

2005

# Determinants of self-concept change in new environments

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Determinants of self-concept change in new environments

by

Jonathan Smith Gore

A dissertation submitted to the graduate faculty  
in partial fulfillment of the requirements for the degree of  
DOCTOR OF PHILOSOPHY

Major: Psychology

Program of Study Committee:  
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Ames, Iowa  
2005

UMI Number: 3172216

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## ACKNOWLEDGEMENTS

I would like to thank Dr. Susan Cross for her guidance and patience over several years. Thank you to Drs. Douglas Bonett, Carolyn Cutrona, Lisa Larson, Stephanie Madon, and Daniel Russell for their input and advice on this project. Many thanks go to all of the research assistants who collected the data for this study. Thanks to my family and friends for their encouragement and support through my years as a graduate student. Finally, thank you to my wife, Kate, for her sympathetic ear and undying love. Without you all, this project would never have reached this point.

## INTRODUCTION

In the film “Dances With Wolves,” Civil War Lieutenant John Dunbar is stationed at a look-out post in the Great Plains region, after being transferred from the battlefields in the East. While he tries to adjust himself to his new surroundings, he meets several Sioux Indians, who later become good friends. Over the next several months, Lt. Dunbar undergoes a transformation in which his appearance, language, philosophy, and name become a part of the Sioux tribe. He eventually becomes a respected member of the tribe and creates around him a cohesive social network including the tribal holy man, Kicking Bird, and a romantic partner, Stands With A Fist. Later, Lt. Dunbar is apprehended by the Union Army and interrogated. He no longer holds allegiance to this part of his past. When they ask him his name and rank, he responds in the Sioux language, “My name is Dances With Wolves and I am a member of the Sioux tribe.” What has occurred in this instance is not brainwashing nor is it a matter of Lt. Dunbar having a weak sense of identity, but rather it is an instance of self-concept change through a transition to a new social and physical environment. Before the change process is examined, I will define the self-concept and distinguish it from other self-related constructs.

### The Self-Concept

The self-concept has its roots in several facets of one’s life. In some ways the self-concept is a reflection of one’s social environment, what may be referred to as the “looking glass self” (Mead, 1934). In other ways, the self-concept is part of a narrative sequence of experiences; the piece that binds our experiences together and makes them coherent (Freeman, 1992; Gergen & Gergen, 1988, Young-Eisendrath & Hall, 1988). Yet another perspective on the self-concept comes from researchers’ understanding of semantic memory

and cognitive structures (Kihlstrom & Cantor, 1984; Kihlstrom, Cantor, Albright, Chew, Klein, & Niedenthal, 1988; Markus, 1983). Although many theorists argue each of these stances exclusively, most researchers have concurred that the self-concept consists of multiple dimensions that are organized hierarchically in memory (Markus & Wurf, 1987; Marsh, Byrne, & Shavelson, 1988; Oyserman & Markus, 1993). This allows for schematic, experiential and social elements to be involved simultaneously in the definition of the self. The self is an amalgam of lower-level self-aspects: experiences, traits, relationships, social roles and identities, environments, abilities and beliefs. These lower-level self-aspects may then be arranged into higher-order self-domains (e.g., an individual self, a relational self). As the lower level self-aspects change, the higher-order self-domains they are a part of shift in the degree to which it is activated as a part of the general self-concept. The more these lower-level changes occur, the greater the overall shift in the general self-concept. Therefore, we define the self-concept here as the higher-order construct that ties together lower-level, self-relevant dimensions.

A definition of self-concept change requires that particular distinctions be made. First, I wish to distinguish between *lower-order self-concept change* and *higher-order self-concept change*. I define lower-order self-concept change as the variation in self content as the result of immediate situational factors. This is not necessarily indicative of a deep-rooted change in the self-concept. For example, people could define themselves in terms of their relationships to A, B and C, then later state that they now define the self in terms of their relationships with X, Y and Z. Although their social network has changed, which can lead to changes in other self-aspects, such people are still defining the self predominately on the basis of relationships; the changes noted are relatively lower-order. If, however, people

predominately define themselves on the basis of their relationships at one occasion, then later define themselves in terms of their skills and abilities, this is indicative of change at a higher-order level. I consider this to be a higher-order change because the self-concept has shifted toward a generalized focus on abilities and skills as opposed to consistently being focused on one's relationships.

The second distinction I wish to make is among *self-evaluation change*, *self-structure change*, and *self-concept change*. Self-evaluation change is change in a person's general outlook and affective response to themselves. This does not necessarily mean that people who have changed their self-evaluation have changed the *content* of their self-concept. For example, perceiving oneself as quiet may be associated with being shy and intimidated, or may be associated with being reflective and thoughtful. The person does not see the self as changing in content (going from quiet to boisterous), but rather changes the evaluation of the characteristic from negative to positive.

In addition, changing the content of the self-concept does not necessarily mean that the person has a more or less complex self-structure. Self-structure describes the degree to which the cognitive associations among self-aspects are integrated with each other or compartmentalized from each other. People with integrated self-structures activate multiple domains of the self when a particular set of aspects are made salient, whereas people with compartmentalized self-structures activate a single self-domain when a particular set of aspects are made salient. Often, content-related self-concept change is an adaptive response to changing life events and commitments (Bower, 1981; Sedikides, 1992), whereas self-structure change is often the result of minimizing the impact of stress and salient negative

experiences, such as compartmentalization between positive and negative self-dimensions (Linville, 1987; Showers, 2002; Showers, Abramson & Hogan, 1998).

The self-concept functions in the same way as other cognitive structures. People come to understand the self in the same way they understand the definition of objects and people, using cognitive *schemas*. Usually the self-schema is more elaborate than most other schemas. Markus (1977) defined the self-schema as “cognitive generalizations about the self... that organize and guide the processing of self-related information contained in the individual’s social experiences” (p. 64). The more established a dimension is in memory, the quicker a person will be to recognize the dimension as self-relevant (Markus, 1977). Thus, aspects of the environment that are experienced with greater frequency are more likely to become part of the self-concept than aspects of the environment that are rarely experienced.

New experiences may not be enough to change the self-concept. The human brain is biased toward encoding consistencies (see Fiske & Taylor, 1991; Rusting, 1998; Westen, 1991), particularly when it comes to the self-concept (termed *identity mastery* by Sampson, 1978; see also Graziano, Jensen-Campbell, & Hair, 1996; Snyder & Ickes, 1985). How then can a deeply-rooted cognitive structure such as the self-concept undergo change? According to attitude change researchers, the more a message from the environment activates the central components of one’s attitude, the more likely a person is to process information related to that attitude with great scrutiny (Petty & Cacioppo, 1981; Petty, Wheeler, & Bizer, 2000; Rogers, Kuiper & Kirker, 1977). Weak attitudes are easily changed with little scrutiny, whereas strong attitudes require effortful examination. Thus, people who are uncertain about their self-concept will be more receptive to messages related to the self, and more easily

convinced that these messages are self-diagnostic, compared to people who are certain about the content of their self-concept.

People in general pay considerable attention to messages in the environment that are framed so as to speak to “the kind of person I am,” so any feature of these messages that invokes self-reference increases information-processing activity (Petty & Cacioppo, 1979; see Haugtvedt, Petty, & Cacioppo, 1992; Thomsen, Borgida & Lavine, 1995 for reviews). Most of the time people are in familiar environments, where self-relevant messages are established and particular environmental cues and stimuli are recognized as supplying more insight into the “kind of person I am” compared to other cues and stimuli that are recognized as irrelevant to the self. In familiar environments people easily become schematic for a trait or ability because their environment changes infrequently or changes only to a small degree (Brinthaup & Lipka, 1992; Markus, 1977). Interestingly, even if people are in the same environment for their entire lives, they still are motivated to seek out self-relevant information, frequently asking themselves the question “Who am I and what is my place here?” (Shweder & Sullivan, 1990).

Conversely, when a person’s environment changes frequently or abruptly, that person is likely to experience self-concept change because the self-relevant feedback in the new environment is likely to differ from the feedback that was given in one’s original environment (Hormuth, 1990). In new environments, self-relevant information is difficult to distinguish from other kinds of information, and much of the time information that may not be self-relevant is encoded as such because they are unfamiliar with the meaning of environmental cues (Hormuth, 1990; Wicklund, 1982). For example, students who have just started college may be more likely to indicate a grade they receive on their first test is

indicative of their ability than they would a grade on a test they receive later in their college career. This is because they are less aware of some of the external factors that can be involved in their performance (e.g., instructor's leniency, exam format) when they are in the new college environment.

New environments can also cause confusion when making attributions. When people are in new environments and a causal explanation is needed, situational factors are often less salient than they are in familiar environments. Thus, people tend to make internal attributions for events when in new environments (Hormuth, 1990; see also Duval & Wicklund, 1972). Generally, when people are self-aware, they are more likely to act on the basis of personal standards, values and attitudes related to their established self-concept, thus creating a system of general cognitive maintenance rather than modification (Carver & Scheier, 1978, 1982; Duval & Wicklund, 1972; Scheier & Carver, 1977, 1980). In situations where one's personal standards are either irrelevant or the applicability of these standards is uncertain, people draw upon their social environment for clues and often use the standards that are salient in the new social environment. For example, when visiting a foreign country, some people find it difficult to apply their personal standards as to how to behave around other people. Acting extraverted in the United States and other Western cultures is generally perceived as friendly by others whereas acting the same way in other countries may be discouraged and perceived as childish. In order to determine behaviors and attitudes that are appropriate to the new environment, people begin to adopt the attitudes and behaviors of those around them, as other people's behaviors serve as a guide for how to act and think. In summary, new environments can facilitate change in the self-concept because they 1) increase a person's self-awareness and 2) make the applicability of personal standards ambiguous. This causes the person to

search external sources for clues as to how to act, feel and think, and these changes in self-relevant dimensions generate a shift in the self-concept.

### Overview

The following review explores the process through which the self-concept changes in the context of moving away from home and into college. Because the self-concept has a multifaceted hierarchical structure, I will begin with a review of the literature that suggests there are several routes to change, which I have classified into four categories that correspond to particular self-domains. The first route to change is the *individual route*, which is the most agentic and independent route to changing the self-concept. Through the individual route, the person chooses to change the self-concept through planning activities that will validate one's desired self (Kunda and Sanitioso, 1989; Sanitioso, 1998; Sanitioso, Kunda, & Fong, 1990; Vorauer & Ross, 1993). The individualized self, which is generally composed of personality characteristics, attitudes and abilities, is considered the most consistent across situations and resistant to change by researchers as well as by the layperson (see Kunda & Nisbett, 1986; Ross & Nisbett, 1991; Wright & Mischel, 1987). I will first provide a brief review of personality and developmental theories of change, then go into more depth with social psychology's perspective on the individual route to change. The individual route is only the tip of the iceberg, however, in understanding the many ways in which the self-concept can change. Just as the self-concept includes more than individual characteristics, changes to the self-concept involve more than the actions of the individual.

The self is socially constructed, which means the routes to changing the self may also be social in nature. The second route is the *relationship route*, which consists of changing one's roles, behaviors and perceptions within the context of close relationships. Several

theorists have suggested that people in close relationships have great influence on each others' behavior and attitudes. In addition, if people define themselves in terms of their close relationships, changes in the self may be reflected in the changes in one's immediate social network.

The third route is the *group route*, which consists of one's affiliations and social identities. Ingroup members influence how people come to understand their place in the world, and how they compare in terms of abilities and attitudes. Similar others provide a basis for determining appropriate behavior within particular social contexts. In addition, people's relative placement in terms of status can impact how they define themselves. As affiliations change, the people considered to be similar others will change as well, resulting in a self-concept that shifts toward the attitudes and behaviors of the new ingroup.

The fourth route is the *ecological route*, which consists of changes to one's physical and cultural environment. Many people define themselves based on the physical objects and geographical environment within which they reside. Many people also define themselves based on their culture or subculture. In the rare event that a person moves from one culture to another, many of their attitudes and behaviors come into question, and pressures to behave in accordance with the new culture may affect one's self-concept if there are few opportunities to maintain one's original cultural self. In addition, some events can cause a cultural shift in attitudes, such as the one that occurred after the September 11 attacks in 2001 where there was a noted increase among Americans in nationalism (see Lev-Wiesel, 2002).

Next, I will review literature showing *individual differences* in the ability to change, perceptions in the likelihood of change, and types of change that occur. I will then present some *methodological issues* in the study of change processes. Many of these issues deal with

inconsistencies in the definition and measurement of self-concept change across research programs, as well as the dearth of longitudinal studies of self-concept change in social psychology. In addition, I will propose a method of studying self-concept change using structural equation modeling and intraclass correlations. I will then present some data from a pilot study that examined the types of change that are the most prevalent among college students.

Finally, I will propose the *current study*, beginning with a brief summary of the literature and the hypotheses. I will then describe the methodology and analysis procedure used to test the models and the results of these tests. Finally, I will discuss why the study of self-concept change is empirically and practically important.

#### The Individual Route

##### *Personality and Developmental Psychology Theories*

Personality is defined as “The complex organization of cognitions, affects and behaviors that gives direction and pattern (coherence) to the person’s life” (Pervin, 1996, p. 414). Much of the literature on personality places great emphasis on the degree to which individuals differ from each other (Funder, 1997) and the degree to which people are consistent (Caspi & Roberts, 1999; Cross & Markus, 1999). Although researchers disagree as to the exact age when personality is fully developed, many theories place the point of personality rigidity in early to middle adulthood (Bloom, 1964; Costa & McCrae, 1988, 1997; James, 1890; McCrae & Costa, 1990, 1994; Sanford, 1962). An alternative perspective on the malleability of personality states that stability increases with age, but personality change later in life is still possible (Glenn, 1980; Field & Millsap, 1991; Helson & Wink, 1992; Roberts, 1997; Roberts & Friend-DelVecchio, 2000). Personality psychologists

recognize that the person is socially constructed and therefore features of the person are consistent to the extent that the social environment remains relatively unchanged (Alwin, 1994; Buss, 1984; Cairns, 1979; Cairns & Hood, 1983; Sameroff, 1995; Sameroff, Seifer, Baldwin & Baldwin, 1993; Warren & Hauser, 1997).

Continuity and consistency are generally conceived as the extent to which a person retains a particular trait across situations and across time (termed *absolute continuity* in Caspi & Roberts, 1999). Continuity, however, does not necessarily mean that a person maintains the same level of a trait throughout the life course; it can be achieved through several different channels. For example, *differential continuity* is defined as the “consistency of individuals within a sample of people over time, to the retention of an individual’s relative placement in a group” (Caspi & Roberts, 1999, p. 304). Intellectual ability has been shown to have strong differential continuity over time (Conley, 1984). Alternatively, *structural continuity* refers to “the persistence of correlational patterns among a set of variables across time” (Caspi & Roberts, 1999, p. 306). Structural change generally indicates a developmental transformation.

Although personality may be resistant to change, qualitative “theories of oneself” may adapt to a larger set of roles in adulthood (Brim, 1975; Damon & Hart, 1986; Harter, 1997). Much of the change in personality during adulthood is either due to an abrupt change in the environment or it is a long-term, developmental shift. Personality is often perceived as more malleable in childhood than in adulthood, as the influence of group members (e.g., Blumer, 1969; Stryker, 1987), mentors (e.g., Chao, 1997), and parents (e.g., Sarbin, 1964) encourage self-improvement and development. As one’s social environment solidifies into a

relatively static set of interaction partners, and the messages of change begin to fade, changes in one's personality are less likely to occur.

In contrast, developmental psychologists suggest that change can occur throughout the life span, but these changes are more likely to occur at certain points of transition. The aging process involves adapting to new roles, needs, obligations and abilities, and it most often leads to a long-term change to the self-concept. Aspects of the self-concept vary and evolve in their importance according to changes that result from maturation, which has an effect on the overall structure of the self-concept (L'Ecuyer, 1992). As people progress through stages in their lives, particular needs are focused on and attended to, and these needs dominate the structure of the self-concept. Erikson (1963, 1980, 1982) describes eight stages in which conflicting needs are balanced as much as possible, and the person's self-concept develops as a result of each "crisis". Between the ages of 12 and 20, Erikson (1963) states that the individual is experiencing a crisis between a) establishing an identity and b) confusion as to what one's identity is. During this stage, individuals are motivated to figure out a self-concept that "fits" (Hamachek, 1994). Thus, major shifts in the self-concept are likely to be observed during this stage. Entering college students not only are experiencing this life stage crisis, but they are also adapting to a new environment, one that involves a dynamic shift from the stability of living at home with one's parents to the ambiguity of roles, needs, obligations and abilities in the new college atmosphere.

### *Social Psychology Theories*

Similar to personality theories, several self theories in social psychology emphasize the maintenance of the self-concept, despite the general agreement that the self is socially constructed. In many of the social psychological theories of the self and self-concept change,

the main focus of the change process is on the failure of self maintenance rather than on functional adaptation of the self to a new environment (Hormuth, 1990). In these theories, the self is perceived as individualized, agentic and striving toward consistency. Changing the self, even for the better, may be forsaken in the interest of self-consistency. One of the major theories stressing self-concept maintenance is self-verification theory (Swann, 1983, 1987). Swann and his colleagues argue that people possess a fundamental desire to know what to expect from their social world. This knowledge can be obtained through several channels: observing one's own behavior, experiencing the reactions from others in regards to one's behavior, or comparing one's performance to similar others. People tend to prefer evidence that is consistent with their self-views and resist evidence that conflicts with their identity (Hilton & Darley, 1985; Swann, 1983; Swann, Pelham, & Krull, 1989).

Although self-verification theory allows for self-concept change, the change process requires a conscious awareness that the current self-concept differs from a previous self-concept, which suggests that a change has already occurred. This noted discrepancy between the current self and a previous self can occur through simple maturation (developmental changes) or through a discrepancy between one's current self-view and interaction partners' views of oneself (Swann, 1987). Swann recognizes that for change to occur, the social environment must support the new view (Swann, 1987). Change, in the self-verification view, is seen more as an identity crisis than an adaptive process, as a person is faced with feedback that threatens the older self-concept. This threat can be especially potent if a) the source of the feedback is perceived by the target as competent, b) the new self is supported by many people, c) the feedback is directly relevant to an important dimension of the self-

concept, and d) the feedback is sufficiently different from the previous self-concept (Swann, 1983).

Self-verification can also be used to validate a desired self. Kunda and Sanitioso (1989) argue that momentary self-concept change can occur when a particular trait is desirable in one's social environment (see also Sanitioso, 1998; Sanitioso, Kunda, & Fong, 1990; Vorauer & Ross, 1993). Being motivated to change the self, they argue, usually leads to applying a certain trait to oneself. This will only happen if the changing individuals convince themselves that they have grounds for possessing the trait, which can be accomplished in two ways. The first is by creating desired instances so they are readily available in one's environment (Sanitioso, Kunda, & Fong, 1990). For example, the person who wants to become a better student may plan to spend more time in the library than he did in the past. The second way is by interpreting past experiences in life with one's new motives and beliefs (Sanitioso, Kunda, & Fong, 1990). For example, if a college student believes that extraverted people are more successful in academia than introverts, that student may begin to define the self as more extraverted than before (Sanitioso, 1998).

Although this motivated self-concept change requires others in the social environment to recognize the desired self, much of the change process occurs from within the individual. Again, this argues that self-concept change is mostly a product of the person rather than a product of the environment. In summary, much of the self-verification literature stresses the importance of self-concept maintenance, so that change is the result of failure to maintain one's self-concept. When the person is motivated to change, verification of a desired self will be sought rather than verification of the present self. This motivated self-concept change,

however, is less common than the motivation to maintain a consistent self-concept across situations and across time.

