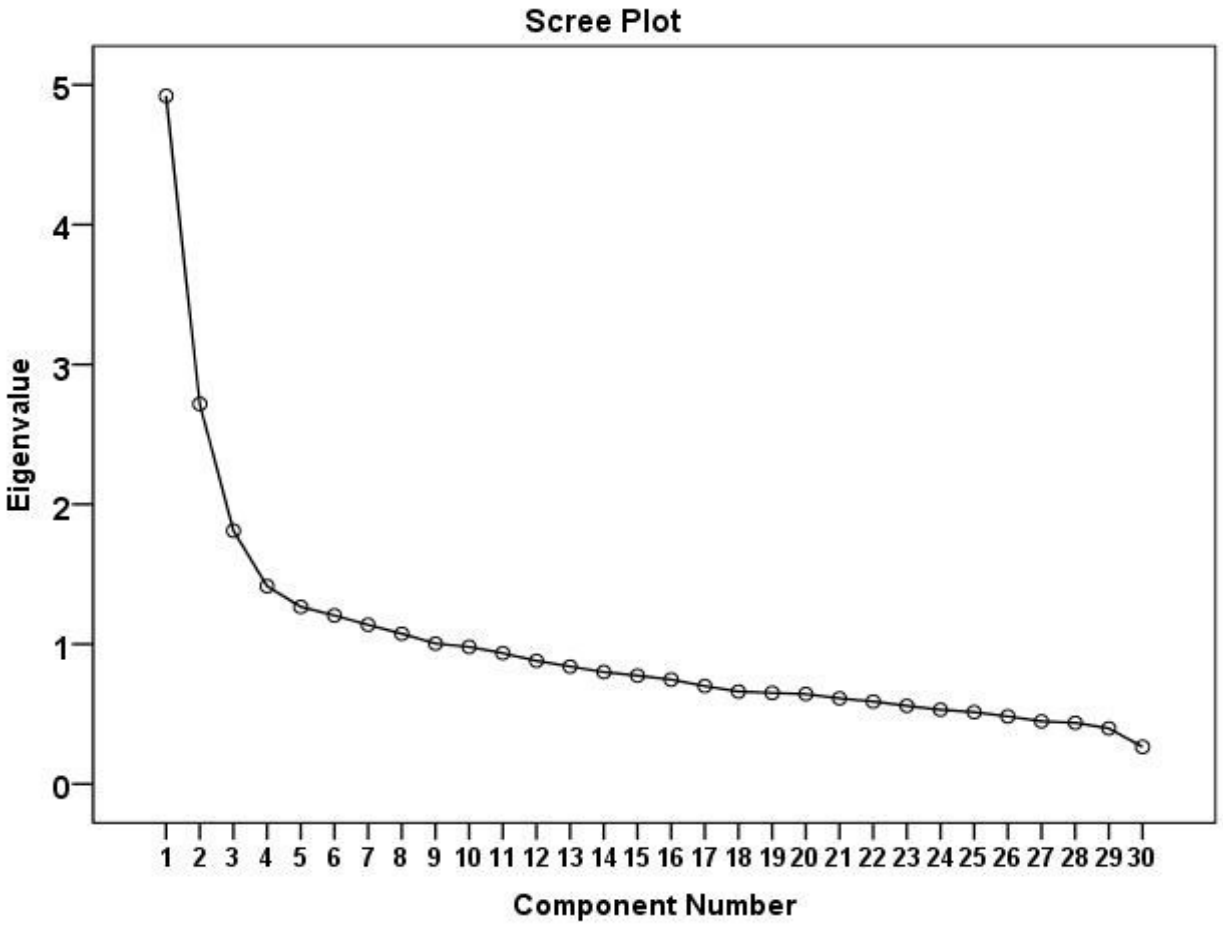


Table F.13. Comparison of Time orientation factors loadings: Original ZTPI scale versus initial dissertation factor analysis.

Item	Original ZTPI factors [a]			Item no.[b]	Dissertation factors		
	Future	Present-fatalistic	Present-hedonistic		Future	Present-fatalistic	Present-hedonistic
1. I believe that getting together with one's friends to party is one of life's important pleasures.	-.02	-.10	.42	1	-.04	.14	.39
3. Fate determines much in my life.	.09	.44	.19	3	.11	.18	.28
6. I believe that a person's day should be planned ahead each morning.	.46	.02	-.16	6	.68	.09	-.05
8. I do things impulsively.	-.27	.05	.51	8	-.12	.18	.28
9. If things don't get done on time, I don't worry about it.	-.33	.12	.21				
10. When I want to achieve something, I set goals and consider specific means for reaching those goals.	.56	-.09	.13				
12. When listening to my favorite music, I often lose all track of time.	-.04	.22	.32	10	.00	.13	.31
13. Meeting tomorrow's deadlines and doing other necessary work comes before tonight's play.	.63	.10	-.17	11	.31	-.26	-.02
14. Since whatever will be, will be, it doesn't really matter what I do.	-.15	.64	.04	12	-.13	.49	.18
17. I try to live my life as fully as possible, one day at a time.	.19	-.06	.50	15	.18	-.09	.38
18. It upsets me to be late for appointments.	.48	-.04	.04	16	.33	-.12	.12
19. Ideally, I would live each day as if it were my last.	.12	.07	.38				
21. I meet my obligations to friends and authorities on time.	.46	-.04	.04	18	.24	-.17	.13
23. I make decisions on the spur of the moment.	-.25	.13	.51	20	-.07	.18	.38
24. I take each day as it is rather than try to plan it out. [b]	-.49	.20	.28	21	.40	-.21	-.29
26. It is important to put excitement in my life.	. 05	-.14	.56	23	.14	-.04	.53
28. I feel that it's more important to enjoy what you're doing than to get work done on time.	-.30	.33	.36	25	-.10	.51	.24
30. Before making a decision, I weigh the costs against the benefits.	.37	-.29	.03				
31. Taking risks keeps my life from becoming boring.	-.02	.03	.70	27	-.02	.13	.72

(*table continues*)

Item	Original ZTPI factors [a]			Dissertation factors			
	Future	Present-fatalistic	Present-hedonistic	Item no.[b]	Future	Present-fatalistic	Present-hedonistic
32. It is more important for me to enjoy life's journey than to focus only on the destination.	-.08	.15	.45				
35. It takes joy out of the process and flow of my activities, if I have to think about goals and outcomes. [b]	-.20	.42	.16	30	.18	.60	.08
37. You can't really plan for the future because things change so much.	-.12	.59	.17	32	-.23	.40	.23
38. My life path is controlled by forces I cannot influence.	.06	.73	-.02	34	-.16	.44	.08
39. It doesn't make sense to worry about the future, since there is nothing that I can do about it anyway.	-.01	.68	-.02	35	-.09	.57	.08
40. I complete projects on time by making steady progress.	.61	.04	-.02				
42. I take risks to put excitement in my life.	-.01	.08	.71	37	-.02	.23	.70
43. I make lists of things to do.	.45	-.05	.07	38	.61		
44. I often follow my heart more than my head.	-.10	.12	.45	39	.16	.17	.31
45. I am able to resist temptations when I know that there is work to be done.	.61	-.06	-.09	40	.27	-.09	.02
46. I find myself getting swept up in the excitement of the moment.	-.22	.10	.44	41	-.07	.17	.47
47. Life today is too complicated; I would prefer the simpler life of the past.	-.00	.42	-.09	42	.06	.34	.05
48. I prefer friends who are spontaneous rather than predictable.	-.16	.18	.45	43	-.01	.06	.46
52. Spending what I earn on pleasures today is better than saving for tomorrow's security.	-.18	.34	.28	46	-.18	.38	.15
53. Often luck pays off better than hard work.	-.11	.45	.14	47	-.11	.48	.14
55. I like my close relationships to be passionate.	-.00	-.02	.44	49	.20	.08	.32
56. There will always be time to catch up on my work. [b]	-.36	.10	.29	50	.15	-42	-.20

Note. The original scale (Zimbardo & Boyd, 1999) used a 5-point Likert response ranging from “very uncharacteristic” to “very characteristic.” The dissertation re-phrased the responses ranging from “very untypical” to “very typical.” Past-negative and Past-positive factors were omitted.

[a] *n*. Blank item numbers indicate that the original item was not used in the dissertation instrument.

[b] *n*. Based on the negative loading for the primary factor in the original scale, this item was reverse-coded in the dissertation factor analysis.

[c] *n*. The original item is, “It takes joy out of the process and flow of my activities, if I have to think about goals, outcomes, and products.”

Table F.14. Correlations, descriptive data, and subscale reliability for Time orientation factors.

Time orientation	Correlations 1	2	*M (SD)*	n items	Coefficient *a*	Final grade *r*
Original sample [a]						
1. Future			3.47 (0.54)	13	.77	.21 ***
2. Present-fatalistic	-.26 ***		2.37 (0.60)	9	.74	-.08 *
3. Present-hedonistic	-.29 ***	.32 ***	3.44 (0.51)	15	.79	-.07
Dissertation sample [b]						
Initial factor						
1. Future			3.53 (0.56)	8	.60	.28 **
2. Present-fatalistic	-.30 **		2.53 (0.60)	9	.70	-.13 **
3. Present-hedonistic	-.11 *	.44 **	3.18 (0.54)	13	.76	-.10 *
Re-specified factor						
1. Future			3.57 (0.58)	7	.60	.28 ***
2. Present-fatalistic	-.23 ***		2.45 (0.64)	8	.71	-.13 **
3. Present-hedonistic	-.02	.35 ***	3.25 (0.55)	12	.76	-.09 *

[a] *n.* Course grade was self-reported by the 566 sample participants (Zimbardo & Boyd, 1999).

[b] *n.* Semester GPA was obtained from official academic records for the 490 sample participants.

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Table F.15. *T* tests of independent means for demographic differences by Time orientation factors.

		Future orientation			Present fatalistic orientation			Present hedonistic orientation		
	Group	Dummy-coded *M (SD)*			Dummy-coded *M (SD)*			Dummy-coded *M (SD)*		
Binomial variable	1 n	1	0	*t*	1	0	*t*	1	0	*t*
Female gender	319	3.64 (0.57)	3.42 (0.58)	4.07***	2.41 (0.62)	2.53 (0.64)	-2.02*	3.22 (0.55)	3.30 (0.54)	-1.59
Age 18 to 21	248	3.48 (0.59)	3.65 (0.57)	-3.32**	2.52 (0.61)	2.38 (0.64)	2.42*	3.33 (0.51)	3.17 (0.57)	3.23**
Primary household	139	3.66 (0.59)	3.53 (0.58)	2.31*	2.37 (0.61)	2.48 (0.63)	-1.69†	3.16 (0.53)	3.29 (0.54)	-2.41*
Filial household [a]	210	3.45 (0.62)	3.65 (0.54)	-3.83***	2.54 (0.61)	2.38 (0.63)	2.88**	3.28 (0.51)	3.23 (0.57)	1.06
Caregiver	162	3.72 (0.56)	3.49 (0.58)	4.10***	2.39 (0.65)	2.48 (0.61)	-1.38	3.18 (0.56)	3.28 (0.53)	-1.98*
Immigrant	226	3.65 (0.56)	3.50 (0.59)	2.88**	2.54 (0.65)	2.37 (0.59)	3.16**	3.23 (0.52)	3.27 (0.56)	-0.67
Room ratio = 1	207	3.52 (0.57)	3.60 (0.59)	-1.39	2.54 (0.66)	2.38 (0.59)	2.91**	3.25 (0.55)	3.25 (0.54)	-0.16

[a] n. Levene's test for equality of variances is significant ($p < .05$). Variance around the mean is not equivalent across groups for this comparison.

* $p < .05$ ** $p < .05$ *** $p < .001$ † $p < .10$

Table F.16. Comparison of Self-regulated learning factor loadings: Original MSLQ scale versus initial dissertation factor analysis.