Another self theory that emphasizes the importance of maintenance is self-affirmation theory (Steele, 1988; see also Liu & Steele, 1986; Steele & Liu, 1983), which states that when the self-concept is threatened, people are motivated to affirm their general self-integrity. For example, if a student receives a poor grade on a test he or she may affirm the self by making a positive self-concept dimension salient (e.g., being a good friend). Steele and colleagues argue that self-affirmation is more flexible and less confined to a specific belief or event than cognitive dissonance, which is typically found in controlled laboratory settings more so than in naturalistic settings. Thoughts and feedback that threaten the perceived integrity of the self arouse the motive for self-affirmation. This motive can then be reduced by either reducing the threat or by not addressing the threat and instead restoring the perceived general integrity of the self. Self-affirmation responses are determined by the availability of one's self-aspects, or the degree to which a given self-aspect is accessible in the individual's perception, memory or imagination (Steele, 1988). Thus, the self-concept can be maintained even while facing threats to the self simply by shifting one's attention to different self-aspects, as long as these self-aspects represent a dimension that is equal to or more important than the threatened dimension. Once the threat has subsided, the individual may again use the previously threatened self-aspect as a part of the general self-concept.

How can the self-concept change if one need only affirm other self-aspects? If a central aspect of the self-concept is threatened and the threat is longlasting, then affirming an alternative aspect of the self may result in an overall shift (Aronson, Blanton, & Cooper, 1995). For example, a student who is new to college may base his or her self-concept on

academic achievement. If, however, that student receives poor grades, he or she will be motivated to reaffirm the self by making a different self-aspect salient (e.g., being sociable, being a partier, being a member of a church). This relatively permanent shift in the importance of new self-aspects may then cause a shift in the general self-concept so that the new self-aspect is more dominant in one's overall definition than the previous self-aspect (Aronson, et al., 1995). For self-concept change and self-affirmation to occur simultaneously, the new dominant self-aspect must a) reduce the threat to the general self (i.e. it cannot be related to the threatened self-aspect), b) it must already be a part of the original self-concept, and c) it must restore a general integrity to the self (i.e. it must also be important to the individual). This is not to say that the change in the self-concept is toward a completely new general self, but rather a shift in importance toward a new dominant self-aspect in the self-concept hierarchy. The threatened self-aspect may still be present in one's general framework, but the importance of that aspect will be reduced if threatened for an extended period of time.

Wicklund and Gollwitzer's (1982) self-completion theory states that people are motivated to strive toward self-defining goals (termed *identity goals*, or *IGs*). When important indicators of self-definition are lacking in one's environment, people will strive after further, alternative symbols of self-definition. For example, if a high school athlete is unable to participate in sports at a new college, that person may become a loyal fan to the college's athletic teams. In addition, identity goals function differently than other kinds of goals in that failed attempts to define the self lead to enhanced motivation toward self-defining goals rather than discouragement (Brunstein & Gollwitzer, 1996; Gollwitzer, Bayer, Scherer, & Seifert, 1999; Gollwitzer, Wicklund, & Hilton, 1982). Again, the social

environment validates one's self-concept, but the construction of new identities are determined by the individual (Gollwitzer & Kirchhof, 1998).

Wicklund and Gollwitzer (1982) define the self-concept as "a readiness, that one carries across situations, to enact certain classes of behaviors" (p. 32). In a sense, the self-concept is no more than a commitment to act in a certain way in a particular social context. Self-concept change can therefore occur if the social context does not support one's original self-concept, and the only available sources of self-definition differ from the original self-concept (Hormuth, 1990). This could particularly be the case when living in a new culture. Many recognized symbols of self-definition in one culture can be uninterpretable in another. If, for example, a person's appearance is symbolic of his or her status or authority in one country, this may not be as easily recognized nor supported in another country with few shared cultural beliefs or standards. As relocation is a rare event for most people, the social context tends to maintain their current self-concept.

Another self theory that suggests change is unlikely to occur is self-evaluation maintenance theory (SEM, Tesser, 1988), which states that people are motivated to behave in a manner that will maintain or increase their self-evaluation, and that one's relationships have a significant impact on one's self-evaluation. Although this theory emphasizes affective self-evaluative responses more than cognitive self-concept processes, the theory nevertheless recognizes the importance of self-aspects to the general self-concept. According to the SEM model, a person's self-evaluation can be enhanced when a close other performs well, as long as the performance domain in which the close other excels is not relevant to one's own self-concept. When close others perform well in a domain that is not self-relevant, people may increase their self-evaluation by "basking in reflected glory," termed the *reflection process*

(Tesser, 1988). Alternatively, if the close other performs well in a domain that is self-relevant, the individual's self-evaluation is threatened, and the person engages in a *comparison process*. The better the other person's performance, the closer the relationship, and the more relevant the performance domain to one's self-concept, the bigger the blow to one's self-evaluation (Tesser, 1988; see also Tesser & Campbell, 1982; Tesser & Smith, 1980).

When outperformed by a close other on a relevant self-aspect, a person can do one of three things. First, the person can alter his or her perceptions of the relationship ("I never liked X that much anyway"). Second, the person can affect the performance gap by either practicing in the performance domain or sabotaging the other person's performance. Finally, the person can change his or her self-definition ("I'm just not as good at this as I thought"). By reducing the importance of the self-aspect in one's self-concept, the individual is more likely to experience the reflection process. Unfortunately, the self-concept change alternative is rarely chosen. Instead, most people choose to distance themselves from the close other or to hinder the close other's performance in some way rather than accept that the performance domain should not be self-defining (Tesser, 1988). This effect is particularly strong among males and people in individualistic cultures (Heine, Kitayama, & Lehman, 2001; Tesser, 1988). Although the SEM model allows for self-concept change as an alternative to more detrimental social outcomes, Tesser and colleagues' research shows that self-enhancing strategies are frequently chosen over self-concept change, even if changing the self provides better consequences for one's close relationships.

From an expectancy-value perspective of self-concept change, the process is again deliberate and based on the planned action of the individual (Klar, Nadler, & Malloy, 1992).

This theory states that people will act and persist at a task to the extent that 1) the outcome of the act is positive and 2) the act is perceived as likely to produce the desired outcome (Atkinson & Birch, 1970). People therefore intentionally plan their behaviors so as to maximize their desired outcomes (Ajzen & Fishbein, 1980; Beach & Beach, 1982). When people are dissatisfied with their current self-concept, they are motivated to change it as long as the change process is perceived as likely to be successful. Klar et al (1992) report that most college students have actively attempted to change something about themselves (e.g., becoming more independent), and that these changes are generally made in an informal setting (i.e. not a clinical one). They also found that the *value* of changing the self motivates the individual and predicts the actual involvement in attempts to change more so than the expectancy of success. Successful changes in a particular domain, however, may lead to further changes within that domain due to heightened expectancies of success. Thus, a person may gain self-efficacy in changing the self within a particular context and may therefore be more willing to change within that context in the future (Bandura, 1986; Feather, 1982; Lewin, Dembo, Festinger, & Sears, 1944).

Self-presentation theory (Tice, 1992) states that three factors lead to self-change in an additive fashion. The first of these is through self-referencing. The more a message from the social environment is perceived as relevant to the self, the more likely that message is able to change one's self-concept. The second factor is choice. The more people believe they have acted or expressed a belief autonomously, the more the act will be perceived as originating from themselves. If an act or belief is contrary to one's normal behavior or attitudes, yet seen as stemming from the self, the more likely that act or belief will be internalized and accepted as self-descriptive. Finally, Tice and her colleagues argue that behaving in public increases

Table 1. Summary Table for the Individual Route.

<i>Theory or concept</i>	<i>Change Process Defined By</i>
Self-verification	Failure to confirm the self; verification of a new, desired self
Self-affirmation	Prolonged threat to a central aspect of the self
Self-completion	Lack of support in environment, search for meaningful self
Self-evaluation	Comparison process leads to diminished importance of aspect maintenance
Expectancy-value	New self-aspect is desirable and attainable
Self-presentation	Chosen behavior leads to internalization into self-concept

the likelihood that the act will be internalized, especially if that person believes he or she will have future interactions with the “audience” (Baumeister & Tice, 1984; Schlenker, Dlugolecki, & Doherty, 1994; Tice, 1992). Often the audience consists of one’s friends, family members and other people with whom one has close relationships. The following section reviews the literature that suggests close others are particularly strong catalysts of self-concept change.

In summary, theories that focus on the individual route to self-concept change state that the change process involves a detachment from a particular self-aspect (i.e., decide that a particular aspect is no longer a part of one’s self-concept), which then causes the self-concept to shift (see Table 1). The main focus of these theories is on the individual making a conscious choice to distance one’s general self-concept from a self-aspect either deemed irrelevant or undesirable. Maintenance failure and conscious choice are therefore central components to the individual route of self-concept change.

#### The Relationship Route

The notion that close others are influential in how the self is constructed and perceived is nothing new. James’ (1890) term, *the social me*, described the part of the self that is recognizable to close others; it is multifaceted in the sense that a person has as many

social selves as relationships with others. Other 19<sup>th</sup> century psychologists also emphasized the self as a social product (e.g., Baldwin, 1897; Peirce, 1868). This set the stage for later theorists such as Cooley (1902) and Mead (1934) to develop symbolic interactionism theory, which states that the self is “inseparable from social life and necessarily involves some reference to others” (Shrauger & Schoeneman, 1979, p. 26). According to the symbolic interactionists, people are encouraged to attend to and even adopt other people’s judgments of themselves from early childhood (Cooley, 1902). This involves the interplay of four components: the individual’s self-concept, the perception of others’ attitudes and responses, the actual attitudes and responses of others, and the individual’s behavior.

Most of the research examining feedback from others and changes in the self-concept have found changes that are consistent with the feedback the individual receives (e.g., Backman, Secord, & Pierce, 1963; Binderman, Fretz, Scott, & Abrams, 1972; Cooper & Duncan, 1971; Eagly, 1967; Evans, 1962; Haas & Maehr, 1965; Harvey & Clapp, 1965; Harvey, Kelley, & Shapiro, 1957; Regan, Gosselink, Hubsch, & Ulsh, 1975; Shrauger & Lund, 1975; Snyder & Shenkel, 1976; Steiner, 1968; Videbeck, 1960). In most cases, however, these changes were assessed immediately after the feedback was given, so the long-term effects of social influence on self-concept change are rarely explored. In addition, much of the change noted in the literature involve positive changes in self-evaluation as a result of positive feedback from others, rather than changes in the self-concept (Halperin, Snyder, Shenkel, & Houston, 1976; Mosher, 1965; Sundberg, 1955; Weisberg, 1970; see Ludwig & Maehr, 1967; Murray, Bellavia, Feeney, Holmes, & Rose, 2001; Murray & Holmes, 1997; Murray, Holmes, & Griffin, 1996a, 1996b, 2000 for positive self-evaluation changes in the context of close relationships). The remainder of this section will therefore review research

that focuses primarily on significant or long-term changes in content, rather than changes in evaluation, in the context of one's close relationships.

The basic tenet of changes through the relationship route is that people's self-concepts are supported and sustained by a network of social relationships, so that when the network changes, the self-concept also changes (Abrams, 1992; Banaji & Prentice, 1994). When the social network undergoes changes, the ways in which people had previously maintained the self-concept are no longer valid or useful in the new context, so they must reformat the content and structure of the self. For example, a male adult may find that his original self-concept consists of being the type of person that likes to hang out with his friends and stay out late. This identity may then change with the introduction of a new social relationship (e.g., a girlfriend), then change even more with marriage and children until the previous self-concept is either invalid or maladaptive in the new social context. Thus, self-concept change is often the by-product of establishing new social commitments and detaching from older ones (Abrams, 1992; Hormuth, 1990, 1991). Although the discontinuation of a relationship may cause a person to re-evaluate his or her self-concept, it is the development of new social commitments that more frequently produce the most significant changes in the self-concept (Hormuth, 1990).

One of the common ways people form new attachments is falling in love. Aron and Aron's (1986, 1991, 1995, 1997) self-expansion theory states that people fall in love because they are motivated to build upon their current self-concept (see also Aron, Norman, & Aron, 1998; Aron, Paris & Aron, 1995). Thus the self-concept is not so much altered as it is expanded. Specifically, the person of interest possesses characteristics that are desirable and these attributes are not a part of one's current self-concept. As relationship partners become

more intimate and psychologically closer, the knowledge structures between the self and the other person begin to merge and the resources, perspectives and characteristics of the other person are adopted as one's own. This cognitive merger is also evident in the integration of attitudes among dating couples (termed *attitude alignment* by Davis & Rusbult, 2001).

New relationships also give people the chance to “try out” a better version of the self and gain self-improvement through validation from one's partner (Aron, Paris, & Aron, 1995). Drigotas, Rusbult, Wieselquist and Whitton's (1999; see also Drigotas, 2002) *Michaelangelo phenomenon* describes a process through which close others are a particularly strong source of this kind of ideal self validation (termed *behavioral confirmation*). Behavioral confirmation is established by constraining interaction so as to inhibit the self's display of unwanted behaviors and enhance the opportunity for ideal self behaviors to be expressed. Close others can therefore help individuals “sculpt” their ideal self by either rewarding decisions the individual makes, displaying behavior themselves so as to elicit such decisions, or create interdependence situations in which certain decisions become more probable (Drigotas et al., 1999). As the individual perceives movement toward his or her ideal, satisfaction with both the self and the relationship increases and the process is reinforced. Thus, self-concept change in the context of close relationships may also be a powerful source of self-improvement. In contrast to Sanitioso and colleagues' research mentioned earlier on the verification of a desired self, Drigotas and colleagues suggest that the main source of the change process comes from close others rather than from the actions of the individual.

Self-concept change need not be constrained to the context of romantic relationships. Deutsch and colleagues have found similarity in self-concepts among friends as well

(Deutsch & Mackesy, 1985; Deutsch, Sullivan, Sage, & Basile, 1991). Similarity among friends is most often established through conversation (especially for women). When people are first acquainted, they can “feel out” each others’ self-aspects as they discuss other people (perhaps a mutual acquaintance). During these early interactions, the individuals will use their own self-aspects to describe the world and other people. Later, when describing themselves, people tend to use the other person’s self-aspects to establish similarity (Deutsch & Mackesy, 1985). For people who are already friends, this effect should be even more pronounced. When talking with other people, particularly people in a new social context, we are exposed to new constructs (e.g., knowledge, expressiveness, preferences, etc.). The more conversations people hold with this new person, the more likely they are to re-define the self in terms of the other’s self-concept. This merger of personal characteristics leads to greater perceived similarity, which then leads to liking (Deutsch et al., 1991).

Just as close relationships are sources of change, they are also (and more often) sources of stability and discouragement of self-concept change (see Baranowski & Nadler, 1985; Hurvitz, 1967; Lichtenstein, Glasgow, & Abrams, 1986; Minuchin, 1974; Napier & Whitaker, 1978; Parkes, 1975; Pearce, LeBow, & Orchard, 1981; Sampson, 1989; Sheriff, 1966; Smith, 1983; Swann, 1983). One of the most powerful relational sources of self-concept stability is the family (Oyserman & Markus, 1993). From early childhood, the family serves as a translator of most other influences in the immediate social environment as well as in the overall culture. In addition, families convey which domains in the environment are important to attend to and what skills are important to develop (e.g., reading, athletics, sociability, etc.). These messages from the family are often unwavering and expressed in an entrenched manner (Nadler & Fisher, 1992). Such social environments that foster the

maintenance of self-views are called *opportunity structures* (McCall & Simmons, 1966) or *primary groups* (Nadler & Fisher, 1992), which systematically distort people's perceptions of reality and function as a secure source of self-confirmatory messages (Swann, 1987).

Primary groups are distinct from other social groups in that a stable pattern of relations exists between the individuals; there is an enhanced collective "we" feeling among individuals as well as a common view of the group in contrast to other groups; there is a high level of emotional investment among individuals (Nadler & Fisher, 1992). Primary groups also serve specific functions. These functions are either instrumental, such as providing clothing, food, shelter or material aid (Fisher, Nadler, & Witcher-Alagna, 1983), or psychological, such as providing stability and social support (Epstein, 1987; Miller & Turnbull, 1986; Nadler & Fisher, 1992). Stability within the primary group is maintained by the group's convictions and ideologies (Reiss, 1980), the group's identity and social roles (Stryker & Statham, 1985), and the individuals' beliefs about themselves (Swann, 1984). Thus, when one of the members of the primary group undergoes self-concept change, that person is perceived as threatening the stability of the group.

Much of the resistance from family and friends comes from perceived threat to the group's *assumptive world*, which is the "stable set of beliefs, assumptions and patterns of behavior that the group shares, which function to regulate relations between members and with the social environment" (Nadler & Fisher, 1992, pp. 215-216; see also Berger & Kellner, 1975; McCall & Simmons, 1966). When a member's self-concept changes, the group will react according to the direction of change. If the person's self-concept changes in a direction that contradicts the assumptive world, that person will be met with resistance, particularly if the change threatens a central quality of the primary group (Nadler & Fisher,

1992; Tesser, 1988). In contrast, if the self-concept changes in a manner that is consistent with the assumptive world, the individual will be accepted and even praised as they become more in line with the group's beliefs. Close others will also be more resistant when the group itself emphasizes a high coordination of beliefs among members (Reiss, 1980), and when the changing person is a high status member of the group (e.g., a parent or spouse; Nadler & Fisher, 1992).

### *Psychotherapy as a Relationship Route*

Psychotherapy is an intimate social context in which changing the self is the primary function. New techniques for self-improvement, self-perception and self-evaluation are offered by the therapist in the interest of solving the client's debilitating condition. Not only is psychotherapy meant to initiate change in the person, but also to serve as a resource for maintaining positive personal change. The role of psychotherapy in most circumstances is to elicit change through conversation (Tomm & Lannanmann, 1988). As no single view of an event can be completely accurate, the negative perceptions conveyed by the client are challenged and improved through a technique termed *radical constructivism* (Maturana, 1988; Rosengard & Chinsky, 1992). Thus, changes in the perception of an event may lead to changes in the self-concept, and the client and therapist are in effect creating a new reality (Anderson, Goolishian, & Winderman, 1986; Goolishian & Anderson, 1987; Rosengard & Chinsky, 1992).

A second technique used to change the self-concept in the context of therapy is through the improvement of a person's skills and efficacy, creating a sense of control over one's environment. Self-efficacy beliefs are defined as "judgments of one's ability to execute given types of performances" (Bandura, 2000, p. 21). These beliefs are domain-specific, such

that an individual may have high self-efficacy beliefs in one domain (e.g., athletics), but low self-efficacy beliefs in another domain (e.g., relationships). Enhancing self-efficacy beliefs often leads to successful progress in therapy, particularly when the client is in need of perceiving a destructive behavioral pattern as controllable. Thus, self-efficacy has been effective when treating eating disorders (e.g., Love, Ollendick, Johnson, & Schlezinger, 1985) and substance abuse (e.g., Collins & Lapp, 1991). Improving self-efficacy beliefs has also been effective in counseling sessions involving academic and career decision-making (e.g., Lent, Brown, & Hackett, 1994) and problem-solving in relationships (e.g., Larson, Suzuki, Gillespie, Polenza, Bechtel, & Toulouse, 1992). Similar to self-evaluation change, enhancement of self-efficacy beliefs may not involve changing the content of the self, but rather it changes the perception of self-content in terms of how effective one can be based on one's available resources. Changing one's self-efficacy beliefs, however, may lead to shifts in the importance of once marginalized aspects of the self. For example, improving efficacy beliefs in academics may lead to a new centralized "student" self-concept.

The enhancement of self-efficacy beliefs has been particularly effective among juvenile delinquent male populations (Gold, 1994). After failing in school, males use delinquent behavior as a way to "show-off" and achieve status through means other than sports or academics (Kaplan, 1980). Treatment of delinquent males involves two steps. First, the therapist creates a warm, unconditional and informal atmosphere (Bowman & Liddle, 1959). This establishes trust as well as communicates that there will be no standards to conform to (or rebel against). Second, the client experiences scholastic success by receiving schoolwork tailored to his personal interests and school level (Gold & Mann, 1980). Gold

and Mann (1980) suggest that these experimental programs initiate and maintain positive change in the clients more than the “Scared Straight” and “Boot Camp” programs.

A third technique used in psychotherapy is to place the clients in a relational position with the therapist that is incompatible with the client’s self-concept (Bergner & Holmes, 2000). The client is therefore given an a priori status by the therapist that is more positive than the status the client normally experiences. Bergner and Staggs (1987) state that the client should be assigned a number of high status positions, and should be treated as a person a) who is acceptable, b) who makes sense, c) whose best interests come first in the therapeutic relationship, d) who is important and significant to the therapist, e) who already possesses enabling strengths, knowledge, and other resources for solving problems, f) who, given a choice between equally realistic, but differentially degrading appraisals of him or her, is to be given the benefit of the doubt, and g) who is an agent capable of entertaining behavioral options and selecting from among them (in Bergner & Holmes, 2000, p. 41). Once the new self-concept is initiated, it can be maintained through interactions in which the new status is the only one that is recognized in the therapeutic context.

Psychotherapy often uses social psychological principles in order to bring about self-concept change. As mentioned before, people are motivated to verify their self-concepts (Swann, 1983), and this desire for consistency can inhibit an individual’s self-improvement if the self-concept is viewed in a negative light (Swann, 1987). The therapist must be careful not to verify the client’s negative self-concept so that the client feels justified, but the therapist must also demonstrate that he or she views the client to some degree “as is”. This creates a paradox as to how the therapist should treat the client. McNulty and Swann (1991) suggest that the therapist should provide moderate levels of confirmation of the client’s

negative self-view at the initial stages to show that he or she is trustworthy and perceptive. The therapist should then gradually provide feedback that disconfirms the client's self-concept. The therapist's goal should be to reduce the certainty of the existence of negative self-aspects while at the same time not challenging the self-aspects directly. This can be achieved through superattitudinal questions that take extreme positions. The client will recognize that his or her beliefs are only moderate and may be more likely to see them as malleable. Therapists should also identify the client's positive aspects and reinforce these aspects' importance and certainty.

Self-presentation is also at work in psychotherapy (Kelly, 2000). The interactions that take place in therapy involve commitments to a new identity in the presence of an audience (the therapist). As was mentioned before, public behavior is more likely to be internalized to the self-concept than behavior expressed privately (e.g., Tice, 1992). Once people claim to be certain types of people in the therapeutic setting, they obligate themselves to behave consistently with that identity (Schlenker et al., 1994). Thus, the mere presence of the therapist makes the client's new identity "stick".

In summary, theories that focus on the relationship route to self-concept change state that the change process involves a change in who the individual perceives as close others (i.e. new members of the primary group), which leads to the reception of new feedback about the self as well as adoption of the other person's attributes as interdependence increases (see Table 2). The main focus of these theories is on the degree to which the individual is exposed to close others and the information they provide about the self. This new information may disconfirm a previous notion about the self (i.e. maintenance failure), but most of the relationship route theories argue that self-aspects are more likely to be added on to the self-

Table 2. Summary Table for the Relationship Route.

<i>Theory or concept</i>	<i>Change Process Defined By</i>
Symbolic interactionism	Feedback from others changes, self concept changes
Self-expansion	Interdependence adds desirable characteristics to self-concept
Michaelangelo phenomenon	Close other constrains environment to foster one's ideal self
Similarity	Conversation leads to adoption of other person's self-aspects
Primary groups	Provide shared meaning and consistent feedback that stabilize self
One-on-one psychotherapy	Radical constructivism, self-efficacy, unconditional atmosphere, verifying then challenging, self-presentation

concept (i.e. self-expansion) rather than replacing old self-aspects. Self-expansion, feelings of closeness, and exposure to close others are therefore central components of the relationship route to self-concept change.

#### The Group Route

Other people can influence the self-concept without being considered close to the changing individual. Affiliations with groups may not involve the emotional investments that are implicit in close relationships, but the internalization of the group's priorities and messages substantially affect how people construct and therefore change the self-concept (Deaux, 1993; Tajfel, 1978, 1981).

As is the case in the relationships literature, some of the work on group identities and self-change focus more on self-evaluation change than self-concept change (Crocker & Luhtanen, 1990; Deaux, 1991; Luhtanen & Crocker, 1991; Tajfel, 1981). People can enhance their positive self-evaluations in relation to group affiliation through two processes. First, people's self-evaluations can improve as the result of becoming affiliated with a new, more positive group, particularly among adolescents (Brown & Lohr, 1987; Snyder, Lessegard, & Ford, 1986). For example, Boersma, Chapman, & Battle (1979) found that special education

students' academic self-evaluation improved when they were placed in a classroom with other special education students as opposed to being in a class with average IQ students. The second process through which people can improve their self-evaluation in the group context is by improving their status in the current group (Archer, 1974). Most groups emphasize particular characteristics that are desirable in its members. When one of the members acquires these characteristics, his or her status in the group improves and that person will receive admiration from other members in the group. Such positive attention from ingroup members is a strong predictor of positive self-evaluation (Baumeister & Leary, 1995; Leary & Baumeister, 2001; Leary, Tambor, Terdal, & Downs, 1995).

Many of the patterns found in the context of groups and self-evaluation can be explained by social comparison theory (Festinger, 1954), and particularly by *downward comparison* (Wills, 1981, 1987). When people are low-status members in a group, or members of a low-status group, their group identity can only be understood by comparing to superior groups or to superior group members. The alternatives are isolating the group (or the self) so that the only comparisons that can take place will be lateral ones (i.e. being the same as others on a particular dimension; Wills, 1991), or identifying groups or group members that are worse off (Wills, 1981). Downward comparison is advantageous in that it is self-protective and secures a person's sense of worth, but it also maintains the current self-concept (Wills, 1992). Thus, downward comparison is conducive to self-evaluation change, but not to self-concept change.

Another process, *upward comparison* (Festinger, 1954), is more likely to result in self-concept change. Upward comparison is comparing the self to people who are better than oneself on a particular dimension. This strategy is used to understand one's placement in a

group as well as to determine how to improve the self, as it provides information that can be used to focus on a dimension where self-concept change is possible (Wills, 1992). Focusing on a specific group member as a point of reference can be helpful in developing a concrete plan for improvement (termed *particularistic comparison*; Miller, Turnbull, & McFarland, 1988). Whereas particularistic comparison may serve to guide self-concept change, a more generalized, universalistic upward comparison may serve as the stimulus for contemplating change (Wills, 1992).

In order to initiate the process of change when faced with an undesirable self-concept, individuals must first overcome the “quicker and easier” route of downward comparison. First, the self-concept must be perceived as controllable (Wills, 1992). Second, one must be made aware that people with a similar self-concept are attempting to improve themselves (Major, Testa, & Bylsma, 1991; Wills, 1991). Third, close others and group members should attempt to increase the amount of social integration and emotional support for the individual (Wills & DePaulo, 1991). This increases the likelihood that the person will experience a wide array of comparison options.

Social comparison can also facilitate self-concept change when a person is unsure of his or her abilities (Gastorf & Suls, 1978; Radloff, 1966; Weary, Elbin, & Hill, 1987). Such uncertainty can be initiated through relocation to new environments and the acquisition of new social roles. When uncertain, people will use a broader range of comparison targets (termed *range seeking*; Wheeler, et al., 1969). Change is particularly likely when the comparison target possesses positive and attainable attributes. When individuals first come to college, they may be uncertain as to their abilities and may look to a variety of people (e.g., roommates, classmates, upper classmen, people at the gym, members of a club) to determine

their placement in the new social environment. Once they have established themselves in the new environment, and they are no longer uncertain of their abilities, they will narrow their comparison range and focus on the abilities relevant to their current situation. This could be the reason why many students new to the college environment “try out” different identities to see where they best fit in. As college students have a huge repertoire of potential groups with different functions, the possibilities for new identities are numerous (Fondacaro & Heller, 1983; Wills, 1990; Wills & Vaughan, 1989). As people’s identities change with the new social environments, the targets perceived as relevant for social comparison will also change (Ng, Dunne, & Cataldo, 1993). Thus, a person’s identity can be easily maintained to the degree that the groups he or she is affiliated with provide sufficient amounts of self-relevant information.

Social identity theory also emphasizes the importance of group identity salience on a person’s self-concept (Tajfel, 1978, 1981). *Social identity* is defined as “that part of the individual’s self-concept which derives from his knowledge of his membership in a social group (or groups) together with the value and emotional significance attached to that membership” (Tajfel, 1981, p. 225). A social identity can be constructed through three processes (Deaux, 1991). First, a person can internalize the group membership into the self-concept (i.e. establish a collective identity). Second, a person can selectively internalize information about group characteristics that are self-relevant into the self-concept. For example, some psychologists have internalized the research or methodological aspects of psychology, whereas others have internalized the biological, therapeutic or teaching aspects of being a psychologist. Third, a person can make a public proclamation of belonging to the

group. This is typically expressed verbally or through one's outward appearance (e.g., clothing).

Particular identities are claimed as the result of situational cues that make the identity salient, that make the identity valued in the social context, or that fit with one's current priorities (Deaux, 1993; Deaux & Major, 1987; Ethier & Deaux, 1994; McCall & Simmons, 1978; Oakes, 1987). Thus, perceived membership in a group is a function of one's motives at the present time. For example, people are more likely to affiliate with a winning sports team than a losing one (Boen, Vanbeselaere, & Feys, 2002; Cialdini, Borden, Thorne, Walker, Freeman, & Sloan, 1976; Kowalski, 1991). *Identity salience* is defined as "the likelihood an identity will come into play in a variety of situations as a function of its properties as a cognitive schema" (Stryker, 2000, p. 28; see also Stryker & Serpe, 1994). The situations in which identities are commonly activated are in the context of intergroup relations and social roles (Stryker, 1968, 1980, 1987, 1992; Tajfel, 1978, 1981). Several factors can influence the degree to which an identity is made salient. A person's commitment to a group identity is a strong predictor of identity salience (Hoelter, 1983; Marks, 1977; Serpe, 1985, 1987; Stryker, 2000). Ethier and Deaux (1994) suggest that other factors, such as being a minority or having distinctive characteristics, and discord between current and past social contexts can lead to increased levels of identity salience (see also McGuire, McGuire, Child, & Fujioka, 1978). If identities are noticeably different in the characteristics that compose them, then change in salience should lead to change in behavioral choices, and eventually change in the self-concept (Deaux, 1991).

Taking social identity theory one step further, self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) focuses on the group processes involved in

perceived membership rather than on the processes within the individual members of the group. Self-categorization is defined as “cognitive groupings of oneself and some class of stimuli as the same in contrast to some other class of stimuli”(Turner et al., 1987, p. 44). Turner and his colleagues (1987) argue that these categorizations are situation-specific, depending on the interaction between the person and the situation. He also states that particular group-related factors can influence the way in which these self-categories are formed. For example, when situational cues make ingroup and outgroup memberships salient, members within the ingroup will increase their levels of perceived similarity to each other, and increase their levels of distinction from the outgroup. They also characterize group membership and cohesion as a function of mutually perceived similarity between the self and others in terms of the defining characteristics of the ingroup. This perception of identity between oneself and ingroup members then leads to a perceived similarity of interests in terms of the needs, goals, and motives associated with the ingroup. Thus, circumstances that make particular characteristics more salient than others can determine which groups are considered to be ingroups and outgroups. In the case of moving to college, several characteristics of the individual that were once marginalized may become salient in the new social environment (e.g., focusing on school, socializing, religion, shared hobbies). Once these shared characteristics are made apparent to the individuals in the social environment, groups begin to form based on these shared characteristics, and new social categories are formed. As cohesion within the group increases, members begin to internalize the group’s goals and needs, and the new social category becomes a part of the self-concept.

Most of the time, people’s affiliations will remain stable, but the meanings attached to their group membership will change (Deaux, 1991; Ethier & Deaux, 1994). Thus, people

may change their self-concept by a) modifying the characteristics associated with the group identity, b) altering the degree of importance attached to the identity, or c) adding or subtracting an identity from one's repertoire. Additions of identities to the self-concept may be completely novel (such as affiliating with a new culture) or they may be encapsulated by current group or role identities (Parkes, 1975). For example, the transition from high school to college may be perceived as a dramatic shift in identity for some, whereas for others it may seem like another stage in one's academic experience.

Therapy can be achieved in group contexts rather than through one-on-one client-therapist interactions. Organizations such as Alcoholics Anonymous (AA) are motivated to treat substance abuse through self-concept change. Individuals seeking treatment must change their identity from a "drinking non-alcoholic" to a "non-drinking alcoholic" (Holland, Lachicotte, Skinner, & Cain, 1998). Thus, the identity toward which members are striving is seen as a valued goal, whereas reverting back to the old identity is highly devalued. In addition, members of group therapy organizations are able to identify with people with similar problems (often through sharing personal stories), and use upward comparison to determine how far they have to go before they are progressing successfully. Members of organizations like AA are also successful in maintaining the new identity through frequent contact with other members, including "sponsors" who guide new members through their initial steps toward the new identity.

In summary, theories that focus on the group route to self-concept change state that the change process involves a change in who the individual perceives as fellow group members, which leads to the reception of new feedback about the self as well as adoption of the characteristics, goals, and beliefs that are ascribed to the group identity (see Table 3).

Table 3. Summary Table for the Group Route.

<i>Theory or concept</i>	<i>Change Process Defined By</i>
Social comparison	Particularistic and upward comparison; uncertain situations
Social identity	Change in group membership, identity salience, meaning
Social categorization	Perceived similarity among members of a new group
Group therapy	Group cohesiveness, similar goals among members

This route is quite similar to the relationship route, but it involves collective identities rather than relationships. The main focus of these theories is on the degree to which the individual is exposed to particular groups and the information they provide about the self based on one's affiliation with the group. Similar to the relationship route, this new information may lead to maintenance failure, but most of the group route theories argue that self-expansion is more likely to occur than is maintenance failure. Self-expansion, perceived similarity among the group members, and exposure to members of the group are therefore central components of the group route to self-concept change.

Although the individual, relationship and group routes cover much of the ways in which the self-concept changes, they are not sufficient in examining self-concept change entirely. Changes in one's geographic location, culture, and physical environment can also produce changes in the self-concept. The following section explores the ways in which these aspects of the environment are influential in the formulation and therefore the modification of the self-concept.

#### The Ecological Route

Perhaps one of the least noticeable changes to the self-concept occurs through changes in people's physical and/or cultural environment. Neisser (1988) defines the ecological self as the "self as perceived with respect to the physical environment" (p. 36). I

wish to broaden the ecological self as consisting of both physical objects and one's general environment. Hormuth (1990) defines the ecology of the self as consisting of other people (which provide direct social experience), the environment (which provides the setting for social experience), and objects (which are used to symbolize social experiences). The "other people" component can be found in the relationship and group routes, whereas the "objects and environments" will be categorized in the ecological route. As a person's general environment changes, the messages one receives from the environment referring to what is important and appropriate can change as well. As the following sections suggest, the components of the ecological self are greatly affected by the cultural messages people receive in their environment.

### *Objects*

People decorate their homes, offices, school lockers, and other personal spaces with objects that are self-expressive. These objects may serve several different functions (Hormuth, 1990), and these functions are based on the messages a person receives from the general environment as to what is important. Objects can enable a person to engage in self-relevant behaviors (either as a setting or as a tool), stimulate self-concept-relevant cognitions, present the self to others, or serve as symbols of social conduct. Objects are therefore self-expressive as long as they are interpretable and understood by others in the general environment. They can also allow the individual to become a part of a larger context. This can be achieved by relating the object to the person's social environment (such as family and other close others), temporal context (by linking the individual's past, present and future), or physical environment (functioning as a special element in the home environment, such as a television or computer).

As objects function as extensions of the self, changes in the objects used in the social environment will generate change in the self-concept. These changes are apparent throughout the life span, as generational patterns emerge with respect to the importance of certain objects (Csikszentmihalyi & Rochberg-Halton, 1981). For example, adolescents and young adults value objects that allow for particular activities (e.g., stereo, TV, computer, video game system), whereas older adults value objects that provide memories (e.g., photographs, home movies).

Self-concept change through objects can also occur with transitions to new environments (Hormuth, 1990). First, the individual acquires new information about the self through action and interaction, and comes to understand particular objects that can be used as tools to allow for activities that express this new self-relevant aspect. For example, young adults who come to college may find that a stereo system is self-expressive because it allows them to play music that they like, which can be displayed to other people. Other students may find that a video game system increases the likelihood that they will interact with other students by playing a game together. Next, the individual begins to link the new information to other parts of the self-concept, and the object becomes a self-presentational symbol of this new aspect. When students use such objects as video game systems to foster interactions with others, they may eventually internalize the video game system as an object that they feel is self-expressive because they link the game system to their current life as a student. This symbol will be a stronger facilitator of change to the degree that it is acknowledged by other people in one's social environment. Video game systems in the American college environment are easily identifiable by others, and are easily interpreted by others as to the kinds of activities that the individual engages in, and therefore the type of person that

individual is. If instead the student owns an exotic collection of objects, they may be less easily identified by other students as reflecting the kind of person the individual is, and may serve a function that is less self-expressive than objects that are easily understood. Finally, the new information is stabilized through continued use of the object in one's social environment as a self-expressive tool, and as a reminder of particular people, places or events. Objects allow for change in new environments in that they can increase the likelihood of forming new relationships and commit the individual to the new social climate (Vinsel, Brown, Altman, & Foss, 1980). At the same time, objects can stabilize the self-concept to the extent that they serve as reminders of old commitments.

### *Environments*

A person's general environment (e.g., one's culture or geographical location) can also be self-expressive. Few people living in New York City consider themselves detached from the metropolis, or have never heard the term "New Yorker". Proshansky and colleagues use the term *place identity* to describe a part of the self-concept consisting of "cognitions about the physical world in which the individual lives" (Proshansky, Fabian, & Kaminoff, 1983, p. 59; see also Proshanski, 1978). In addition, environments allow for a specific set of behaviors, dictated by the physical and cultural context (Baron & Misovich, 1992; Hogg & Abrams, 1990; Lévy-Leboyer, 1979). For example, living in a metropolis increases the likelihood that the individual's activities will involve going to a club, going to a museum, or going to the theater, whereas living in a rural area increases the likelihood that the individual will enjoy activities that involve either outdoor activities or staying at home.

The cultural messages provided by the environment as to what is important and appropriate constrain the individual toward particular behaviors and attitudes. As people in

new environments seek out self-relevant information, the cultural constraints on the messages made available influences the content of the self-concept (Shweder & Sullivan, 1990). Baron and Misovich (1992) describe three ways through which the general environment can induce change: *affordances*, *attunement*, and *effectivities*. *Affordances* refer to the information made available in the social environment. For example, a college atmosphere makes available several ways in which an individual can start his or her career, but affords less information as to how to raise a family. *Attunement* refers to one's sensitivity to certain environmental features and not to others (i.e. an "education of attention" from one's environment). For example, attunement in a college atmosphere is directed toward scholastics, whereas attunement in a business atmosphere is directed toward sales. *Attunement* explains how the environment can cause individuals to focus on an aspect about themselves that they had not noticed before or not had deemed important. For example, people may become more aware of being physically fit and attractive when vacationing at the beach than when they are working in their office. *Effectivities* refer to the competencies a person experiences in his or her environment. *Effectivities* can change from place to place. For example, a student in high school may feel quite effective in the school setting, but this effectivity diminishes when he or she is placed in the college atmosphere, where the "bar is raised" in terms of demands on academic performance. As these three components change in the environment, so does the individual's self-concept. Thus, although people may seek out new environments (going to college, getting a job, relocating), the changes in the social context generally cause change in the self-concept, not the other way around (Baron & Misovich, 1992).