Motivations for learning	Original MSLQ factors [a]							Dissertation factors [b]					
Item	Intrinsic goals	Extrinsic goals	Task value	Control beliefs	Self-efficacy	Test anxiety	Item	1	2	3	4	5	6
1. I prefer course material that really challenges me so I can learn new things.	.64						1	.53	-.08	.18	.00	.21	.08
2. If I study in appropriate ways, then I will be able to learn the material in a particular course.				.57			2	.33	.01	.25	.25	.00	.01
3. When I take a test, I think about how poorly I am doing compared with other students.						.60	3	-.19	.55	-.15	.05	-.01	.06
4. I think I will be able to use what I learn in one course in other courses I take.			.57				4	.35	-.05	.12	.19	.27	.08
5. I believe I will receive an excellent grade in any particular course.					.83		5	.21	-.25	.45	.26	.22	.08
6. I'm certain that I can understand the most difficult material presented in the readings for my courses					.70								
7. Getting good grades in my courses is the most satisfying thing for me right now.		.71					6	.10	.07	.16	.63	.06	.04
8. When I take a test, I think about items on other parts of the test that I can't answer.						.42							
9. It is my own fault if I don't learn the material in a course.				.38			7	.09	.07	.01	.10	-.01	.46
10. It is important for me to learn the material in my courses.			.64										
11. The most important thing for me right now is improving my overall grade point average, so my main concern is getting good grades in my courses.		.58											
12. I'm confident that I can learn the basic concepts taught in a course.					.63		8	.45	-.23	.23	.24	.09	.20
13. If I can, I want to get better grades in my courses than most of the other students.		.48					9	.15	.04	.13	.44	.07	.13
14. When I take tests, I think of the consequences of failing.						.62	10	.05	.53	-.13	.24	-.05	.04
15. I'm confident that I can understand the most complex material presented by an instructor in a course.					.71		11	.41	-.11	.33	.02	.22	.17

(*table continues*)

Motivations for learning	Original MSLQ factors [a]							Dissertation factors [b]					
Item	Intrinsic goals	Extrinsic goals	Task value	Control beliefs	Self-efficacy	Test anxiety	Item no.	1	2	3	4	5	6
16. I prefer course material that arouses my curiosity, even if it is difficult to learn.	.69						12	.72	-.07	.01	.04	.17	.02
17. I am very interested in the content area of my courses.			.88										
18. If I try hard enough, then I will understand course material.				.84			13	.47	-.08	.21	.21	.02	.27
19. I have an uneasy, upset feeling when I take an exam.						.88	14	-.08	.21	-.07	-.06	-.06	.04
20. I'm confident that I can do an excellent job on the assignments and tests in my courses.					.86		15	.30	-.22	.71	.21	.11	.02
21. I expect to do well in my courses.					.89		16	.21	-.10	.66	.35	.25	-.07
22. The most satisfying thing for me in a course is trying to understand the content as thoroughly as possible.	.66												
23. I think the material in my courses is generally useful for me to learn.			.86				17	.29	-.06	.20	.38	.46	-.04
24. When I have the opportunity, I choose course assignments that I can learn from, even if they don't guarantee a good grade.	.55						18	.21	.07	.10	-.03	.44	.06
25. If I don't understand the course material, it is because I didn't try hard enough.				.47			19	.10	.03	.00	.02	.21	.65
26. I generally like the subject matters of my courses. [d]			.88				20	.11	-.11	.11	.23	.54	.18
27. Understanding the subject matter of a course is very important to me.			.84										
28. I feel my heart beating fast when I take an exam.						.76	21	-.12	.70	.01	.04	.03	-.02
29. I'm certain that I can master the skills being taught in my courses.					.77								
30. I want to do well in my courses because it is important to show my ability to my family, friends, employer, or others.		.44					22	-.03	.20	.06	.32	.09	.03
31. Considering the difficulty of my courses, the teacher, and my skills, I think I will do well in my academic tasks.					.87								

(*table continues*)

Strategies for learning	Original MSLQ factors [a]					Dissertation factors [e]					
Item	Metacognitive self-reg.	Time & study env. mgmt..	Effort mgmt.	Peer learning	Help seeking	Item no.	1	2	3	4	5
33. During class time I often miss important points because I'm thinking of other things. [c]	.40					23	.07	.03	.49	.06	-.01
34. When studying for a course, I often try to explain the material to a classmate or friend.				.54		24	.16	.43	-.01	.08	-.03
35. I usually study in a place where I can concentrate on my course work.		.52									
36. When reading for a course, I make up questions to help focus my reading.	.44										
37. I often feel so lazy or bored when I study for a course that I quit before I finish what I planned to do. [c]			.53			25	.09	-.01	.59	-.15	.07
40. Even if I have trouble learning the material in a course, I try to do the work on my own, without help from anyone. [c]					.20	26	.09	.04	.00	.27	.01
41. When I become confused about something I'm reading for a course, I go back and try to figure it out.	.47					27	.62	-.04	.16	.01	.04
43. I make good use of my study time for my courses.		.81				28	.58	.23	.22	-.12	-.22
44. If course readings are difficult to understand, I change the way I read the material.	.54										
45. I try to work with other students from my courses to complete assignments.				.82		29	.09	.77	-.02	-.13	-.10
48. I work hard to do well in my courses even if I don't like what we're doing in them.			.65			30	.59	.21	.12	.06	-.09
50. When studying for a course, I often set aside time to discuss course material with a group of students from the class.				.84		31	.09	.75	.01	-.05	-.20
52. I find it hard to stick to a study schedule. [c]		.52				32	-.03	.06	.44	.42	-.08
54. Before I study new course material thoroughly, I often skim it to see how it is organized.	.53										
55. I ask myself questions to make sure I understand the material I have been studying in a course.	.58										
56. I try to change the way I study to fit the course requirements and the instructor's teaching style.	.43										
57. I often find that I have been reading for a course but don't know what it was all about. [c]	.35					33	.05	-.05	.50	.15	-.19

(*table continues*)

Strategies for learning	Original MSLQ factors [a]						Dissertation factors [e]				
Item	Metacog. self-reg.	Time & study env.	Effort mgmt.	Peer learning	Help seeking	Item no.	1	2	3	4	5
58. I ask the instructor to clarify concepts I don't understand well.					.17	34	.28	.35	.16	.14	.17
60. When course work is difficult, I either give up or only study the easy parts. [c]			.52			35	.22	.00	.66	-.25	.13
61. I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for a course.	.60					36	.23	.10	.03	.18	.04
65. I have a regular place set aside for studying.		.56									
68. When I can't understand the material in a course, I ask another student in the course for help.					.90	37	.12	.79	.02	.17	.16
70. I make sure that I keep up with the weekly readings and assignments for my courses.		.64				38	.65	.24	.12	.02	-.11
73. I attend my courses regularly.		.37				39	.58	.00	.01	.05	.17
74. Even when course materials are dull and uninteresting, I manage to keep working until I'm finished.			.74			40	.79	.06	.12	.09	.12
75. I try to identify students in my courses whom I can ask for help if necessary.					.79	41	.17	.68	-.02	.23	.28
76. When studying for a course I try to determine which concepts I don't understand well.	.61					42	.52	.25	.15	.25	.05
77. I often find that I don't spend very much time on a course because of other activities. [c]		.48				43	.07	.05	.47	.17	.05
78. When I study for a course, I set goals for myself to direct my activities in each study period.	.55										
79. If I get confused taking notes in class, I make sure to sort it out afterwards.	.50					44	.39	.11	.05	.07	-.04
80. I rarely find time to review my notes or readings before an exam. [c]		.40				45	.12	-.04	.39	.00	-.02

Note. The original and the dissertation both used 7-point Likert scales ranging from "Not all true about me" to "Very true about me."

[a] Pintrich et al. (1993) reported item loadings only for each item's primary factor for the original sample of 380 cases.

[b] n. The initial principal components analysis for the dissertation sample gave only five Motivation factors with eigenvalues greater than 1.

[c] n. This Strategy item was reverse-coded both in the original scale (Pintrich et al.) and in the dissertation analysis.

[d] n. This Motivation item was rephrased in the dissertation instrument as, "I generally like the material covered in my courses."

[e] n. The initial principal components analysis for the dissertation sample gave only four Strategy factors with eigenvalues greater than 1.

Figure F.6. Initial Principal Components scree plot for Motivations.

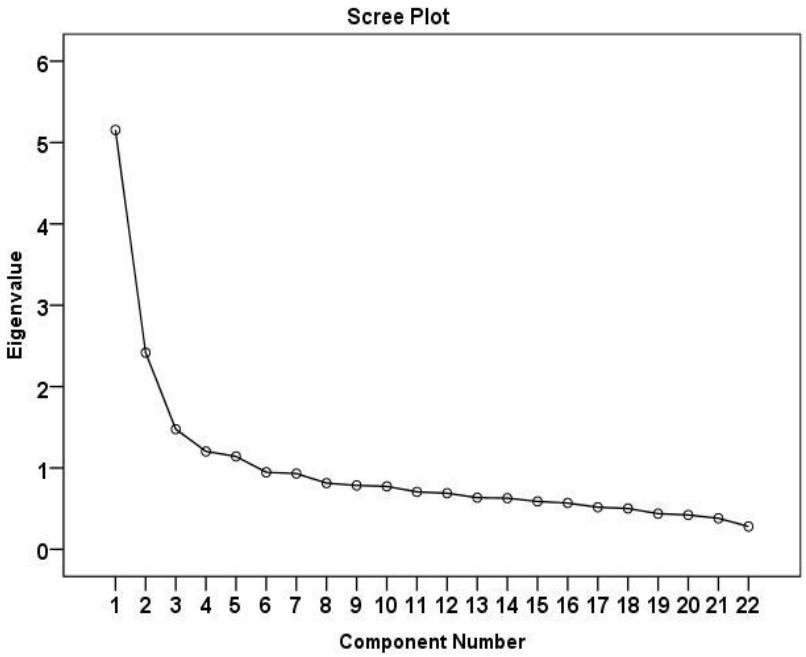


Figure F.7. Initial Principal Components scree plot for Strategies.

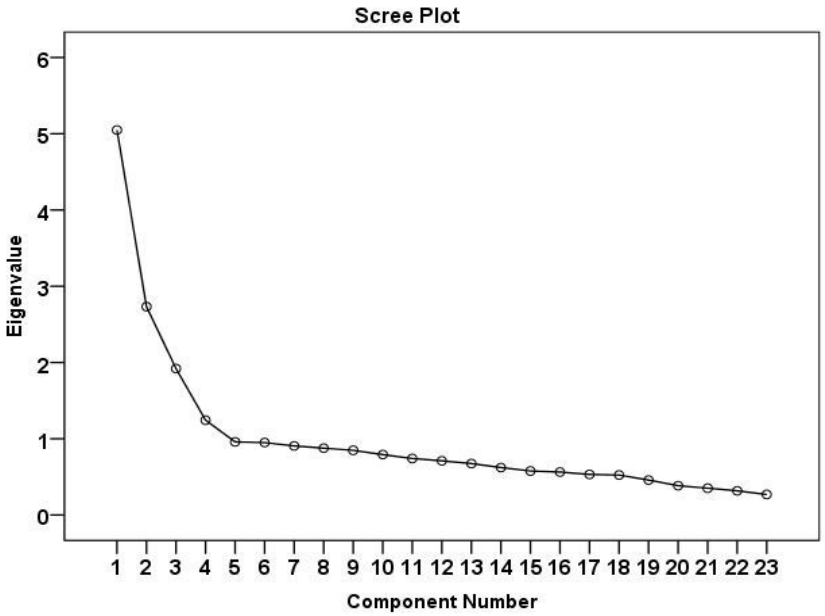


Table F.17. Correlations, descriptive data, and reliability for Self-regulated learning factors: Comparison of original and dissertation scales.