Social contexts change through role transitions, situational demands and changing cultural messages, which leads to self-concept change (Banaji & Prentice, 1994; Becker,

1968). Much of the time, people's social contexts remain relatively stable (same family, same friends, same culture), but many people living in a foreign country experience separate working self-concepts in disparate social environments, and therefore different cultural meaning systems. Cultural messages can include beliefs about the nature of the person, what makes for an ideal person, and the person's purpose in life. For example, some cultures view thin people as healthy, whereas other cultures view round people as healthy. The greater the frequency particular events or scripts are activated, the greater the accessibility of knowledge structures that in turn influence behavior and attitudes (Bruner, 1957). Consequently, the more accessible a construct, the more likely it will come to mind when an individual must interpret their own behavior.

People who experience multiple cultures are able to shift cultural meaning systems in a way that suggests new cultural contexts coexist with the old cultural contexts in memory (i.e. a sort of self-expansion of cultures). This cultural self-expansion is particularly evident among bicultural people, who have internalized two cultures (Bautista de Domanico, Crawford, DeWolfe, 1994; Hong, Morris, Chiu, & Benet-Martinez, 2000; Kaneshiro, 1997; McCrae, Yik, Trapnell, Bond, & Paulhus, 1998; Ryder, Alden & Paulhus, 2000; Sussman, 2000; see Cross & Gore, 2003; LaFromboise, Coleman, & Gerton, 1993, for reviews).

Often, bicultural people find the two cultures "taking turns" guiding their thoughts and feelings, depending on particular cues in the environment (termed *frame switching* by Hong et al., 2000; see also LaFromboise et al., 1993; Morris, Nisbett, & Peng, 1995). This suggests that multiple internalized cultures are not necessarily blended, and that absorbing a second culture does not necessitate a substitution of the old cultural meaning system. Instead, this suggests that the new self-aspects related to the new culture are "added on" to the

original self-concept. Thus, the self-concept is not changed in terms of “in with the new, out with the old,” but rather the self-concept is built upon in much the same manner as is described in self-expansion theory. The self-concept becomes more complex, but it is adaptive in the diverse social environments. The overall self-concept undergoes a shift in the direction of the new culture even if the individual has not completely acculturated to the new environment. Enduring change to the self-concept will occur when the individual’s social context undergoes a permanent shift, and frame switching is no longer as viable an option as it once was. Thus, the cultural messages people receive in different environments can greatly affect the degree to which their self-concept remains consistent across environments, or undergoes change in order to adapt to the changing messages in the environment. If one set of cultural messages increases in frequency, bicultural people may experience a shift in the self-concept toward the culture with the more frequent cultural messages.

Another cognitive readjustment process called *mental narrowing* (Baumeister, 1991) or *shrinking of the self* (Baumeister & Boden, 1994), involves activating a smaller and less meaningful self-aspect for the purpose of alleviating the stress caused by heightened self-awareness (Baumeister & Boden, 1994). This process of shrinking the self results in lowered inhibitions toward deviant behavior, a lack of initiative in goal pursuit, emotional numbness, and a higher frequency of fantasizing and irrational thought (Baumeister & Boden, 1994). The self, in effect, becomes meaningless and less deserving of self-focused attention. Shrinking of the self is a means for escaping one’s current situation, and can be adaptive (e.g., religious devotions, meditation, short-term coping with a traumatic event) or maladaptive (e.g., substance abuse, binge eating, masochism, suicide). Exposure to a new environment can lead to increases in both stress and self-awareness. It should therefore come

as no surprise that many people's self-structures become simplified during life transitions so that a) positive and negative self-aspects are categorized separately, and b) trivial self-aspects dominate the self-concept. For example, a student who experiences failure in the academic setting may marginalize the student aspect of the self, and centralize a trivial aspect of the self (e.g., good hygiene, ability in recreational activities such as video games). Although long-term self simplification inhibits growth, it is an adaptive short-term strategy when faced with overwhelming amounts of information in a new social context.

### *Relocation*

Moving to a new environment is often recognized as an experience that fosters self-concept change. This transition is important to take into account because it involves the adoption of new roles and absorption of new messages from the general environment as to what is deemed important. It also involves a sort of dissociation from the previous environment and therefore the previous self-concept.

Wapner (1981) describes four stages in relocation and self-concept change. First, the person is integrated in the initial environment and has no plans for change. In the second phase, the person anticipates relocating and begins distancing the self from the initial environment. In the third phase, after the move has occurred, the person is completely distanced from the initial environment, but still feels isolated in the new environment. Finally, in the fourth phase, the person integrates the new environment into the self, and it becomes the "old" environment (see also Wofsey, Rierdan, & Wapner, 1979).

Most of the time, the negative effects of relocation are studied, such as increased illness (Rosch & Irle, 1984; Stokols, Shumaker, & Martinez, 1983), decreased levels of involvement in the community (Stokols et al., 1983), and dissatisfaction within social

relationships (Brett, 1982). Less research has been conducted on the processes involved in relocation and self-concept change, although some progress has been made in this area. Jones (1980) found that people who are motivated to maintain the self-concept are more likely to sustain correspondence with people from their original environment (e.g., letters, phone calls), whereas people motivated to change take more opportunities to meet new people and engage in new activities. The original environment referred to here will be the environment (i.e. school, work, home, hang-out spots, etc.) that the individuals were in before they came to college. Although these opportunities are often made available to people in new environments, many people engage in self-concept maintenance during the initial stages of relocation, particularly because the individual's social network in the new environment has yet to be established (Hormuth, 1990).

In summary, theories that focus on the ecological route to self-concept change state that the change process involves a change in the messages made available to the individual as to which objects and places are important and which are easily interpreted as self-expressive by others in the environment (see Table 4). The main focus of these theories is on the degree to which the individual is exposed to these cultural messages of object and place importance and the manner through which the individual uses those objects and places as a means for self-expression. Exposure to new cultural messages may disconfirm particular objects and places as self-expressive as is suggested by the relocation literature (i.e. maintenance failure). Maintenance failure can take the form of deeming certain objects and places as unimportant or undesirable, or it can take the form of certain objects and places not translating to the new environment as something or some place that is self-expressive. Theories on biculturalism, however, suggest that self-expansion is also evident in the self-concept change process.

Table 4. Summary Table for the Ecological Route.

<i>Theory or concept</i>	<i>Change Process Defined By</i>
Objects	New objects become symbolic, used for self-expression
Place identity	Geographic relocation
Social constitution	Change in attunement, affordances, effectivities
Frame-switching	New culture dominates environment, detach from old culture
Relocation	Anticipation of change, detachment from old environment, establishing new environment as old environment

Exposure to cultural messages, and the importance these messages place on objects and certain locations are therefore central components of the ecological route to self-concept change.

#### Individual Differences

Research on individual differences shows that high levels of particular psychological constructs (e.g., uncertainty, dissatisfaction) increase the likelihood of self-concept change. One of the popular notions of self-concept change is that people with low *self-esteem* are more likely to want to change than people with high self-esteem (e.g., Jones, 1990; Murray et al., 1998, 2001). People with low self-esteem are thought to be more motivated to improve their self-evaluation than others, and also may be more likely to internalize changes in the environment than people with high self-esteem (Campbell, 1990; Showers, et al., 1998). For example, college students with low self-esteem may experience changes in their self-concept as the result of changes in their grades, whereas students with high self-esteem may show a self-concept that remains consistent despite the grades they receive. People with low self-esteem are also more likely to benefit from increased interdependence in a relationship, as long as the partner possesses a more positive self-evaluation than the individual (Murray et al., 1998). For example, people with low self-esteem may undergo positive changes in their

self-evaluation if their friends or romantic partner have positive self-aspects (e.g., being moral, sociable, intelligent). This is because, as the relationship grows stronger, the person with low self-esteem can internalize the friend's or partner's self-aspects and bask in that person's positive attributes. Other researchers argue that people with high and low self-esteem experience self-concept change for different reasons. Whereas people with low self-esteem are more likely to change due to internalization of situational factors, people with high self-esteem may be more flexible and better able to improve the self (Campbell, 1990).

Some individuals are less likely to change than others because they perceive personal characteristics as fixed. Dweck and colleagues have shown that individuals' beliefs about the malleability of self-attributes predict judgments about the self (see Dweck & Leggett, 1988; Chiu, Hong, & Dweck, 1997; Hong, Chiu, & Dweck, 1995; Robins & Pals, 2002). People who perceive self-aspects as fixed (termed *entity theorists* by Chiu et al., 1997) do little to modify their self-concept and instead focus on determining the degree to which they possess a particular trait. In contrast, people who perceive self-aspects as malleable (termed *incremental theorists* by Chiu et al., 1997) place more emphasis on developing an ability or characteristic. Entity theorists tend to focus on fixed traits as influencing behavior, whereas incremental theorists tend to focus on the situational factors that influence behavior. Such differences in implicit personality theories may have an effect on the degree to which people are open to change and the degree to which they are willing to admit having experienced a change in their self-concept.

Another individual difference component often studied in the context of self-concept change is *self-monitoring* (Snyder, 1974). High self-monitors rely on external cues to guide their behavior, look to what other people are doing to determine the appropriateness of

particular thoughts and actions, and describe the self in terms of social relationships and group memberships (Snyder, 1974). Low self-monitors rely on personal characteristics and psychological attributes to describe the self, and express themselves consistently across situations. High self-monitoring may be a sign of uncertainty in one's environment, and may be an adaptive strategy when situational cues for proper behavior are ambiguous (Hormuth, 1990). Long-term self-monitoring or self-monitoring in a stable environment, however, may be maladaptive in that the individual may not be able to "tie down" a stable identity.

*Uncertainty orientation* is another individual difference component relevant to self-concept change (Sorrentino & Rowey, 1990). People high in uncertainty orientation are concerned with finding out new things about the self and the environment, and have a high need to resolve this uncertainty. They also are more likely to perceive themselves as flexible and better able to adapt to the environment, and prefer to figure out things on their own. They are therefore more prone to experience changes in the self-concept as the result of environmental changes. People low in uncertainty orientation are motivated to remain in situations in which the outcome is certain, and seek to maintain clarity about what is already known (Sorrentino & Roney, 1990). They are therefore less likely than high uncertainty-oriented people to experience self-concept change.

If the self is defined primarily within a particular domain, then changes in that domain may lead to changes in the self-concept. *The relational-interdependent self-construal* (or *relational self-construal*, Cross, Bacon, & Morris, 2000) is a self-definition based on one's close relationships. Thus, a person with a high relational self-construal will consider close family and friends when they are asked to describe themselves. Changes in relationships may lead high relationals to alter their self-concept in the direction of the new

relationships. These new relationships may serve as a new basis for thinking about the self, despite the fact that the self-concept is still dominated by the relationships aspect of the self. Thus, highly relational people may undergo several lower-order changes to the self while maintaining an unwavering focus on their close relationships as a basis for self-definition.

### Methodological Issues

Measuring the self-concept and self-concept change is not an easy task. Several inconsistencies exist among research programs in the operationalization and analysis of the self-concept, and many times the findings argue more for self-concept maintenance than change. The following section examines the difficulties in self-concept change research as well as the preferable methods for measuring and analyzing self-concept change.

#### *Problems in Definition and Measurement*

One of the main problems in the self-concept change literature is that the self-concept is often defined in disparate ways. As mentioned before, much of the research exploring changes to the self involve self-evaluation change (changes in one's positive or negative self-view) rather than self-concept change (changes in self content; see Bailey, 1970). The current research is designed to examine self-concept change, not self-evaluation change or self-structure change. Again, self-concept change refers to changes in the characteristics used to describe the self, whereas self-evaluation change refers to change in the positive or negative appraisal of the self, and self-structure change refers to change in the degree of compartmentalization among characteristics. Another distinction I wish to make is that much of the previous work on self-concept change explores short-term, lower-order changes to the self rather than long-term, higher-order changes (Deaux, 1993). Although lower-order changes to the self-concept can have an impact on important behaviors, the current research

is interested in the degree to which the self-concept changes as a function of changes in the environment.

Hormuth (1990) describes several techniques that must be employed for a research program on self-concept change to be successful. First, the researcher should utilize multiple methods for assessing the self and change. Often, a single method is used to match a single theory, and the program falls short. The researcher must be certain that the self-concept and self-concept change is measured in the manner that matches one's theory and definition of the self, but is not constrained to a single method of measurement. Second, the researcher should consider the ecological validity of the design. That is, the researcher should choose variables that exist in the natural environment of the population. Third, the researcher should employ a naturalistic design, one that assesses change in a realistic context. Relocation is a preferable context to study in that it is a realistic situation that involves some degree of adaptation to the environment, and therefore increases the likelihood of self-concept change. As mentioned earlier, self-concept and self-concept change have been assessed in a variety of ways. The following section examines the options researchers have in studying this process.

#### *Types of Assessment*

In the interest of simplicity, most of the research on self-concept change involves some form of self-report. These self-report measures can take on two forms: reactive or spontaneous (Brinthaupt & Erwin, 1992). *Reactive self-report* measures involve participants locating the self on one or more dimensions deemed important by the researcher. Examples of this type of assessment include the Piers-Harris Children's Inventory (Coopersmith, 1967), and the Self-Description Questionnaire (Marsh, 1988). *Spontaneous self-report* measures involve participants answering an open-ended question about the self (e.g., writing a

paragraph on “Who I Am”). Generally, these methods are employed to assess a generalized (i.e. higher-order) self-concept, but the responses are still susceptible to situational effects. Examples of this assessment include the Who Are You? Method (WAY; Bugental & Zelen, 1950), and the Twenty Statements Test (Kuhn & McPartland, 1954). Although reactive self-report measures are more popular and make analysis easier, spontaneous self-report measures are generally higher in construct validity (Brinthaupt & Erwin, 1992). Thus, spontaneous self-report measures are preferable, particularly if the researcher is able to cut down on the amount of coding involved.

### *Analysis of Change*

*Structural equation modeling (SEM).* A significant amount of research exploring self-concept change involves the calculation of change scores (Time 1 score on measure X – Time 2 score on measure X). This operationalization of change is notoriously unreliable due to the error in the scores at Time 1 and Time 2, and the correlation between them (Malloy, 1992). Instead, researchers should employ structural equation modeling (SEM) when analyzing changes in multi-wave data. Specifically, a predictor variable Y predicts change in variable X to the degree that the path coefficient from Y to X at Time 2 is significant after controlling for the association between X at Time 1 and X at Time 2 (see

Figure 1. SEM estimation of change.

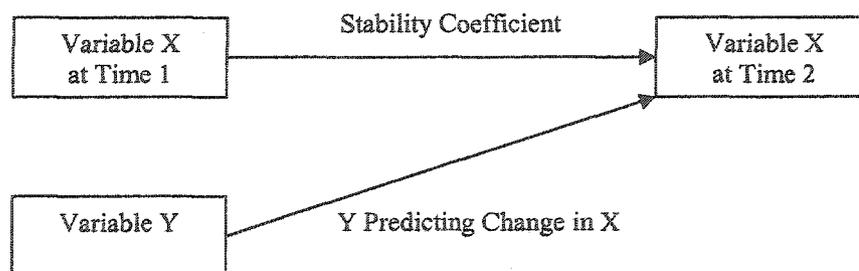


Figure 1). Thus, “change” in a variable is defined as the degree to which a criterion variable predicts changes in the level of an outcome variable at Time 2, controlling for the outcome variable at Time 1. The increases or decreases in the routes to change between time points will be examined in this manner for the current study.

*Intraclass correlations.* The disadvantage of using SEM to assess self-concept change is that it does not pick up on trait-by-trait differences across time. Thus, an effective summary score of self-concept change must be able to identify differences in ratings for aspects across time, and compute a score that reflects those differences across several self-aspects. For example, a person may rate himself as “intelligent” (with a rating of 3) and “caring” (with a rating of 3) at Time 1, but if he rates himself as more intelligent (with a rating of 4) and less caring (with a rating of 2) at Time 2, a mean difference score of the two ratings would reflect no change.

An absolute agreement, two-way intraclass correlation coefficient can summarize ratings in such a way that reflects trait-by-trait consistency across several raters (see Bernieri, Zuckerman, Koestner, & Rosenthal, 1994). In the current study, the same participant serves as three different raters of the same target across several dimensions (rating himself or herself on how characteristic self-aspects are at three different time points), which is a specialized version of a single-perceiver, multiple-targets (1PMT) design (see Kenny & Winquist, 2001). The intraclass correlation coefficient summarizes the amount of agreement (or consistency) of self-aspect ratings between two time points. It allows for examination of similarity in terms of the organization, and patterning of self-aspects (Luo & Klohnen, 2005), and it captures the relative importance or centrality of self-aspects between two time points on a broad range of attributes.

Table 5. Intraclass Correlation Coefficients (Two-Way, Absolute Agreement) as Indicators of Change Compared to Mean Difference and Pearson  $r$  Approaches.

Case #1: Equal means, perfect correlation		Case #2: Different means, perfect correlation		Case #3: Equal means, imperfect correlation	
<i>Time 1</i>	<i>Time 2</i>	<i>Time 1</i>	<i>Time 2</i>	<i>Time 1</i>	<i>Time 2</i>
1.00	1.00	1.00	2.00	1.00	2.00
2.00	2.00	2.00	3.00	2.00	1.00
3.00	3.00	3.00	4.00	3.00	4.00
4.00	4.00	4.00	5.00	4.00	3.00
5.00	5.00	5.00	6.00	5.00	6.00
6.00	6.00	6.00	7.00	6.00	5.00
<i>ICC</i>	1.00	<i>ICC</i>	.88	<i>ICC</i>	.85
<i>Mean Diff.</i>	0.00	<i>Mean Diff.</i>	1.00	<i>Mean Diff.</i>	0.00
<i>r</i>	1.00	<i>r</i>	1.00	<i>r</i>	.83

This operationalization of change is preferable to calculating mean differences or Pearson correlation coefficients because it accounts for changes in means scores, in addition to the amount of agreement, between two time points. In Table 5, this is illustrated using hypothetical data from three cases with differing profiles between Time 1 and Time 2. For Case #1, the ratings given at Time 1 and Time 2 are identical, so the intraclass correlation coefficient, mean difference, and Pearson correlation coefficient are all able to identify this case as having perfect agreement, and therefore no change between time points. For Case #2, the person's ratings at Time 1 and Time 2 are all higher by 1.00. This change in ratings is accounted for in the intraclass correlation coefficient and the mean difference calculation, but the Pearson correlation coefficient is unable to differentiate between Case #2 and Case #1. For Case #3, all of the ratings at Time 2 are either higher or lower than the ratings at Time 1 by 1.00. This difference is accounted for in the intraclass correlation coefficient and the Pearson correlation coefficient, but the mean difference score is unable to differentiate Case #3 and Case #1. Thus, the intraclass correlation coefficient is the best indicator of change

among the three approaches because it takes into account both mean differences and consistency of responses in its calculation.