Learning motivation	Factor correlations 1	2	3	4	5	*M (SD)*	n items	Coefficient *a*	Final grade *r*
Original MSLQ sample [a b]									
1. Intrinsic goals						5.03 (1.09)	4	.74	.25
2. Extrinsic goals	.15					5.03 (1.23)	4	.62	.02
3. Task value	.68	.18				5.54 (1.25)	6	.90	.22
4. Control beliefs	.29	.14	.30			5.74 (0.98)	4	.68	.13
5. Self-efficacy	.59	.15	.51	.44		5.47 (1.14)	8	.93	.41
6. Test anxiety	-.15	.23	-.14	-.10	-.37	3.63 (1.50)	5	.80	-.27

(*table continues*)

Learning motivation	Factor correlations 1	2	3	4	5	*M (SD)*	n items	Coefficient *a*	Final grade *r*
Dissertation sample [c d]									
1. Intrinsic goals						5.31 (1.11)	3	.55	.15 **
2. Extrinsic goals	.14 **					6.09 (0.97)	3	.49	.11 *
3. Task value	.45 **	.30 **				5.77 (0.94)	3	.60	.15 **
4. Control beliefs	.33 **	.22 **	.33 **			5.58 (0.90)	4	.47	.11 *
5. Self-efficacy	.48 **	.30 **	.54 **	.37 **		5.80 (0.89)	5	.78	.21 **
6. Test anxiety	-.11 *	.17 **	-.11 *	.02	-.29 **	4.14 (1.53)	4	.73	-.06

Learning strategy	Factor correlations 1	2	3	4	*M (SD)*	n items	Coefficient *a*	Final grade *r*
Original MSLQ sample [a]								
1. Metacognitive self-regulation					4.54 (0.90)	12	.79	.30
2. Time & study environment management [b]	.58				4.87 (1.05)	8	.76	.28
3. Effort regulation	.61	.70			5.25 (1.10)	4	.69	.32
4. Peer learning	.15	.10	.05		2.89 (1.53)	3	.76	-.06
5. Help seeking	.25	.21	.18	.55	3.84 (1.23)	4	.52	.02
Dissertation sample								
1. Metacognitive self-regulation					4.95 (0.87)	6	.50	.18 **
2. Time management [b]	.54 **				4.81 (0.97)	6	.55	.20 **
3. Effort regulation	.54 **	.57**			5.06 (1.04)	4	.58	.22 **
4. Peer learning	.16 **	.19 **	.13 **		4.11 (1.58)	3	.71	.06
5. Help seeking	.27 **	.29 **	.19 **	.54 **	4.65 (1.34)	4	.59	.11 *

Re-specified dissertation factors	Factor correlations 1	2	3	*M (SD)*	n items	Coefficient *a*	Final grade *r*
1. Approach motivations [c]				5.74 (0.68)	16	.83	.23 **
2. Avoidance motivations [d]	-.14 **			4.14 (1.53)	4	.73	-.06
3. Solo strategies [e]	.53 **	-17 **		5.00 (0.82)	14	.78	.24 **
4. Social strategies [f]	.35 **	.01	.26 **	4.51 (1.40)	6	.81	.09

(*table continues*)

[a] *n*. N = 356. Pintrich et al. used final grades reported by instructors in various courses but did not report significance levels for final course grade *r.*

[b] *n.* Original (Pintrich et al.) Study environment management items were not used in the dissertation. The new factor was limited to Time management.

[c.] *n*. The Approach motivation factor included items from Intrinsic goals, Extrinsic goals, Task value, Control beliefs, and Self-efficacy.

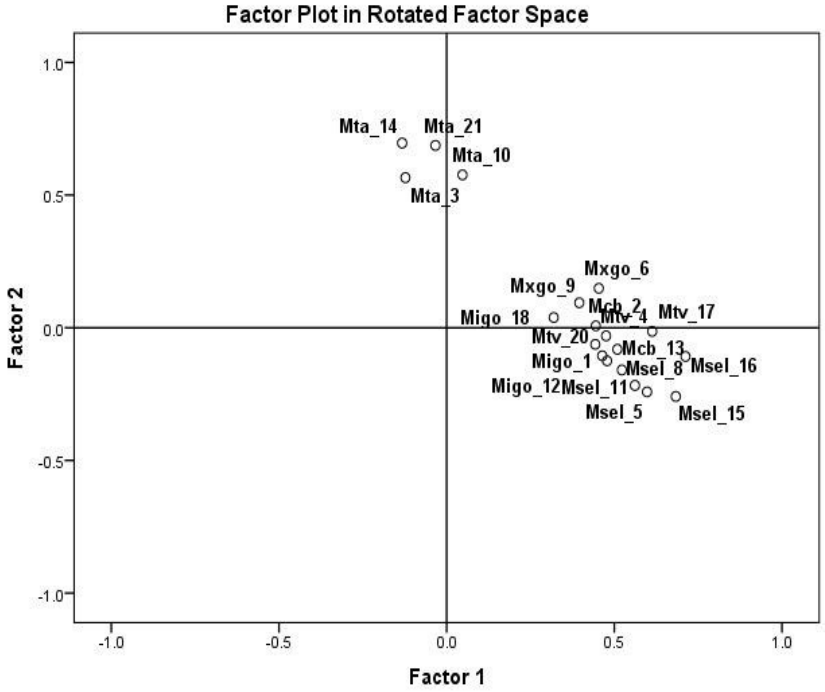
[d] *n*. The re-labeled factor, Avoidance motivation, was identical to the Test anxiety factor in the original MSLQ.

[e.] *n*. The Solo strategy factor included items from Metacognitive self-regulation, Time management, and Effort regulation.

[f.] *n.* The Social strategy factor included items from Peer learning and Help seeking.

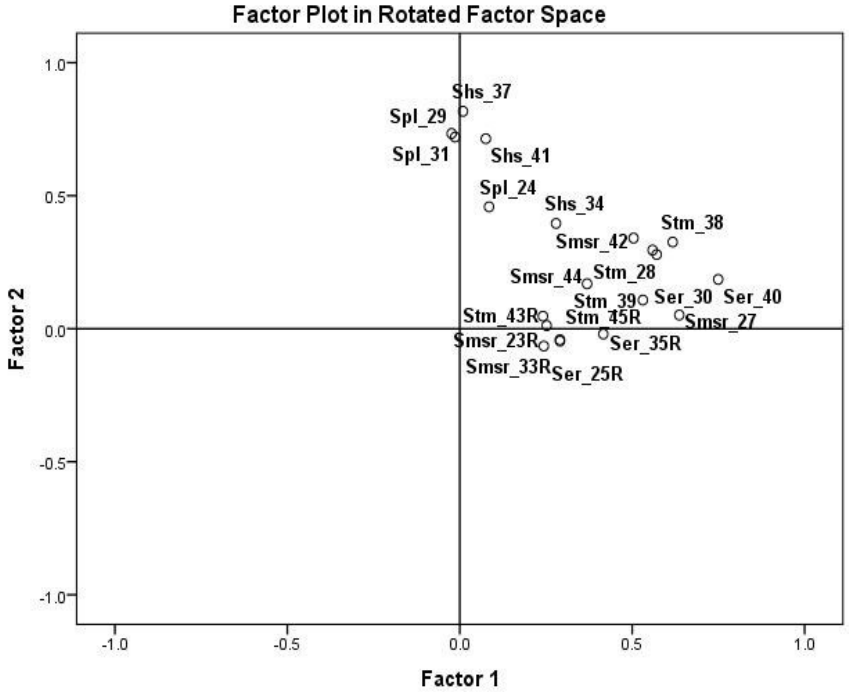
* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Figure F.8. Rotated factor plot for Motivations, re-specified.



Key: Mta = Test anxiety, Migo = Intrinsic goals, Mxgo = Extrinsic goals, Mcb = Control beliefs, Msel = Self-efficacy for learning, Mtv = Task value.

Figure F.9. Rotated factor plot for Strategies, re-specified.



Key: Shs = Help seeking, Spl = Peer learning, Stm = Time management, Smsr = Metacognitive self-regulation, Ser = Effort management.

Table F.18. *T* tests of independent means for demographic differences by Self-regulated learning factors.

		Approach motivation			Avoidance motivation		
	Group	Dummy-coded *M (SD)*			Dummy-coded *M (SD)*		
Binomial variable	1 n	1	0	*t*	1	0	*t*
Female gender	319	5.74 (0.67)	5.74 (0.70)	-0.80	4.30 (1.46)	3.85 (1.61)	3.09** [a]
Age 18 to 21	248	5.69 (0.68)	5.80 (0.67)	-1.86†	4.11 (1.52)	4.17 (1.54)	-0.45
Primary household	139	5.72 (0.71)	5.75 (0.67)	-0.42	4.23 (1.48)	4.11 (1.55)	0.84
Filial household	210	5.67 (0.68)	5.80 (0.67)	-2.06*	4.15 (1.58)	4.13 (1.50)	0.12
Caregiver	162	5.73 (0.69)	5.75 (0.67)	-0.35	4.28 (1.42)	4.07 (1.58)	1.49[a]
Immigrant	226	5.84 (0.68)	5.66 (0.66)	3.00**	4.28 (1.48)	4.02 (1.56)	1.91†
Room ratio = 1	207	5.73 (0.71)	5.75 (0.65)	-0.36	4.30 (1.45)	4.02 (1.58)	2.02*

		Social strategy			Solo strategy		
	Group	Dummy-coded *M (SD)*			Dummy-coded *M (SD)*		
Binomial variable	1 n	1	0	*t*	1	0	*t*
Female gender	319	4.55 (1.39)	4.44 (1.43)	0.80	5.09 (0.80)	4.86 (0.86)	2.98**
Age 18 to 21	248	4.35 (1.41)	4.67 (1.38)	-2.59**	4.85 (0.85)	5.17 (0.76)	-4.35***
Primary household	139	4.69 (1.33)	4.44 (1.43)	1.82†	5.12 (0.74)	4.97 (0.85)	1.82† [a]
Filial household	210	4.30 (1.46)	4.67 (1.34)	-2.92**	4.87 (0.87)	5.12 (0.78)	-3.20** [a]
Caregiver	162	4.60 (1.39)	4.46 (1.41)	1.02	5.07 (0.77)	4.98 (0.85)	1.21
Immigrant	226	4.80 (1.37)	4.26 (1.38)	4.36***	5.10 (0.82)	4.93 (0.82)	2.26*
Room ratio = 1	207	4.61 (1.40)	4.44 (1.40)	1.37	4.96 (0.85)	5.04 0.81)	-1.06

[a] n. Levene's test for equality of variances is significant ($p < .05$). Variance around the mean is not equivalent across groups for this comparison.

* $p < .05$ ** $p < .05$ *** $p < .001$ † $p < .10$

APPENDIX G

Table G.1. Factor loadings, standard errors, and significance for items in each CFA model.

CFA model *Eta* factor *Y* item	Unstandardized factor loading	*SE*	*t*
1. Interior inadequacy			
xSTANDRD			
d4_24: a place to live where I think that the interior (walls, floors, furniture, etc.) is nice to look at.	1.00	[a]	[a]
d6_26: a place to live where things work the way that they are supposed to (plumbing, electricity, etc.)	0.72	0.06	12.26
xSPACE			
d5_25: enough comfortable space inside the home to invite friends or family to visit.	1.00	[a]	[a]
d7_27: enough places inside the household for storage, to put away the things that belong to me.	0.92	0.05	18.08
d8_28: a place inside my home where everyone who lives there can be together comfortably.	0.91	0.05	19.82
xRETREAT			
d9_29: a place inside the household where some of the people can have privacy together apart from others in the home.	1.00	[a]	[a]
d10_30: a place inside my home where I can spend quiet time alone whenever I want to.	0.91	0.05	17.20
2. Perceived housing stress			
HELPLESS			
Parcel 1: III.2, How often have you felt that you were unable to do anything about the physical condition of the inside of your home? III.6, How often have you felt that you could not manage everything you had to do to take care of the place where you live?	1.00	[a]	[a]
Parcel 2: III.3, How often have you felt nervous and stressed by how crowded your home is? III.9, How often have you been angry because you didn't have enough privacy or personal "space" for yourself at home?	1.42	0.11	13.01
Parcel 3: III.10, How often have you felt that your responsibilities at home were piling up so high that you could not overcome them? III.11, How often have you found yourself withdrawing from or trying to ignore what was going on at home?	1.13	0.09	12.93
EFFICACY			
Parcel 4: III.5, How often have you felt satisfied that things were going your way in how you use the space inside your home? III.12, How often have you felt comfortable that you could predict how things would happen at home each day?	1.00	[a]	[a]
Parcel 5: III.4, How often have you felt confident about your ability to deal with noise or other irritating distraction inside your home? III.7, How often have you felt confident about your ability to deal with noise or other irritating distractions from neighbors in your building or from nearby buildings? III.8, How often have you felt that you were able to keep the places in your home comfortable enough for yourself?	1.17	0.23	5.13