In order to assess change in self-aspects, this coefficient (which measures consistency) must be subtracted from 1.00 so that the resulting coefficient reflects the amount of inconsistency of ratings between time points. Thus, the current study operationalizes self-concept change as 1.00 minus the intraclass correlation coefficient (1 – ICC of absolute agreement). Change coefficients were calculated between the ratings of self-aspects for Time 1 and Time 2, and between the ratings of self-aspects for Time 2 and Time 3. These change coefficients were also calculated within self-domains, so that the amount of change within one domain across time (e.g., individual self-change) could be distinguished from the amount of change within other self-domains.

#### Current Study

The self-concept is a hierarchical, multi-faceted cognitive structure that is composed of four self-domains: the individual self, the relational self, the group self, and the ecological self. There are four routes to self-concept change, and each of these routes corresponds to the four self-domains (i.e. there are individual, relationship, group, and ecological routes).

The literature reviewed earlier examined multiple theories of the self-concept and change. Many of these theories argued for one of two mechanisms that are involved in the self-concept change process, particularly in the context of experiencing a new environment. The first of these mechanisms involves an inability to express one's original self-aspects in the new environment, either because those self-aspects are discouraged or uninterpretable in the new environment. This kind of process will be referred to in the remainder of this paper as *maintenance failure*. As mentioned before, many of the theories promoting the individual

route to change stress the importance of self-maintenance, and that the failure to maintain a self-concept in a new environment will result in a new self-concept. This process is particularly evident in such theories as self-verification, self-affirmation, and self-evaluation maintenance theory.

The second mechanism often examined in self-concept change research involves “adding on” to one’s self-concept rather than substituting old self-aspects with new self-aspects. In this process, the individual is able to maintain the original self-concept, but the overall meaning of the self-concept changes because new information has been added to the overall repertoire. This process of change will be referred to in the remainder of the paper as *self-expansion*. Although this process is generally applied to close relationships only (see Aron & Aron, 1986), self-expansion processes are also implicit in other theories as well, such as self-categorization (see Turner, 1987), and research examining biculturalism and frame-switching (see Hong et al., 2000). Through the process of self-expansion, the individual is not constrained to a set of particular behaviors, but rather can build upon the self-concept that already exists from the original environment by adopting elements of the new environment into the self-concept. Self-expansion may therefore lead to self-concept change due to the shift of the self-concept toward the new environment, rather than a detachment from the original environment.

The transition to college is a particularly useful life event to study in self-concept change research in that it involves several components that foster some form of change. First, most of the students are at an age in which they have not established a stable identity, and are in the process of “finding themselves.” Second, the transition usually involves relocation to a new environment, one that is different from the original environment. Third, college offers

multiple ways for individuals to form new relationships, join new groups, learn new skills, and experience new worldviews, which are all factors that can cause self-concept change. Fourth, the transition to college is a relatively common form of relocation, which allows for some generalizations to be made about self-concept change in the context of relocation. Fifth, the changes in the environment are anticipated, and therefore pre-change stages can be examined.

#### *Results from a Pilot Study*

Eighty-nine students from Iowa State University participated in a brief survey asking them to describe five incidents in which they experienced a change to their personality. They were asked to think of the personality traits they possessed before and after the change, specify the factors that changed them, and answer why they thought those factors were responsible. In addition, they were asked to categorize each incident as demonstrating one of the following types of change: change in activities, change in interests, change in relationships, change in goals, change in attitudes, change in worldview or religion, and other. The percentage of events described in each category are in Table 6. Change in relationships was the most common category recognized by the participants as events that produced personality change, followed by change in attitudes. Change in interests and change in worldview or religion were the least common events that produced change. Although this study did not examine the effects of the group and ecological route, it

Table 6. Percentage of Events Described as Producing a Change in Personality (Pilot Study).

Change Category	Activities	Interests	Relationships	Goals	Attitudes	Worldview/ religion	Other
%	14	9	25	16	19	11	6

nevertheless suggests that changes in relationships are an important part of changing the self-concept. Another important aspect to note in this study is that participants indicated what caused change to their “personality,” which is an individual self-aspect. This suggests that change in relationships can influence change in self-domains other than the relational self-domain. The degree to which the four routes predict change in their corresponding self-domains versus the degree to which they “cross-over” into non-corresponding domains has not yet been examined in psychological research.

### *Hypotheses*

The goals of the current study are to a) examine the degree to which the four routes predict change in their corresponding self-domains, b) identify the route to change (individual, relationship, group, ecological) that shows the strongest “cross-over” effect on change in non-corresponding self-domains, c) explain the process of change further by distinguishing between two mechanisms of change (maintenance failure and self-expansion) and examining their unique predictive abilities on self-concept change, d) show that the level of change expectations moderates the degree to which the routes and mechanisms predict self-concept change, and e) show that self-change in some domains is a better predictor of psychological well-being than others.

All hypotheses will define the four self-domains and four routes to change as follows. The individual level is the self-rating of traits, attributes and abilities. The relational level is the self-rating of relationship-based characteristics. The group level is the self-rating of internalized group identity, and the ecological level is the place identity for the new environment. The individual route is degree to which the person is attempting to change who he or she is. The relationship route is the degree to which the individual is in contact with

close others from his or her new environment. The group route is the degree to which the individual is in contact with groups from his or her new environment. The ecological route variable is the degree to which individuals stay in contact with their new environment by avoiding contact with their old environment.

Maintenance failure will be defined as the degree to which an aspect of the self-concept is either irrelevant to the current environment, or difficult to express in the new environment. Such discouragement of expression will lead to marginalizing that aspect of the self as unimportant. In contrast, self-expansion involves the addition of a new self-aspect into the self-concept without displacing any other aspects of the self. Thus, maintenance failure can be thought of as deletions from the self-concept, whereas self-expansion can be thought of as additions to the self-concept.

*Hypothesis 1: Testing effects of routes on corresponding self-concept change variables*

The first step in this research is to examine the associations among the routes to change with their corresponding self-domains (e.g., individual route to change-to-individual self-domain). Through preliminary bivariate and regression analyses, and later through structural equation modeling analyses, I will test a model that includes the four routes to change (individual, relationships, group and ecological) and the four self-change domains (individual, relational, group, and ecological). As shown in Figure 2, I will examine the associations among the routes to change with their corresponding self-domains, as well as the stability paths among variables measured at multiple time points. I propose that the four routes will positively predict change in their corresponding self-domains. These effects will be referred throughout the remainder of the paper as *correspondence effects*.

Figure 2. Proposed Model for Hypothesis #1.

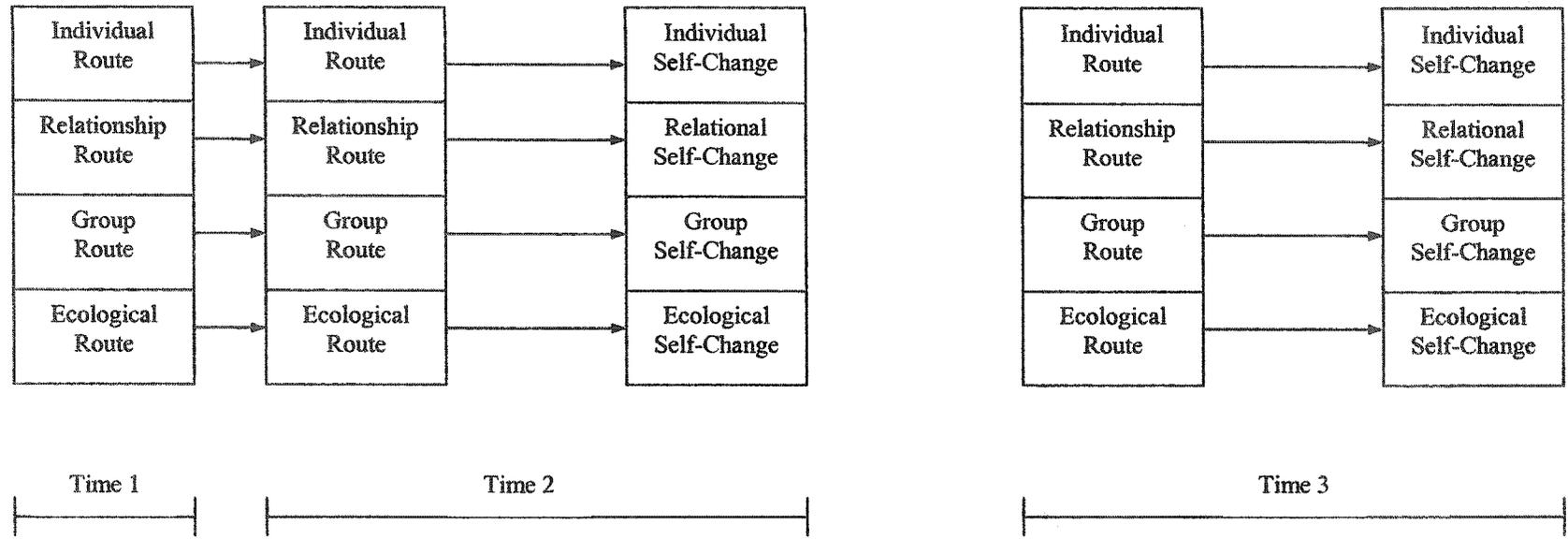
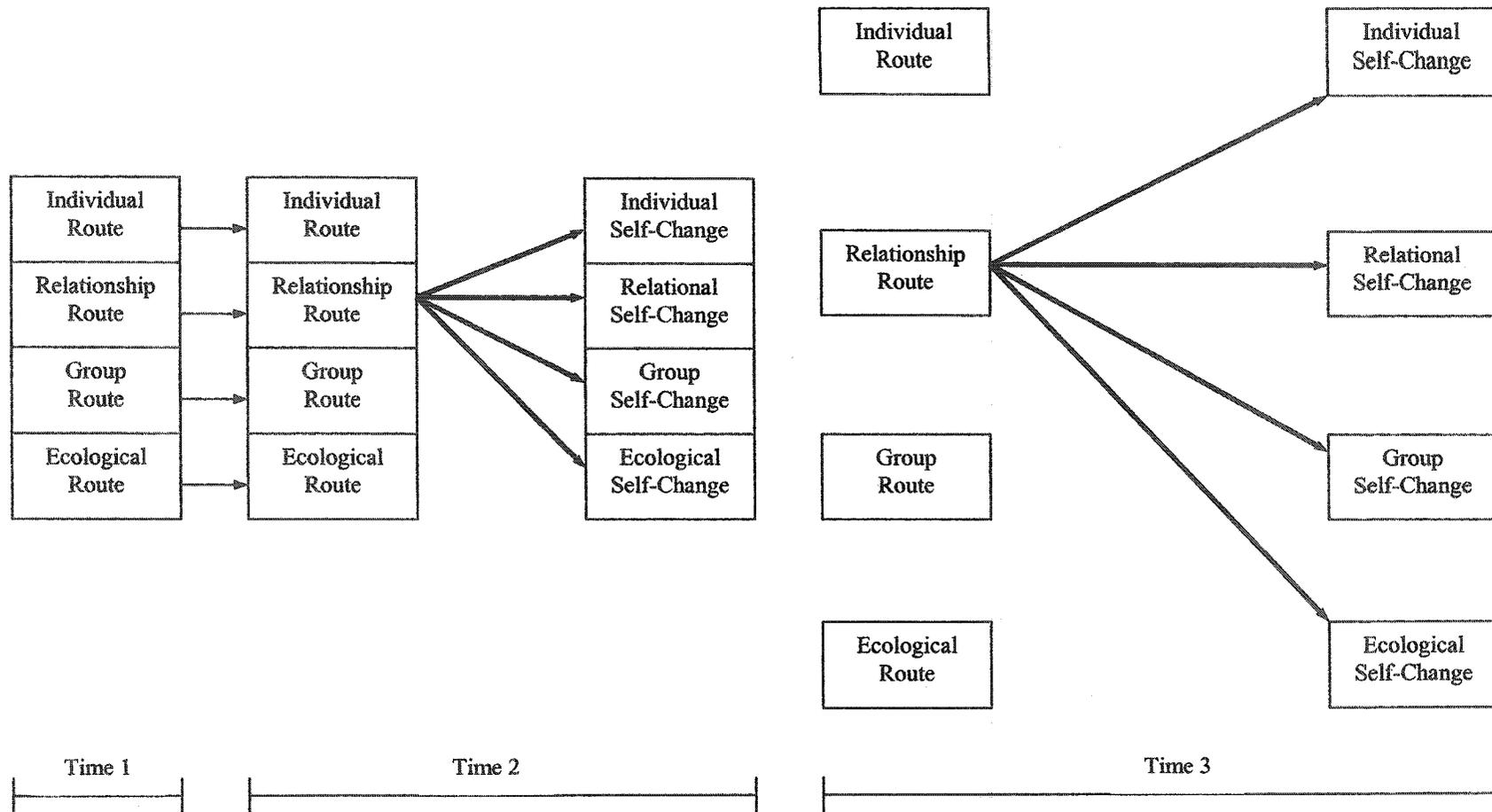


Figure 3. Proposed Model for Hypothesis #2 (all cross-over and stability paths will also be estimated, but not shown in the figure).



*Hypothesis 2: Testing cross-over effects of routes on self-concept change variables*

The results from the pilot study showed that changes in relationships were indicated as the most common influence on self-concept change. For the current study, I predict that change in the amount of contact people have with new relationships (relational route) will predict more change in the self-concept than volitional attempts at change (individual route), changes in the amount of contact people have with the most prominent groups of their environment (group route), and changes in the amount of contact people have with their pre-college environment (ecological route). I therefore propose a model where the paths from each of the four routes to change at Time 2 are estimated to predict all of the self-concept change variables at Time 2, including those that do not correspond to the route (i.e., *cross-over effects*). I predict that the relationship route will be the strongest predictor of self-concept change compared to the other three routes (see Figure 3; only these cross-over effects are shown in Figure 3, although all possible cross-over effects will be estimated).

I also predict that changes in the degree of contact with new relationships at Time 3 will be a stronger predictor of the Time 3 self-concept variables than the other three routes to change. Thus, I predict that the paths labeled with bold arrows will be stronger than all other paths from the routes to non-corresponding self-concept variables, which will be estimated in the model, but are not labeled in Figure 3 (i.e., from the individual route to the relational self, group self and ecological self; the group route to the individual self, relational self and ecological self; the ecological route to the individual self, relational self and group self).

*Hypothesis 3: Mechanisms of change in the self-change process*

Although the routes to change provide insight into what causes self-concept change, the question remains, why do these changes in the self-concept occur? The two mechanisms,

maintenance failure and self-expansion, will be added to the model to examine their unique mediating effects between the routes to change and the self-concept. First, the fit of the model with the additional four variables (maintenance failure and self-expansion at Time 2 and Time 3) will be examined. This revised model is shown in Figure 4, which will test three predictions. First, I predict that the individual route will be a stronger predictor of maintenance failure than the other three routes to change. These paths are marked with bold, solid arrows in Figure 4. This is because most of the theories of self-concept change that involve conscious change efforts refer to a maintenance failure process.

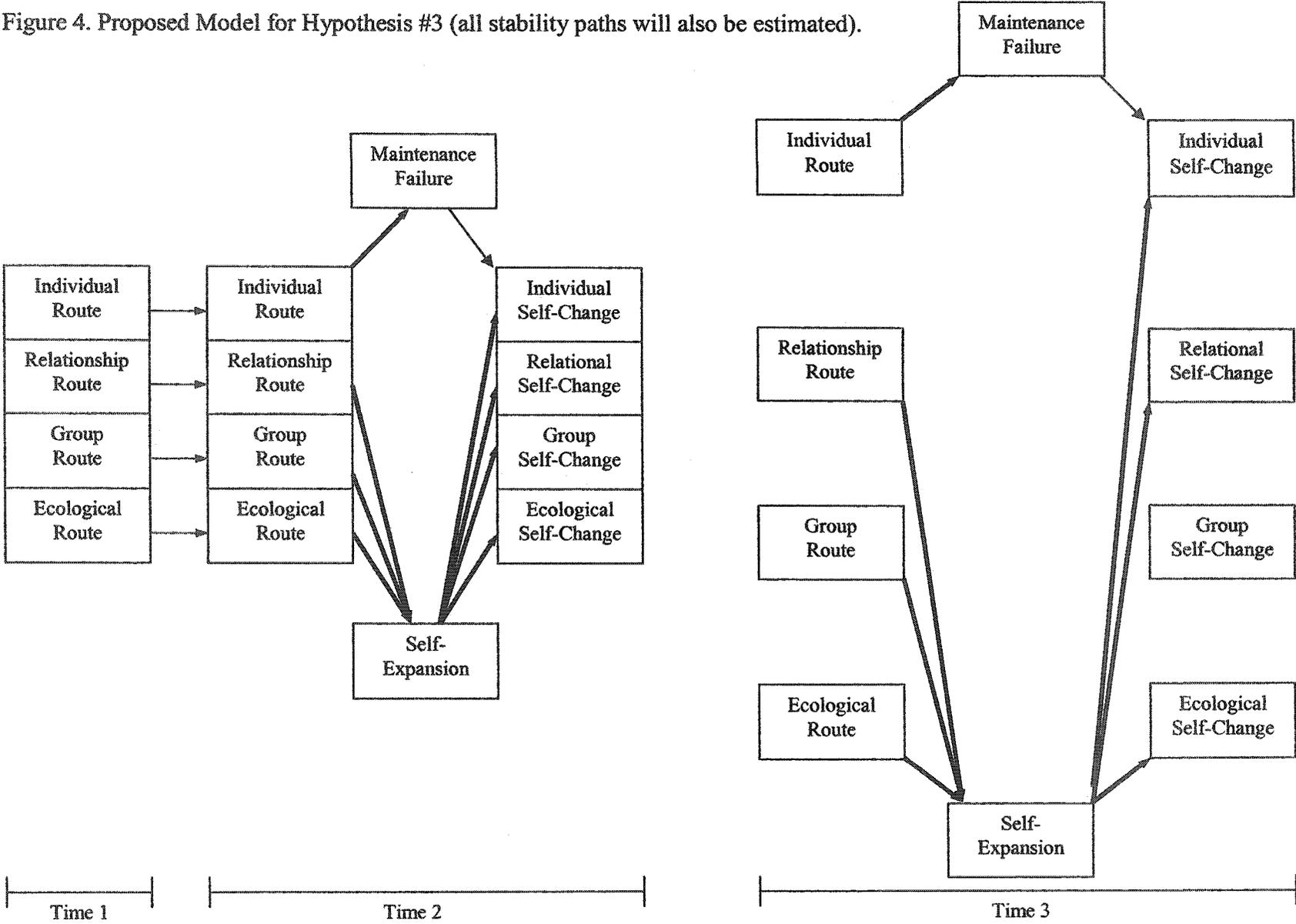
Most of the theories of self-concept change based on the relationship, group and ecological routes suggest that change occurs as the result of the addition of self-aspects, whereas most of the theories of self-concept change based on the individual route suggest that change occurs as the result of failing to maintain the self-concept, or substituting a new, ideal self-aspect for an older self-aspect. Thus, the second prediction is that the relationship, group and ecological routes will be stronger predictors of self-expansion than the individual route.

Most of the theories across all four routes argue that the self-concept changes through adopting new aspects of the environment into the self rather than detaching from the original self-concept and the original environment. Thus, my final prediction is that self-expansion will be a stronger predictor of self-concept change than maintenance failure. These predicted paths are marked with bold arrows in Figure 4.

#### *Hypothesis 4: Moderation effects*

Research on individual differences and self-concept change suggest that several variables could moderate the magnitude of some of the associations shown in Figures 3 and

Figure 4. Proposed Model for Hypothesis #3 (all stability paths will also be estimated).