(*table continues*)

CFA model *Eta* factor *Y* item	Unstandard-ized factor loading	*SE*	*t*
3. Spatial self-regulation			
HomeSSR			
V.1, I have a place for myself at home where I know I can focus on my school work.	1.00	[a]	[a]
V.3, I'm satisfied that the people I live with are considerate when I need to pay attention to school work at home.	0.84	0.05	17.67
V.5, I feel free to rearrange my home environment from day to day so that it's a good place for me to do my schoolwork.	1.00		
PARCEL: V.11, I'm good at being flexible in doing my school work around the needs and schedules of the people I live with. + V.12, I'm comfortable asking the people I live with to share daily responsibilities so that I have time to be a good student.	1.16	0.10	11.96
HomeDYSR			
V.6, When I try to do schoolwork at home it takes a lot of effort to avoid getting distracted by the people I live with.	1.00	[a]	[a]
V.8, The way that my home is makes me give up when I try to do my school work at home.	0.99	0.09	10.81
CAMPUS			
VII.2, When I am on campus I feel free from demands and expectations from outside (from family, friends, work, etc.)	1.00	[a]	[a]
VII.4, The BCC campus gives me the opportunity to do non-academic activities that I like.	0.79	0.14	5.67
VII.5, When the weather is good I like to read or study outside on campus.	1.32	0.19	6.97
VII.6, Being around other students helps me to focus on getting my school work done.	1.56	0.22	7.26
VII.11, I'm good at being flexible in doing my school work in different places on campus if I have to.	0.89	0.14	6.30
4. Learning motivation			
SELFEFFIC			
VI.5, I believe I will receive an excellent grade in any particular course.	1.00	[a]	[a]
VI.11, I'm confident that I can understand the most complex material in a course.	0.78	0.08	9.46
VI.15, I'm confident that I can do an excellent job on the assignments and tests in my courses.	0.93	0.08	11.00
TASKVALU			
VI.4, I think I will be able to use what I learn in one course in other course I take.	1.00	[a]	[a]
VI.17, I think the material in my courses is generally useful for me to learn.	1.17	0.14	8.35
VI.20, I generally like the material covered in my courses.	1.00	0.13	7.68
5. Learning strategy			
METASELF			
VI.27, When I become confused about something I'm reading for a course, I go back and try to figure it out.	0.62	0.59	11.31
VI.36, I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for a course.	0.44	0.28	5.63
VI.42, When studying for a course I try to determine which concepts I don't understand well.	0.67	0.56	10.77

(*table continues*)

CFA model *Eta* factor *Y* item	Unstandard-ized factor loading	*SE*	*t*
EFFORT			
VI.30, I work hard to well in my courses even when I don't like what we're doing in them.	0.73	0.62	11.63
VI.40, Even when course materials are dull and uninteresting, I manage to keep working until I'm finished.	1.00	[a]	[a]

[a] *n.* This item was used to scale its *Eta* factor.

Table G.2. Factor loadings, standard errors, significance, and diagnostics for integrated SEM items

Higher-order factor: *Eta* factor *Y* item	Unstandardized factor loading	*SE*	*t*	Max. Std. Residual	Max. Expected X^2 Change
Interior inadequacy: xSPACE					
d5_25	1.00	[a]	[a]	-3.32	0.06
d7_27	0.91	0.05	17.77	-3.16	0.29
d8_28	0.90	0.05	19.29	5.10	1.49
Interior inadequacy: xRETREAT					
d10_30	1.00	[a]	[a]	2.96	0.25
d9_29	0.98	0.05	18.36	5.10	0.26
Perceived housing stress: EFFICACY					
PHS478Rs	1.00	[a]	[a]	8.70	0.35
PHS512Rs	0.94	0.16	5.70	8.70	0.16
Perceived housing stress: HELPLESS					
PHS3_9s	1.00	[a]	[a]	-2.93	0.21
PHS1011s	0.80	0.05	15.76	-4.54	0.39
Time orientation: FATALIST					
Tpf_34	1.00	[a]	[a]	3.52	0.06
Tpf_35	1.08	0.16	6.64	4.20	0.35
Tpf_47	1.00	0.16	6.38	-3.94	0.29
Time orientation: moderatr					
o_d9Pf34	1.00	[a]	[a]	9.35	0.17
o_d9Pf35	1.15	0.17	6.91	-5.71	0.18
o_d9Pf47	0.99	0.15	6.38	6.03	0.26
o_10Pf34	0.89	0.14	6.30	9.35	0.32
o_10Pf35	1.10	0.19	5.66	5.08	0.04
o_10Pf47	0.87	0.18	4.91	-6.81	0.11
Time orientation: HEDONIST					
Tph_23	1.00	[a]	[a]	2.33	0.28
Tph_27	1.30	0.22	5.78	3.54	0.46
Tph_43	1.13	0.19	5.84	2.32	0.26

(*table continues*)

Higher-order factor: *Eta* factor *Y* item	Unstandardized factor loading	*SE*	*t*	Max. Std. Residual	Max. Expected X^2 change [b]
Time orientation: FUTURE					
Tf_6	1.00	[a]	[a]	3.23	0.24
Tf_11	1.13	0.28	4.03	3.89	0.24
Tf_18	0.75	0.19	3.92	3.24	0.26
Spatial self-regulation: Home SSR					
SSRh1	1.00	[a]	[a]	2.70	1.32
SSRh3	0.83	0.05	18.02	-4.13	0.21
SSRh5	0.90	0.05	17.98	3.90	0.38
SSR1112s	0.52	0.04	11.42	4.76	0.30
Spatial self-regulation: HomeDYSR					
SSRh6n	1.00	[a]	[a]	-3.94	0.72
SSRh8n	0.96	0.08	11.42	-4.33	0.27
Spatial self-regulation: CAMPUS					
BCC_2	1.00	[a]	[a]	-3.17	0.14
BCC_4	0.57	0.12	4.64	-3.53	0.19
BCC_5	1.02	0.16	6.18	-2.97	0.04
BCC_11	0.90	0.14	6.43	4.76	0.21
Learning Motivation: SELFEFFI					
Msel_5	1.00	[a]	[a]	2.99	0.11
Msel_11	0.83	0.08	9.95	-2.88	0.11
Msel_15	0.93	0.08	11.86	4.37	0.06
Learning Motivation: TASKVALU					
Mtv_4	1.00	[a]	[a]	2.84	0.29
Mtv_17	1.23	0.14	8.92	2.76	0.08
Mtv_20	1.03	0.13	7.84	2.51	0.16
Learning Strategy: METASELF					
Smsr_27	1.00	[a]	[a]	3.22	0.42
Smsr_36	0.71	0.12	5.69	3.24	0.69
Smsr_42	1.04	0.10	10.08	3.01	0.30
Learning Strategy: EFFORT					
Ser_30	1.00	[a]	[a]	4.51	0.35
Ser_40	1.18	0.09	12.66	4.51	0.10

Note. Appendix E contains the text and item analyses for each *Y* in the SEM. Items ending in "s" indicate parcels that were rescaled through mathematical transformations to permit an identifiable covariance matrix.

[a] *n*. This item was used to scale its *Eta* factor.

[b] *n*. Values shown are for positive modification index changes only.

Table G.3. Goodness-of-fit indicators for confirmatory factor analyses and structural equation models.

Model	n items	n factors	X^2 (*df*)	X^2 *p* Value	CFI	RMSEA (90% CI)	*p* Value [c]	Largest Std. Residual		Max. Exp. X^2 Change[d]
								Neg.	Pos.	
CFA 1: Interior inadequacy	7	3	22.91 (11)	0.02	1.00	0.046 (0.017, 0.073)	0.60	-2.43	2.48	1.02
CFA 2: Perceived housing stress	5	2	8.41 (4)	0.08	0.99	0.048 (0.0, 0.093)	0.46	-2.68	2.55	0.17
CFA 3: Home SSR	6	2	15.01 (8)	0.06	0.99	0.042 (0.002, 0.055)	0.60	-2.23	2.90	0.35
CFA 4: Campus SSR	5	1	5.21 (5)	0.39	1.00	0.006 (0.0, 0.063)	0.86	-1.42	1.64	n/a
CFA 5: Learning Motivation	6	2	11.67 (8)	0.17	1.00	0.027 (0.0, 0.064)	0.82	-2.10	1.70	0.38
CFA 6: Learning Strategy	5	2	9.69 (4)	0.05	0.96	0.055 (0.009, 0.099)	0.36	-2.31	2.30	11.64
CFA 7: Time Orientation	9	3	39.61 (25)	0.03	0.96	0.033 (0.007, 0.053)	0.91	-2.44	2.42	0.39
SEM 1: CFA 1 > CFA 2 [a b]	10	4	45.32 (30)	0.04	1.00	0.032 (0.009, 0.051)	0.89	-2.53	3.29	0.45
SEM 2: CFA 2 > CFA 3	15	5	166.20 (84)	0.00	0.98	0.44 (0.034, 0.0.54)	0.81	-3.74	5.47	0.94
SEM 3: CFAs 3,4 > CFA 5	17	5	207.44 (113)	0.00	0.97	0.42 (0.003, 0.05)	0.94	-2.89	5.57	0.34
SEM 4: CFA 5 > CFA 6	11	4	92.01 (40)	0.00	0.98	0.49 (0.035, 0.063)	0.51	-3.35	3.00	1.70
Fully integrated SEM	45	15	1653.29 (923)	0.00	0.95	0.039 (0.036, 0.042)	1.00	-6.81	9.34	1.32

Note. The Measures section of Chapter 2 describes steps taken toward the confirmatory factor analyses and the structural equation model segments. The Structural Equation Models section of Chapter 3 describes steps taken toward the fully integrated model.

[a] *n*. SEM 1 included the exogenous variable, Persons per room. Persons per room was not included in the fully integrated SEM.

[b] *n*. The data shown for SEM 1 is prior to the introduction of the orthogonalized time moderation effect.

[c] *n*. This p-value represents the Test of Close Fit (RMSEA < 0.05).

[d] *n*. Values shown are for positive modification index changes only.

Table G.4. Covariance matrix of *Eta* for integrated structural model.

Eta factor	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. xSPACE	1.00														
2. xRETREAT	0.82	0.94													
3. FATALIST	[a]	[a]	0.25												
4. moderatr [b]	[a]	[a]	[a]	0.33											
5. EFFICACY	-0.29	-0.33	-0.08	[a]	0.17										
6. HELPLESS	0.67	0.76	0.17	-0.08	-0.32	0.87									
7. HomeSSR	-0.76	-0.87	-0.20	[a]	0.45	-0.84	1.35								
8. HomeDYSR	0.51	0.58	0.27	09.96	-0.29	0.76	-0.75	0.96							
9. CAMPUS	0.01	0.01	0.00	-0.04	0.03	0.08	0.09	0.06	0.34						
10. SELFEFFI	0.01	0.01	-0.15	-0.04	0.07	-0.03	0.19	-0.11	0.29	0.83					
11. TASKVALU	0.00	0.00	-0.13	-0.02	0.05	-0.06	0.14	-0.12	0.15	0.45	0.46				
12. METASELF	0.00	0.00	-0.10	-0.02	0.05	-0.04	0.12	-0.09	0.15	0.44	0.34	0.51			
13. EFFORT	0.00	0.00	-0.11	-0.02	0.05	-0.04	0.13	-0.09	0.20	0.49	0.38	0.54	0.67		
14. FUTURE	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	0.09	0.08	0.04	0.04	0.14	0.22	
15. HEDONIST	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	0.10	0.09	0.05	0.05	0.05	[a]	0.24

[a] *n.* This parameter was fixed and not estimated because its initial *t* value was not significant ($t > 1.96$).

[b] *n.* "moderatr" represents the orthogonalized interaction of the xRETREAT and FATALIST factors.

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