4. The current research will focus primarily on the expectation of self-concept change while attending college. I predict that people who expect to experience change after moving away to college will show a stronger influence of the routes to change and mechanisms of change on their self-concept than people who do not expect to change. This is because people who expect to experience changes to their self-concept may show a tendency to detach from their old environment as well as take advantage of opportunities to internalize their new environment (new people, new groups, new messages) during this time of transition. I therefore predict that the associations between the routes to change and mechanisms of change with the self-change variables will be stronger for people who expect to change compared to those who do not expect to change.

*Hypothesis 5: Self-change and well-being*

Early self psychologists, such as Lecky (1945) and Allport (1937), argued that consistency is necessary for maintaining the integrity of the self. Others have argued that consistency is an important indicator of successful adaptation and good mental health (Funder, 1995; Rogers, 1959). Recent research shows that individuals who describe themselves relatively consistently in different roles or situations report higher levels of well-being than do individuals who have more inconsistent or fragmented self-concepts (Block, 1961; Donahue, Robins, Roverts, & John, 1993; McReynolds, Altrocchi, & House, 2000; Sheldon, Ryan, Rawsthorne, & Ilardi, 1997). These researchers, however, have defined the self-concept strictly in terms of personality characteristics and trait adjectives. They did not consider the various ways the self-concept could be defined, such as group identities or ecological self-aspects. In addition, they examined inconsistencies of self-aspects across roles and situations, but not across time. Thus, I predict that self-concept change will be negatively

related to psychological well-being, but only in instances where the changes to the self-concept involve individual self-changes (i.e., personality characteristics). Self-concept changes in other domains (i.e., group identities) will not be related to psychological well-being.

In addition, maintenance failure and self-expansion may be associated with psychological well-being in distinct ways. Because maintenance failure involves an inability to express self-aspects, I expect that maintenance failure will be negatively related to well-being. In contrast, self-expansion is a change mechanism that allows for more aspects of the self to be expressed, so I hypothesize that self-expansion will be positively related to psychological well-being (see Aron, Paris, & Aron, 1995 for support).

## METHOD

### *Participants*

One hundred forty-three undergraduate students (40 men, 101 women, 2 unspecified) from Iowa State University were recruited to participate in this study within the first two months of beginning college. Eight participants indicated having transferred from another college, meaning they had already begun college elsewhere and they were not in their first semester of college. These participants were excluded from analyses, resulting in a final sample of 136 participants (38 men, 96 women, 2 unspecified). For the first two sessions, participants received extra credit toward their grade in an introductory psychology class. For the third session, participants either received credit for an introductory psychology class in which they are currently enrolled, or an entry into a 4-winner drawing for \$50 if they were not enrolled in an introductory psychology course.

### *Materials*

*Self-domains.* The self-domains questionnaire consisted of a number of batteries designed to assess distinct domains of the self-concept. On all items, participants were asked to rate each statement based on how they view themselves, not how other people view them. For the *individual self-domain*, participants completed a 25-item version of the Big 5 personality measure (John, 1989; Cronbach's  $\alpha = .81$ ), a 10-item version of the Personal Attributes Questionnaire (PAQ; Spence, Helmreich, & Stapp, 1975; Cronbach's  $\alpha = .85$ ), and the Self-Attributes Questionnaire (SAQ; Pelham & Swann, 1989; Cronbach's  $\alpha = .76$ ). I included these measures for the purpose of examining a broad array of traits, attributes, abilities, and other characteristics that people use to describe the individual self-domain. For these measures, participants rated single words or phrases (e.g., affectionate, competitive, warm in relation to others, independent, etc.) based on how self-descriptive they were on a 5-point scale (1 = *not at all descriptive of me*, 5 = *extremely descriptive of me*). For the *relational self-domain*, participants completed the 10-item Interpersonal Qualities Scale (IQS; Murray, Holmes, & Griffin, 1996; Cronbach's  $\alpha = .81$ ), which consists of rating the self-descriptiveness of words and phrases related to interpersonal qualities using the same 5-point scale mentioned above (e.g., kind, tolerant, distant, patient, etc.). Participants also completed the Relational-Interdependent Self-Construal scale (RISC; Cross, Bacon, & Morris, 2000; Cronbach's  $\alpha = .88$ ), which measures a person's tendency to include close relationships in one's self-definition. An example item is, "My close relationships are an important reflection of who I am." Participants also listed people they know who fit into each of the following categories: mother/mother figure, father/father figure, a sibling, a roommate, a romantic partner, a close friend from high school, and a close friend from college.

Participants were only allowed to list a person once, so that the categories contained seven different people. Participants then indicated the degree to which they thought about that person when they thought about themselves. This was measured using a format similar to the Inclusion of Others in the Self scale (*IOS*; Aron, Aron, & Smollan, 1992; Cronbach's  $\alpha = .93$ ). This measure consists of two circles, one representing the participant, and the other representing the other person. The response format in the measure consisted of the two circles overlapping to various degrees (if participants didn't think about the other person at all when they thought of themselves, they chose the option where the two circles did not overlap at all; if the participant thought about the other person a great deal when they thought of themselves, they chose the option where the circles had a high degree of overlap). For the *group self-domain*, participants completed the 4-item Identity subscale of the Collective Self-Esteem scale (CSE; Luhtanen & Crocker, 1992; Cronbach's  $\alpha = .78$ ). A sample item is, "The groups I belong to are an important reflection of who I am." Participants also listed a group from their life that fit into each of the following categories: social groups, athletic groups, academic groups, ethnicity groups, activity/hobby groups, their job, and their dorm floor. Participants then indicated the degree to which they thought about that group when they thought about themselves. This was measured using the same IOS format used for the relational self, except the second circle represents the group rather than a single person. To assess the *ecological self-domain*, participants rated the following statements using a 5-point scale, "I think of my college dorm room (or current residence) as my 'home'," and "I think of the place where I lived before I started college as my 'home'." They also answered the following questions using a 5-point scale (1 = 0-20%, 5 = 80-100%), "About what percentage of the objects in your room are symbolic of your life before moving to college?"

and “About what percentage of the objects in your room are symbolic of your life in college?”

*Self-concept change.* To assess self-concept change, intraclass correlation coefficients were computed for each participant for their responses on the pre-selected self-domain questionnaire items at Time 1 and Time 2, and again between Time 2 and Time 3. The resulting coefficients indicate the degree to which participants’ responses between the two time points “agree with each other.” The coefficients were then subtracted from 1.00, as an indicator of the degree of inconsistency in participants’ responses compared to the previous time point. Separate change scores for each self-domain were computed for both Time 2 and Time 3. A score for *total self-change* was also computed for Time 2 and Time 3 by obtaining the mean change score of the four self-change variables.

*Routes to change.* For the *individual route* to change (Cronbach’s  $\alpha = .59$  at Time 1,  $.70$  at Time 2, and  $.65$  at Time 3), participants rated the degree to which they had made an active attempt to change. Example items used for the attempts at change measure were, “I often work on changing something about myself,” and “I am taking active steps in trying to become a better person.” The mean for the items was then obtained so that high scores indicated a high degree of volitional attempts to change. For the *relationships route* (Cronbach’s  $\alpha = .68$  at Time 1,  $.74$  at Time 2, and  $.52$  at Time 3), participants rated each of the relationship types they listed earlier based on the degree to which they come into contact with each person (1 = *less than once a week*, 5 = *several times a day*). Ratings for contact with people from their home environment (e.g., parents, siblings, high school friends) were reverse-coded. The mean for these ratings was obtained so that high scores indicated a high degree of contact with new relationships and a low degree of contact with old relationships.

For the *groups route* (Cronbach's  $\alpha = .72$  at Time 1,  $.69$  at Time 2, and  $.83$  at Time 3), participants rated each of the group types they listed earlier based on the degree to which they come into contact with members from each group (1 = *less than once a week*, 5 = *several times a day*). The mean of these ratings was obtained so that high scores indicated a high degree of contact with new groups. For the *ecological route* (Cronbach's  $\alpha = .50$  at Time 1,  $.59$  at Time 2, and  $.53$  at Time 3), participants rated the following statements at Time 1, "How often have you called home since you moved to college?" (1 = *less than once a week*, 5 = *several times a day*), "How often have you emailed or sent a letter to people from back home since you moved to college?" (1 = *less than once a week*, 5 = *several times a day*), "How many times have you gone home since you moved to college?" (1 = *not at all*, 5 = *four or more times*). At Time 2 and Time 3, the statements were the same except they read, "...in the past month" instead of "...since you moved to college." All of the ratings for these items were reverse-coded, and the mean of those reverse-coded ratings was obtained so that high scores indicated a high degree of contact with the new environment and less contact with the home environment.

*Mechanisms of Change.* To assess the mechanisms of change, participants first completed the Twenty Statements Test (TST; Kuhn & McPartland, 1954). The instructions for the first part of the Who Are You? list (which is what it will be referred to in this research) are as follows:

For the list below, please write twenty statements that answer the question "Who Am I?" in the blanks. Just give twenty answers to this question. Answer as if you were giving the answers to yourself, not to somebody else. Use whatever information you think helps to describe yourself. For example, you may want to describe yourself in terms of your

personality, your physical attributes, as a friend or family member, or as the member of an organization. You may find it useful to describe yourself in comparison to other people, or compared to what you expect to be like in the present, or compared to what you were like in the past. Feel free to use or disregard any of these suggestions, and please include any other information that is important to include when answering the question "Who Am I?" Write the answers in the order that they occur to you. Don't worry about logic or "importance," and please DO NOT repeat any responses.

Next, participants categorized each of their statements into one of each of the following categories: personality characteristic, physical characteristic, activity or skill, relationship with a friend, relationship with a family member, group membership, attitudes/beliefs/values, or other. Finally, participants listed up to five objects they own that they believe are symbolic of who they are, and five places that they believe are symbolic of who they are. To assess *maintenance failure*, participants at Time 2 received their Time 1 Twenty Statements list, and the objects/places lists. They crossed-out the items they believe were either no longer relevant to their life in college, or were difficult to express in their current environment. At Time 3, participants received their Time 1 Twenty Statements list again with the items they had crossed-out at Time 2 labeled as such. This way, the participants were made aware of the items they had indicated previously as irrelevant or difficult to express. The number of crossed-out items from their lists at each time point were counted to represent their *maintenance failure score*. To assess *self-expansion*, participants at Time 2 added any new statements (or objects or places) to their lists that were not included in their list at Time 1 but were now aspects that they considered when they thought about themselves. At Time 3, participants were asked to make any additions they think are relevant, with the additions they made at Time 2 included on the list. At Time 2 and Time 3,

Table 7. Mean Number of Descriptions within Each Category Listed at Time 1, and the Mean Number of Deletions and Additions for Each Category at Time 2 and Time 3.

Self-Description Category	Time 1	Time 2		Time 3	
	Total	Deletions	Additions	Deletions	Additions
1. Personality characteristics	8.09	0.16	0.72*	0.13	0.64*
2. Physical characteristics	2.47	0.06	0.16*	0.08	0.06
3. Activities/Skills	2.29	0.11	0.26*	0.03	0.13
4. Relationships with friends	1.25	0.01	0.16*	0.04	0.21*
5. Relationships with family	1.79	0.01	0.06	0.00	0.08
6. Group memberships	1.31	0.02	0.11*	0.09	0.09
7. Attitudes/Beliefs	1.90	0.04	0.29*	0.00	0.22*
8. Other	1.04	0.05	0.21*	0.04	0.13*
9. Objects	4.96	0.37	0.92*	0.38	0.66*
10. Places	4.96	0.44	0.99*	0.24	0.74*

\*significant difference between additions and deletions within category ( $p < .05$ ).

participants also categorized each statement in terms of the domain into which the statement fit. The number of items participants added to their lists were counted to represent their *self-expansion score*.

Table 7 shows the distribution of the types of categories listed at Time 1, and the number of deletions and additions within each category at Time 2 and Time 3. Personality characteristics were the most common category used for self-descriptions at Time 1. Places that were self-descriptive at Time 1 were the most common category deleted at Time 2, but new places that were self-descriptive were the most common category to be added at Time 2. Paired samples t-tests showed that additions were more common at Time 2 than deletions in all categories except there was no difference in the number of deletions and the number of additions for relationships with family ( $p > .10$ ). New places were also the most common self-description added to lists at Time 3. Objects that were considered self-descriptive at Time 2 were the most common category to be deleted at Time 3. Additions were more common at Time 3 than deletions in all categories except there was no difference in the

number or deletions and the number of additions for physical characteristics, activities/skills, relationships with family, and group memberships ( $p$ 's > .10).

*Expectations of change.* To assess expectations of change, participants rated six statements on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). The first three items were adapted from Dweck et al.'s (1995; Cronbach's  $\alpha = .90$ ) measure of lay theories of personality, specifically the degree to which people believe in the rigidity of personality and identity. The items are adapted so they refer to the individual rather than people in general, and focus on the upcoming transition to college. These adapted statements are, "The kind of person I am is something very basic about me and won't be changed very much now that I've moved to college," "I may do things differently from time to time, but the important parts of who I am won't really change while I'm in college," and "I am a certain kind of person and there is not much that can be done to really change that." The remaining statements focus on the individual's expectations of change when moving to college. These statements are, "I will probably be a different person than I was in high school now that I have moved to college," "I believe that moving to college is a transition in life that will change who I am," "I expect that the ways I thought about myself in high school will be different than the ways I think about myself right now."

*Psychological Well-Being.* The Rosenberg Self-Esteem scale (RSES; Rosenberg, 1965; Cronbach's  $\alpha = .84$  at Time 1, .89 at Time 2, .87 at Time 3) was used to measure global self-esteem. This scale is well known for its high reliability and validity for measuring global self-esteem. Participants rated the items using a 7-point scale (1 = *strongly disagree*, 5 = *strongly agree*). An example of an item is, "I feel that I am a person of worth, at least on an equal plane with others." The Satisfaction With Life Scale (SWLS; Diener et al., 1985;

Table 8. Operationalization of Constructs.

Construct	Operationalization
Individual Self-Change	1.00 – Intraclass correlation of individual self measures between Time 1 and Time 2, and between Time 2 and Time 3 (John's Big 5 Scale; Personal Attributes Questionnaire; Self-Attributes Questionnaire)
Relational Self-Change	1.00 – Intraclass correlation of relational self measures between Time 1 and Time 2, and between Time 2 and Time 3 (Interpersonal Qualities Scale; Relational-Interdependent Self-Construal Scale; Including Others in the Self Scale)
Group Self-Change	1.00 – Intraclass correlation of group self measures between Time 1 and Time 2, and between Time 2 and Time 3 (Collective Self-Esteem: Identity subscale; Including Groups in the Self Scale)
Ecological Self-Change	1.00 – Intraclass correlation of ecological self measures between Time 1 and Time 2, and between Time 2 and Time 3 (Place Identity and Object questions)
Total Self-Change	Mean value of the four self-change domain scores
Individual Route	Attempts at Change scale
Relationship Route	Mean contact frequency score with new close others
Group Route	Mean contact frequency score with new groups
Ecological Route	Mean contact frequency score with new environment
Maintenance Failure	Number of items crossed off from Time 1 Twenty Statements list
Self-Expansion	Number of items added to the Time 1 Twenty Statements list
Expectation of Change	Dweck et al.'s (1995) lay personality theories measure; expectations statements
Psychological Well-Being	Standardized value of the Rosenberg Self-Esteem scale score + the Diener Satisfaction with Life scale score – Perceived Stress scale score

Cronbach's  $\alpha = .80$  at Time 1,  $.79$  at Time 2,  $.84$  at Time 3) was used to measure a general feeling of well-being. The scale has been used extensively and has good psychometric properties. An item example is, "The conditions of my life are excellent." Participants rated the items on the above measures using a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983; Cronbach's  $\alpha = .82$  at Time 1,  $.88$  at Time 2,  $.87$  at Time 3) measured individuals' sense of personal control over daily life stressors. The scale correlates strongly with depression and physical symptomatology ( $r$ 's =  $.70$  and  $.65$ , respectively). Participants were asked to indicate how often they felt a certain way during the past two weeks by finishing the items sentence, "In the past 2 weeks, how often have you..." with each item. Participants rated the

Table 9. Correlation Matrix and Descriptives.

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.							
<i>Time 1</i> (n=136)																																
1. Exp. Ch.	---	<u><b>.31</b></u>	<u><b>.14</b></u>	.06	.12	.05	<u><b>.16</b></u>	<u><b>.18</b></u>	.12	-.02	.05	-.09	.08	-.09	.09	-.04	.14	.14	.07	-.15	-.03	.03	-.13	-.15	-.06							
2. Ind. Rte.		---	.05	.08	.08	<u><b>.47</b></u>	.02	.08	-.12	.00	-.09	.03	.06	.14	-.14	<u><b>.20</b></u>	.02	.04	.02	-.08	.12	.07	.03	-.01	.04							
3. Rel. Rte.			---	.13	<u><b>.26</b></u>	-.12	<u><b>.55</b></u>	.09	<u><b>.26</b></u>	-.01	-.04	-.01	-.04	<u><b>-.16</b></u>	-.12	-.14	<u><b>.22</b></u>	-.03	.16	-.02	.01	.09	.03	-.07	.08							
4. Grp. Rte.				---	.04	.03	.07	<u><b>.48</b></u>	-.04	-.07	<u><b>-.21</b></u>	-.10	.05	-.07	-.14	.05	-.01	<u><b>.30</b></u>	-.06	-.09	-.07	-.05	.08	-.06	.01							
5. Eco. Rte.					---	.03	<u><b>.22</b></u>	-.05	.90	.19	<u><b>.21</b></u>	.05	-.05	.01	-.06	-.08	<u><b>.21</b></u>	-.08	<u><b>.30</b></u>	.03	<u><b>.20</b></u>	.14	-.10	.10	-.06							
<i>Time 2</i> (n=117)																																
6. Ind. Rte.						---	-.01	.07	.03	<u><b>.00</b></u>	.10	<u><b>-.16</b></u>	-.12	-.02	.06	<u><b>-.40</b></u>	-.06	.04	.01	-.04	.10	-.11	-.02	.16	.07							
7. Rel. Rte.							---	.14	<u><b>.22</b></u>	-.15	-.13	-.05	.05	-.12	-.02	-.15	<u><b>.44</b></u>	.10	<u><b>.27</b></u>	-.14	.03	-.03	-.12	.02	.05							
8. Grp. Rte.								---	-.05	-.03	<u><b>-.17</b></u>	-.15	-.04	.09	-.07	.04	.05	<u><b>.53</b></u>	.09	-.11	-.15	-.11	-.01	.10	.03							
9. Eco. Rte.									---	<u><b>.19</b></u>	<u><b>.21</b></u>	.05	-.05	.01	-.06	-.08	<u><b>.21</b></u>	-.08	<u><b>.30</b></u>	.03	<u><b>.20</b></u>	.14	-.10	.10	-.06							
10.M.F.											---	.14	.01	-.09	.13	.18	-.03	<u><b>-.22</b></u>	.16	-.03	.11	.01	.01	.08	.04							
11.S.E.												---	.10	-.04	-.01	.14	.02	-.15	.04	-.07	.05	-.05	.08	.05	.13							
12.Ind. S.C.													---	<u><b>.44</b></u>	.10	.02	.02	-.09	-.06	.04	.13	<u><b>.40</b></u>	.08	-.10	.08							
13.Rel. S.C.														---	.14	.02	-.01	-.06	-.13	-.10	-.05	<u><b>.26</b></u>	<u><b>.36</b></u>	-.02	.10							
14.Grp.S.C.															---	.13	.00	.09	-.04	.02	-.10	<u><b>.19</b></u>	.12	<u><b>.29</b></u>	-.03							
15.Eco S.C.																<u><b>.23</b></u>	-.03	-.10	.01	.02	.06	.14	.16	-.02	<u><b>.24</b></u>							
<i>Time 3</i> (n=61)																																
16.Ind. Rte.																	---	.03	.00	.00	<u><b>.15</b></u>	.08	.12	.10	<u><b>.28</b></u>	.18						
17.Rel. Rte.																		---	.08	<u><b>.35</b></u>	-.13	.04	.17	<u><b>-.19</b></u>	<u><b>.25</b></u>	.08						
18.Grp. Rte.																			---		<u><b>.18</b></u>	-.02	-.03	-.11	.02	.05	.09					
19.Eco. Rte.																				---		-.06	<u><b>.27</b></u>	-.01	-.14	<u><b>.20</b></u>	-.13					
20.M.F.																					---			<u><b>.35</b></u>	-.04	.03	.00	.00				
21.S.E.																										<u><b>.13</b></u>	.07	-.06	.07			
22.Ind. S.C.																											---	<u><b>.25</b></u>	.07	.14		
23.Rel. S.C.																												---		.04	.17	
24.Grp.S.C.																													---		-.06	---
25.Eco S.C.																														---		---
Mean	2.8	3.6	2.0	3.2	3.5	3.5	2.1	3.2	3.6	1.3	3.9	0.4	0.5	0.5	0.5	3.5	1.9	3.4	3.8	1.0	3.1	0.4	0.4	0.4	0.4	0.4						
SD	0.7	0.5	1.0	0.9	0.7	0.5	1.0	0.8	0.6	2.0	3.9	0.2	0.2	0.3	0.3	0.4	0.8	0.6	0.7	0.8	1.8	0.1	0.1	0.2	0.2	0.2						

Coefficients underlined in bold =  $p < .10$  ( $p$ 's  $< .05$  for  $r$ 's  $> .17$  at Time 1, for  $r$ 's  $> .20$  at Time 2, and for  $r$ 's  $> .26$  at Time 3). Coefficients in inner grids represent preliminary tests of Hypotheses 1-4. Exp. Ch. = Expected Change, Ind. Rte. = Individual Route, Rel. Rte. = Relationship Route, Grp. Rte. = Group Route, Eco. Rte. = Ecological Route, M. F. = Maintenance Failure, S. E. = Self-Expansion, Ind. S.C. = Individual Self-Concept Change, Rel. S.C. = Relational Self-Concept Change, Grp.S.C. = Group Self-Concept Change, Eco. S.C. = Ecological Self-Concept Change.

Table 10. Correlations and Descriptives for Participants with Complete Data.

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
<i>Time 1</i>															
1. Exp. Ch.	---	.13	<b>.37</b>	.15	.19	.01	<b>.22</b>	.20	-.12	.04	-.03	.02	.03	-.13	-.01
2. Ind. Rte.		---	-.11	.14	-.11	<b>.53</b>	-.09	.03	-.04	-.02	.13	.19	.13	.08	<b>.29</b>
3. Rel. Rte.			---	-.02	<b>.30</b>	<b>-.22</b>	<b>.50</b>	-.01	<b>.21</b>	.07	.03	<b>.22</b>	.16	-.08	.01
4. Grp. Rte.				---	-.13	-.03	.07	<b>.52</b>	-.12	<b>-.21</b>	-.17	-.01	.09	.09	-.18
5. Eco. Rte.					---	-.18	<b>.27</b>	-.18	<b>.47</b>	<b>.24</b>	.12	.12	-.04	-.05	-.09
<i>Time 2</i>															
6. Ind. Rte.						---	-.08	.11	.08	-.03	.11	.06	-.05	.00	.21
7. Rel. Rte.							---	.13	<b>.28</b>	<b>-.24</b>	<b>-.27</b>	-.08	<b>.21</b>	-.05	-.08
8. Grp. Rte.								---	-.04	<b>-.24</b>	-.15	-.12	-.13	<b>.28</b>	-.02
9. Eco. Rte.									---	.20	.09	<b>-.21</b>	-.11	.06	.01
10.M.F.										---	<b>.60</b>	.09	-.19	-.08	.19
11.S.E.											---	.11	-.14	.01	<b>.25</b>
12.Ind. S.C.												---	<b>.35</b>	.15	.15
13.Rel. S.C.													---	<b>.28</b>	.13
14.Grp.S.C.														---	.03
15.Eco S.C.															---
Mean	2.9	3.6	2.0	3.1	3.5	3.6	2.0	3.3	3.5	1.6	4.7	0.4	0.5	0.4	0.5
SD	0.7	0.5	0.9	0.9	0.7	0.6	1.1	0.9	0.6	2.2	3.5	0.2	0.2	0.3	0.3

Coefficients **underlined in bold** =  $p < .10$  ( $p$ 's  $< .05$  for  $r$ 's  $> .26$ ).

using a 7-point scale (1 = *never*, 7 = *very often*). An item example is, "... been upset because of something that happened recently." Participants rated the items on the depression and stress measures using a 5-point scale (1 = *never*, 5 = *very often*). The psychological well-being index was created by taking the standardized score of the following equation: self-esteem + life satisfaction - stress (Composite Reliability Coefficients = .90 at Time 1, .92 at Time 2, and .93 at Time 3).

All of the measures described above are summarized in Table 8, and the correlations among all of the measures are shown in Table 9. Table 10 shows the correlations and descriptives for participants with complete data at all three time points.

### *Procedure*

Participants signed up for this study in the months of September and October of their first year in college. Upon arrival to the laboratory, participants were seated and asked to provide consent. They then completed the Twenty Statements list, the preselected self-

domain measures, and the expectations of change, attempts at change, and well-being measures. Upon completion, participants listed people who fit into each of seven relationship categories, and list groups that fit into each of seven categories. Participants then rated each person and each group based on frequency of contact, quality of contact, and the degree to which each person and group is included in the self-concept. Finally, participants rated statements regarding how much contact they had with their home environment. Upon completion, participants received a reminder card about when they were to return (eight weeks later), and dismissed.

They were contacted by email two days before to remind them of the second session, which took place eight weeks after the initial session. For the second session, 117 participants returned (25 men, 90 women, 2 unspecified) for a return rate of 82%. Upon arrival, participants received their original Twenty Statements list and objects/places lists, and asked to cross-off any of the items on the list they believed were either irrelevant or difficult to express in their current environment (maintenance failure). They were then asked to add any statements to the list that they thought of when they thought of themselves currently, which was not on the original list (self-expansion). Participants were asked to categorize any of the statements they added into one of the eight domains. The remainder of the session proceeded in the same manner as the Time 1 session, except participants re-rated the frequency and quality of contact with the people from the relationships/groups lists from Time 1. Upon completion, participants were reminded of the third session and dismissed. Independent samples t-tests revealed that participants who failed to return for the second session had higher scores on Time 1 Individual Route than participants who returned

( $M_{returned} = 3.59, SD = 0.49; M_{absent} = 3.86, SD = 0.58$ ),  $t(134) = 2.39, p < .05$ . There were no other significant differences.

Sixty-one participants returned for the third session (9 men, 51 women, 1 unspecified) for a return rate of 43% of the initial sample, and 52% of the sample from the second session. Similar to Time 2, participants were reminded by email of their third session two days before they were to return (between mid-January and late February). This session proceeded in the same way as the Time 2 session except all of the changes participants made to their lists at Time 2 (the deletions and additions) were included in the list given to them at Time 3. Upon completion, participants were fully debriefed. Independent samples t-tests revealed that participants who returned for the third session had higher scores than participants who failed to return on Time 2 Maintenance Failure ( $M_{returned} = 1.00, SD = 1.80; M_{absent} = 1.66, SD = 2.19$ ),  $t(133) = 2.22, p < .05$ , and Time 2 Self-Expansion ( $M_{returned} = 3.20, SD = 4.05; M_{absent} = 4.75, SD = 3.51$ ),  $t(133) = 2.34, p < .05$ . There were no other significant differences among participants who returned and participants who were absent at Time 3.

#### *Gender differences*

Independent samples t-tests revealed that men scored higher than women on Time 1 Ecological Route ( $M_{men} = 3.74, SD = 0.72; M_{women} = 3.44, SD = 0.67$ ),  $t(121) = 2.22, p < .05$ ; Time 1 – Time 2 Individual Self-Change ( $M_{men} = 0.44, SD = 0.16; M_{women} = 0.36, SD = 0.15$ ),  $t(132) = 2.85, p < .01$ ; Time 2 – Time 3 Individual Self-Change ( $M_{men} = 0.46, SD = 0.12; M_{women} = 0.40, SD = 0.13$ ),  $t(2.41) =, p < .05$ ; and Time 1 – Time 2 Group Self-Change ( $M_{men} = 0.54, SD = 0.25; M_{women} = 0.45, SD = 0.25$ ),  $t(132) =, p < .05$ . There were no other significant differences.

### *Differences between time points*

The following analyses were conducted to analyze mean differences in scores between time points. Due to the differences in operationalization, these analyses are summarized separately for variables that were calculated at each time point (i.e., the route and well-being scores; see Table 11) and variables that were based on a comparison between two time points (i.e., the mechanisms and self-change scores; see Table 12).

*Routes to change and well-being.* Paired samples t-tests revealed that volitional attempts to change (individual route) scores were higher at Time 1 than at Time 2, and contact with new relationships (relationship route) scores were higher at Time 2 than at Time 3 (see Table 11). The scores for contact with new groups (group route) and contact with the new environment (ecological route) were higher at Time 3 than at Time 2.

Table 11. Mean Differences of Route and Well-Being Variables (Time 1 vs. Time 2, and Time 2 vs. Time 3).

Variables	Time 1		Time 2		Time 3		Time 1 – Time 2	Time 2 – Time 3
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>t</i>
Individual Route	3.64	0.51	3.52	0.55	3.53	0.37	2.64*	-0.22
Relationship Route	1.99	0.99	2.08	0.97	1.95	0.75	-1.21	1.69 <sup>+</sup>
Group Route	3.18	0.92	3.18	0.85	3.43	0.64	0.06	-3.89**
Ecological Route	3.53	0.70	3.59	0.63	3.78	0.65	-0.67	-2.96**
Well-Being	0.00	1.00	0.00	0.91	0.01	0.66	-0.01	-0.02

\*\* $p < .01$ , \* $p < .05$ , <sup>+</sup> $p < .10$ .

Table 12. Mean Differences of Mechanisms and Self-Change Variables (Time 1 – Time 2 vs. Time 2 – Time 3).

Variables	Time 1-Time 2		Time 2-Time 3		Time 1 – Time 2 vs. Time 2 – Time 3
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>
Maintenance Failure	1.29	2.00	1.05	0.84	1.29
Self-Expansion	3.87	3.89	3.13	1.75	2.06*
Individual Self-Change	0.39	0.16	0.42	0.13	-2.49*
Relational Self-Change	0.49	0.18	0.43	0.12	3.71**
Group Self-Change	0.47	0.26	0.40	0.20	2.92**
Ecological Self-Change	0.49	0.30	0.35	0.22	4.97**
Total Self-Change	0.46	0.14	0.38	0.10	6.58**

\*\* $p < .01$ , \* $p < .05$ , <sup>+</sup> $p < .10$ .

*Self-change and mechanisms of change.* Paired samples t-tests showed that self-expansion, relational self-change, group self-change, ecological self-change, and total self-change scores were higher for Time 1 – Time 2 than for Time 2 – Time 3 (see Table 12). The only score that was higher for Time 2 – Time 3 compared to Time 1 – Time 2 was individual self-change.

## RESULTS

### *Correlation Analysis*

Bivariate correlation analyses were conducted prior to any hypothesis testing. These results provided some preliminary information that supported some of the predictions (see Table 9; coefficients relevant to the hypotheses are presented in grids within the matrix). These results revealed that there is very little support for the first hypothesis at Time 2 and at Time 3, which predicted that the routes to change would be positively associated with their corresponding self-change domains (these coefficients are shown in the grid at the center of the matrix). Most of the predicted associations were uncorrelated except for two negative correlations between Time 2 individual route and Time 1-Time 2 individual self-change ( $r = -.16$ ), and between Time 3 relationship route and Time 2-Time 3 relational self-change ( $r = -.19$ ).

The second hypothesis, which stated that the relationship route would show the strongest cross-over effects in predicting non-corresponding self-change domains, was not supported at Time 2 but had some support at Time 3 (shown in the grid at the bottom, right-hand corner the matrix). At Time 2, there were no significant cross-over correlations, but at Time 3, the individual, relationship and ecological routes were positively associated with

group self-change ( $r$ 's = .28, .25 and .20). Thus, there was more evidence for the cross-over effects hypothesis at Time 3 than there was at Time 2.

The third hypothesis stated that a) the individual route would be associated with maintenance failure whereas the other three routes would be associated with self-expansion, and that b) self-expansion would be more strongly associated with self-change than maintenance failure. The first part of this hypothesis was partially supported at Time 2 and Time 3 (shown in the center grid and the grid at the bottom, right-hand corner the matrix). At Time 2, the individual route was not related to maintenance failure ( $r = .00$ ), but the ecological route was positively associated with both maintenance failure and self-expansion ( $r$ 's = .19 and .21). Contrary to prediction the group route was negatively associated with self-expansion ( $r = -.17$ ). At Time 3, the individual route was positively, but non-significantly, associated with maintenance failure ( $r = .15$ ), and the ecological route was positively associated with self-expansion ( $r = .27$ ). Thus, the results at Time 3 again showed more support for the hypothesis than the results at Time 2. Contrary to prediction, the mechanisms of change were not associated with any of the self-change variables. Thus, the second part of the hypothesis was not supported.

The fourth hypothesis predicts that expectations of change will moderate the associations between the routes to change and self-change. Although the correlation coefficients do not allow for the test of this hypothesis (the regression analyses testing this hypothesis are mentioned later), they revealed that expectations of change were associated with several of the routes to change (these coefficients are shown in the grid at the top of Table 8). Specifically, expectations of change were positively associated with the individual

and relationship routes at Time 1 ( $r$ 's = .31 and .14), and the relationship and group routes at both Time 2 ( $r$ 's = .16 and .18).

The fifth hypothesis, which made predictions based on the associations between psychological well-being and the routes, mechanisms and self-change variables is discussed later. The remainder of the results reported test the predictions as specified in the hypotheses.

*Hypothesis 1: Testing effects of routes on corresponding self-concept change variables*

The first prediction specified that each of the four routes to change (individual, relationship, group, and ecological) would positively predict self-concept change within their corresponding self-domains (individual, relational, group, and ecological). To test this hypothesis, a series of simultaneous linear regression analyses were conducted (see Table 13; coefficients pertaining to this hypothesis are highlighted in bold text). The first analysis included the four routes to change at Time 2 predicting the four Time 1-Time 2 self-change variables, controlling for the variance explained by the Time 1 routes. These results provided little support for any influence of the routes on their corresponding self-change domains. The

Table 13. Time 2 Routes Predicting Time 1-Time 2 Self-Change Variables, and Time 3 Routes Predicting Time 2-Time 3 Self-Change Variables.

Time 2 Predictor Variables	T1T2 Individual Self-Change	T1T2 Relational Self-Change	T1T2 Group Self-Change	T1T2 Ecological Self-Change
Individual Route	<b>-.15<sup>+</sup></b>	<b>-.17<sup>+</sup></b>	-.10	-.01
Relationship Route	-.03	<b>.12</b>	-.10	.06
Group Route	-.11	-.07	<b>.17<sup>+</sup></b>	-.01
Ecological Route	-.01	-.04	<b>.18<sup>+</sup></b>	<b>-.04</b>
Time 3 Predictor Variables	T2T3 Individual Self-Change	T2T3 Relational Self-Change	T2T3 Group Self-Change	T2T3 Ecological Self-Change
Individual Route	<b>.16<sup>+</sup></b>	<b>.15<sup>+</sup></b>	<b>.23*</b>	<b>.18<sup>+</sup></b>
Relationship Route	<b>.22*</b>	<b>-.18<sup>+</sup></b>	<b>.24*</b>	.10
Group Route	-.06	.07	-.01	.14
Ecological Route	-.07	-.09	.11	<b>-.23*</b>

\*\* $p < .01$ , \* $p < .05$ , <sup>+</sup> $p < .10$ .

only support for this hypothesis was the group route predicting group self-change. Contrary to the hypothesis, the individual route at Time 2 negatively predicted individual self-change.

A second regression analysis included the four routes to change at Time 3 predicting the four Time 2-Time 3 self-change variables, controlling for the variance explained by the Time 2 routes. These results provided little support for the hypothesis, with the only support provided by the individual route predicting individual self-change. Similar to the Time 2 results, some of the routes predicted less change in their corresponding self-change domains, except this time the negative correspondence effect was through the relationship route negatively predicting relational self-change and the ecological route negatively predicting ecological self-change. Due to the lack of support for the hypothesis, and lack of replication, revealed in these analyses, the model testing the hypothesis (represented in Figure 2) was not estimated.

*Hypothesis 2: Testing cross-over effects of routes on self-concept change variables*

Hypothesis 2 specified that, although all four routes would predict self-concept change in non-corresponding self-domains, the relationship route to change would be the strongest predictor of self-concept change relative to the other routes (see Figure 2). This hypothesis was also tested through regression analyses prior to testing the model. The regression analyses used to test Hypothesis 1 also tested these predictions, and are therefore revealed above in Table 13. These results provided little support for cross-over effects at Time 2, with the only support stemming from the ecological route predicting group self-change. None of the other routes predicted change in non-corresponding self-domains with the exception of the individual route negatively predicting relational self-change. At Time 3, however, these results provided more support for the hypothesis, except the individual route

was the most consistent predictor of change in non-corresponding self-domains; it positively predicted relational, group and ecological self-change. The relationship route showed cross-over effects by predicting individual self-change and group self-change. Neither the group route nor the ecological route predicted change in any non-corresponding self-domain. Due to the partial support for the hypothesis in these regression results, the proposed model for Hypothesis 2 was estimated using structural equation modeling.

Structural equation analyses using maximum likelihood estimation from the LISREL 8.5 program were used to test this model. Conventional fit criteria uses a Goodness of Fit Index (*GFI*) that is 0.90 or above, and a non-significant chi-square statistic (but this is often significant due to its sensitivity to sample size. For this reason, Hu and Bentler (1999) state that additional fit criteria should be reported for models using large samples. A model fits the data well if the Comparative Fit Index (*CFI*) is 0.95 or above, and the Root Mean Square Error of Approximation (*RMSEA*) is 0.06 or less (although 0.10 or less is considered an acceptable fit). These four fit indices are reported for all of the following structural equation model analyses.

To test the model, the paths from all four routes to change at both Time 2 and Time 3 were estimated to predict all four of the self-change variables, so that each route was predicting four change variables at each time point. The model fit the data well,  $\chi^2 (112, N = 136) = 101.08, n.s.$ ; *GFI* = .93, *CFI* = 1.00, *RMSEA* = 0.00; see Figure 5. Much like the test of Hypothesis 1, several of the path coefficients were contrary to prediction, but others were in the proposed direction. At Time 2, increased volitional attempts to change (individual route) predicted less individual self-change, and increased contact with new relationships (relationship route) predicted less group self-change. The only association at Time 2 that was

Figure 5. Expanded Model Results for Hypothesis #2. (all stability paths were estimated, but are not shown in the figure)

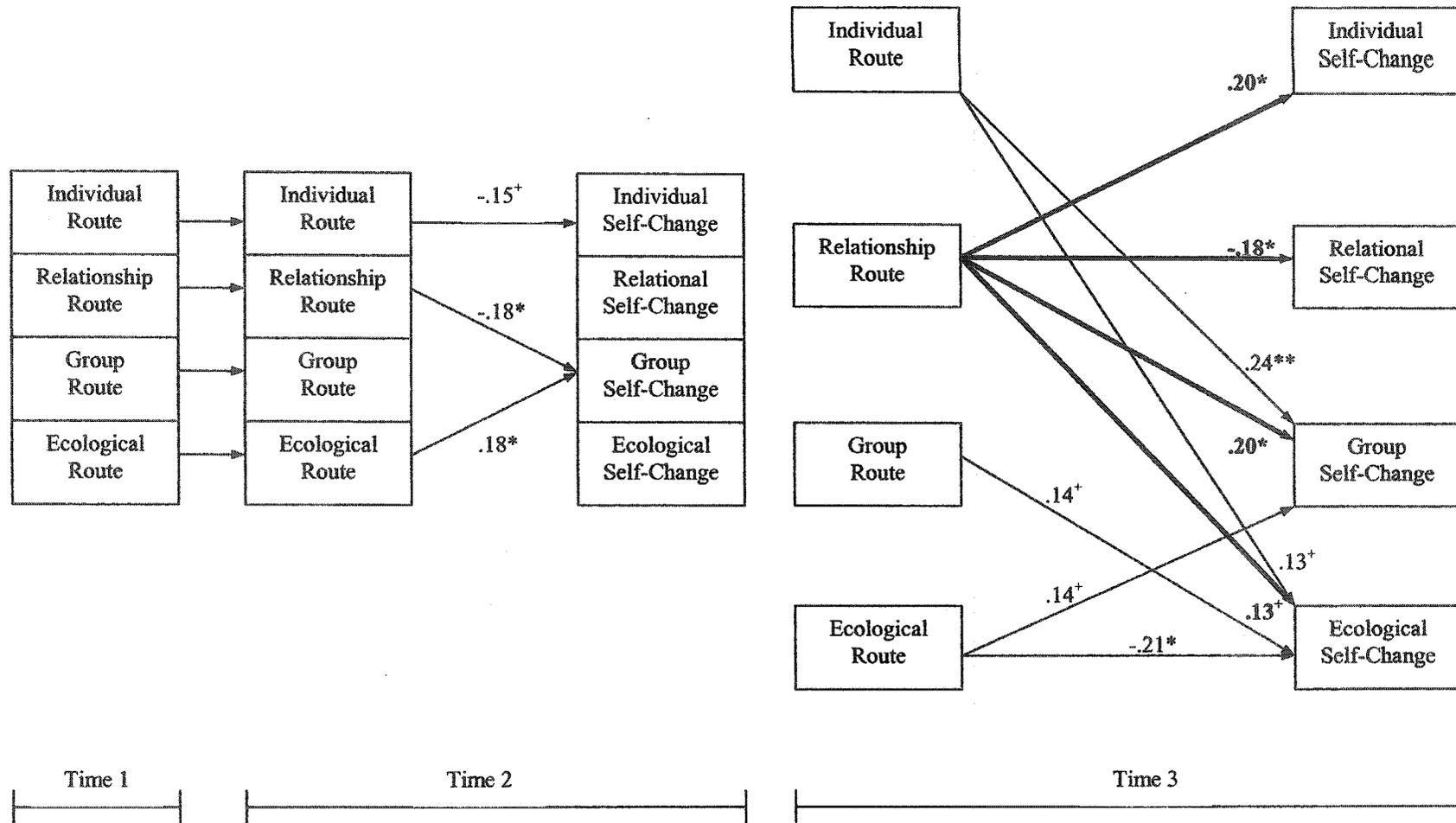
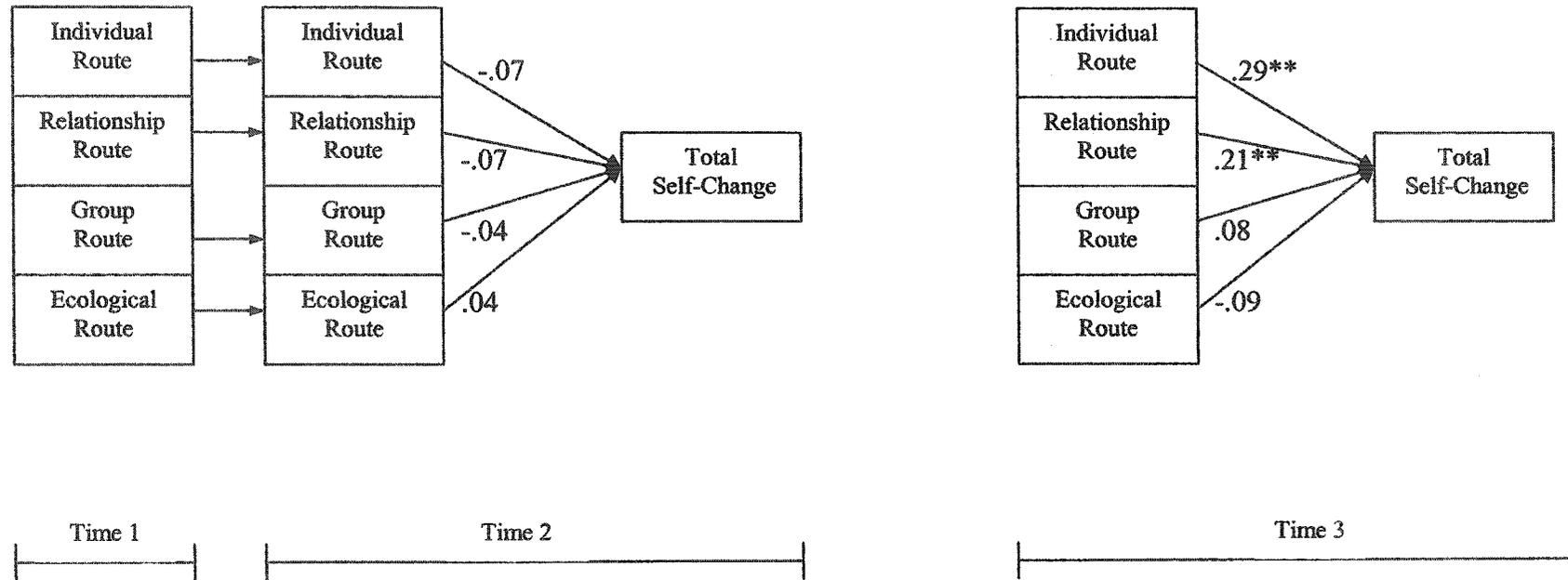


Figure 6. Model Results for Hypothesis #2 (reduced model)



in the predicted direction was increased exposure to the new environment (ecological route) predicted group self-change.

At Time 3, the results showed more support for the hypothesis than was the case at Time 2 (see Figure 5). Increased volitional attempts to change at Time 3 predicted group self-change and ecological self-change. As predicted, increased contact with new relationships predicted all four self-change domains, although this association was negative for relational self-change. Increased exposure to new groups positively predicted change in the ecological self, and increased exposure to the new environment positively predicted change in the group self, but negatively predicted change in the ecological self.

Figure 6 shows the same model substituting the total self-concept change variable in at Time 2 and Time 3 for the four self-concept change variables shown in Figure 6. This reduced model also fit the data well,  $\chi^2(52, N = 61) = 53.55, n.s.$ ;  $GFI = .95$ ,  $CFI = 1.00$ ,  $RMSEA = 0.00$ ; see Figure 6. None of the routes significantly predicted total self-change at Time 2, but increased volitional change (individual route) and increased contact with new relationships (relationship route) both predicted total self-change at Time 3.

*Hypothesis 3: Testing the role of the mechanisms of change in the self-change process*

Hypothesis 3 specified that, with the addition of the two mechanisms of change to the model at both time points (maintenance failure and self-expansion), a) the individual route would predict maintenance failure whereas the other three routes would predict self-expansion, and b) self-expansion would be a stronger predictor of self-change than maintenance failure.

To test the first part of this hypothesis, a series of simultaneous linear regression analyses were conducted (see Table 14; coefficients pertaining to this hypothesis are

highlighted in bold text). The first analysis included the four routes to change at Time 2 predicting the two Time 2 mechanisms of change, controlling for the variance explained by the Time 1 routes. These results provided little support for any association of the routes with the change mechanisms. Contrary to the hypothesis, the relationship route at Time 2

Table 14. Time 2 Routes Predicting Time 2 Mechanisms, and Time 3 Routes Predicting Time 3 Mechanisms.

Time 2 Predictor Variables	Time 2 Maintenance Failure	Time 2 Self-Expansion
Individual Route	<b>.08</b>	.12
Relationship Route	<b>-.24*</b>	<b>-.19<sup>+</sup></b>
Group Route	.03	<b>-.07</b>
Ecological Route	.03	<b>.10</b>
Time 3 Predictor Variables	Time 3 Maintenance Failure	Time 3 Self-Expansion
Individual Route	<b>.20<sup>+</sup></b>	.05
Relationship Route	-.12	<b>-.05</b>
Group Route	.11	<b>.01</b>
Ecological Route	-.06	<b>.32**</b>

\*\* $p < .01$ , \* $p < .05$ , <sup>+</sup> $p < .10$ .

Table 15. Time 2 Routes and Mechanisms Predicting Time 1-Time 2 Self-Change Variables, and Time 3 Routes and Mechanisms Predicting Time 2-Time 3 Self-Change Variables.

Time 2 Predictor Variables	T1T2 Individual Self-Change	T1T2 Relational Self-Change	T1T2 Group Self-Change	T1T2 Ecological Self-Change	T1T2 Total Self-Change
Individual Route	<b>-.16<sup>+</sup></b>	<b>-.18<sup>+</sup></b>	-.10	-.03	<b>-.18<sup>+</sup></b>
Relationship Route	.00	.13	-.12	.12	.05
Group Route	-.11	-.07	<b>.16<sup>+</sup></b>	-.01	.01
Ecological Route	-.02	-.05	<b>.20*</b>	-.03	.06
Maintenance Failure	<b>.12</b>	<b>.07</b>	<b>-.11</b>	<b>.16<sup>+</sup></b>	<b>.09</b>
Self-Expansion	<b>.04</b>	<b>-.01</b>	<b>-.01</b>	<b>.06</b>	<b>.09</b>
Time 3 Predictor Variables	T2T3 Individual Self-Change	T2T3 Relational Self-Change	T2T3 Group Self-Change	T2T3 Ecological Self-Change	T2T3 Total Self-Change
Individual Route	<b>.18<sup>+</sup></b>	.16	<b>.22*</b>	<b>.19<sup>+</sup></b>	<b>.36**</b>
Relationship Route	<b>.21<sup>+</sup></b>	<b>-.18<sup>+</sup></b>	<b>.24*</b>	.09	<b>.21<sup>+</sup></b>
Group Route	-.05	.08	-.02	.15	.09
Ecological Route	-.14	-.15	.16	<b>-.28*</b>	-.17
Maintenance Failure	<b>-.15</b>	<b>-.09</b>	<b>.05</b>	<b>-.09</b>	<b>-.11</b>
Self-Expansion	<b>.20<sup>+</sup></b>	<b>.15</b>	<b>-.15</b>	<b>.16</b>	<b>.11</b>

\*\* $p < .01$ , \* $p < .05$ , <sup>+</sup> $p < .10$ .

negatively predicted Time 2 self-expansion. The second analysis included the four routes to change at Time 3 predicting the two Time 3 mechanisms of change, controlling for the variance explained by the Time 2 routes. These results showed partial support for the hypothesis, in that the individual route at Time 3 predicted maintenance failure, and the ecological route at Time 3 predicted self-expansion. None of the other coefficients were significant.

To test the second part of this hypothesis, another series of simultaneous linear regression analyses were conducted (see Table 15; coefficients pertaining to this hypothesis are highlighted in bold text). The first analysis included the four routes to change and two mechanisms of change at Time 2 predicting the four Time 1-Time 2 self-change variables (plus the total self-change variable), controlling for the variance explained by the Time 1 routes. These results provided little support for any association of the mechanisms with the self-change variables. The only support came from maintenance failure significantly predicting ecological self-change.

The second analysis included the four routes to change and two mechanisms of change at Time 3 predicting the four Time 2-Time 3 self-change variables (plus the total self-change variable), controlling for the variance explained by the Time 2 routes. These results showed partial support for the hypothesis, in that self-expansion positively predicted individual, relational, and ecological self-change, although the association was only significant for individual self-change. Due to the partial support for the hypothesis in these regression results, the proposed model for Hypothesis 3 was estimated using structural equation modeling.

To test this model, the paths from all four routes to change predicting all four of the self-change variables at both time points were kept in, but the mechanisms to change (maintenance failure and self-expansion) were added into the model, and the proposed paths specified above were estimated. The model fit the data well, although not as well as some of the previous models,  $\chi^2(143, N = 136) = 192.47, p < .05; GFI = .90, CFI = 0.90, RMSEA = 0.04$ ; see Figure 7. In this model, the paths at Time 2 from the individual route to individual self-change, from the relationship route to group self-change, and from the ecological route to group self-change found to be significant in the previous results remained significant. These results revealed no significant association between volitional attempts to change and maintenance failure, or between increased contact with new relationships and self-expansion at Time 2. Another finding contrary to the hypothesis was that increased contact with new groups was associated with less self-expansion at Time 2. The only result at Time 2 that was consistent with Hypothesis 3 was that increased contact with the new environment (ecological route) positively predicted self-expansion. Neither maintenance failure nor self-expansion predicted any of the self-concept change variables at Time 2.

As was the case previously, the results provided more confirmation for the hypothesis at Time 3 than they did at Time 2. All of the Time 3 paths that were significant in the test of Hypothesis 2 remained significant and of the same magnitude, except for the associations between the individual route and ecological self-change and between the group route and ecological self-change. In accordance with the hypothesis, increased volitional attempts to change positively predicted maintenance failure, and increased contact with the new environment positively predicted self-expansion. Self-expansion at Time 3 then predicted ecological self-change, but did not predict change in either the relational or group self-

Figure 7. Model Results for Hypothesis #3 (expanded model).

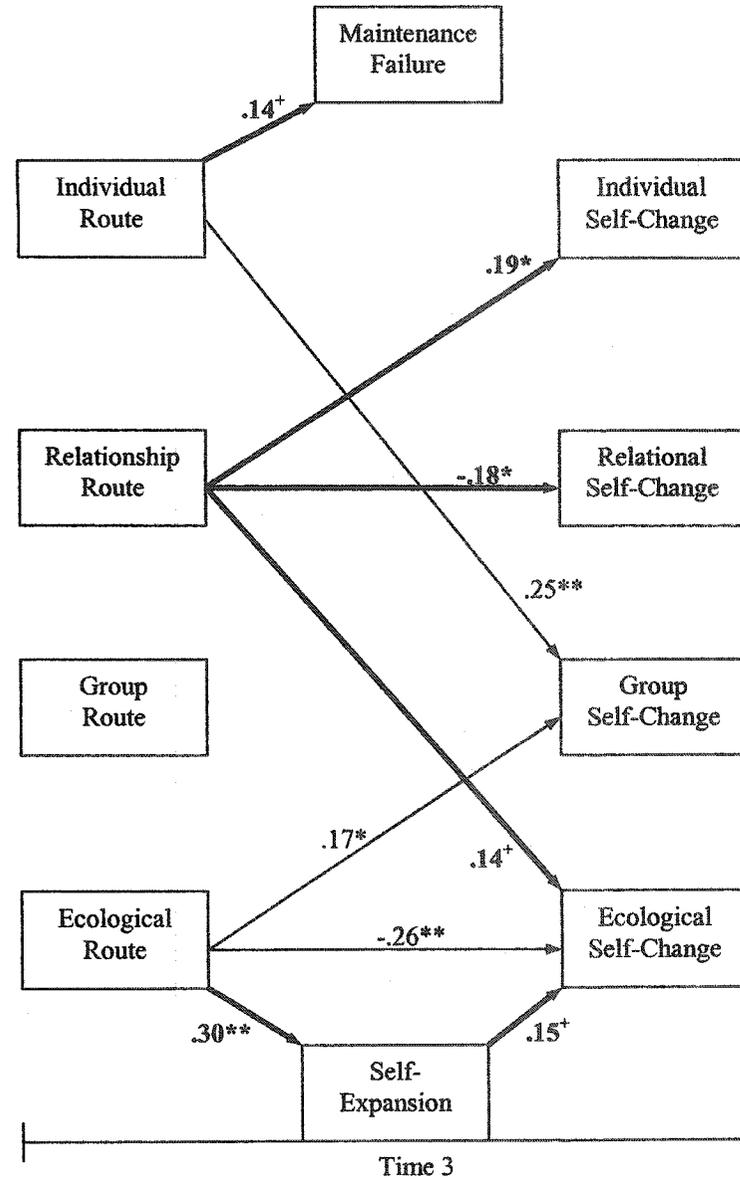
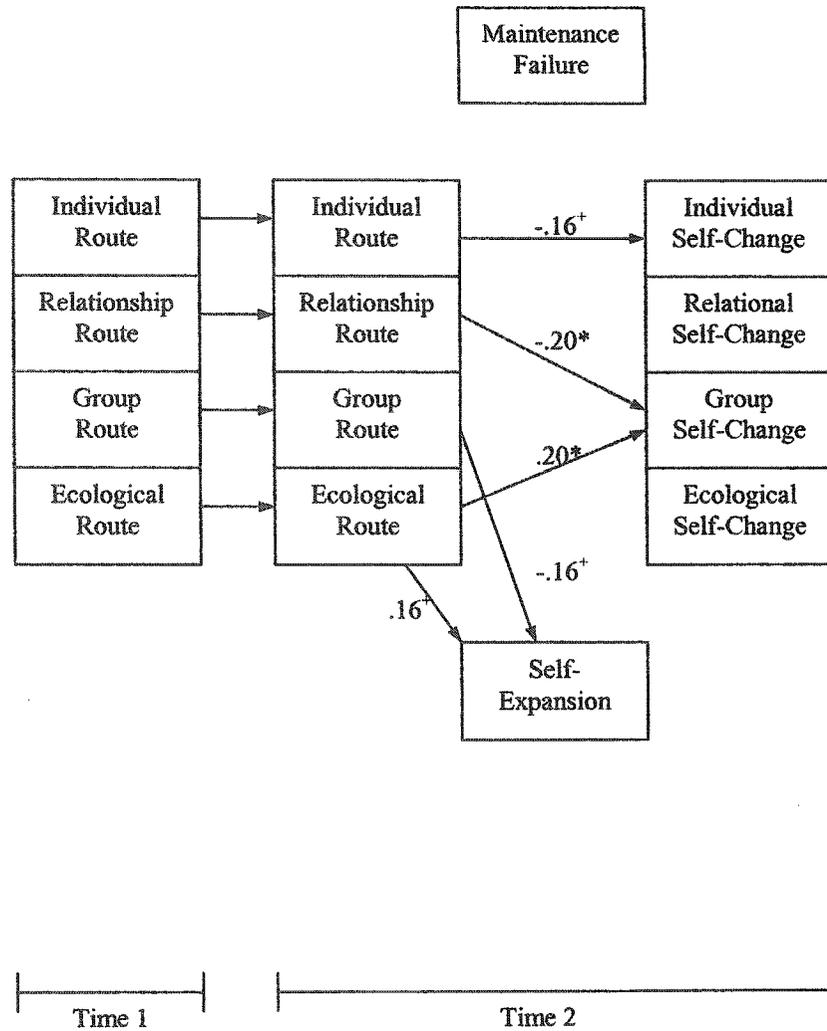
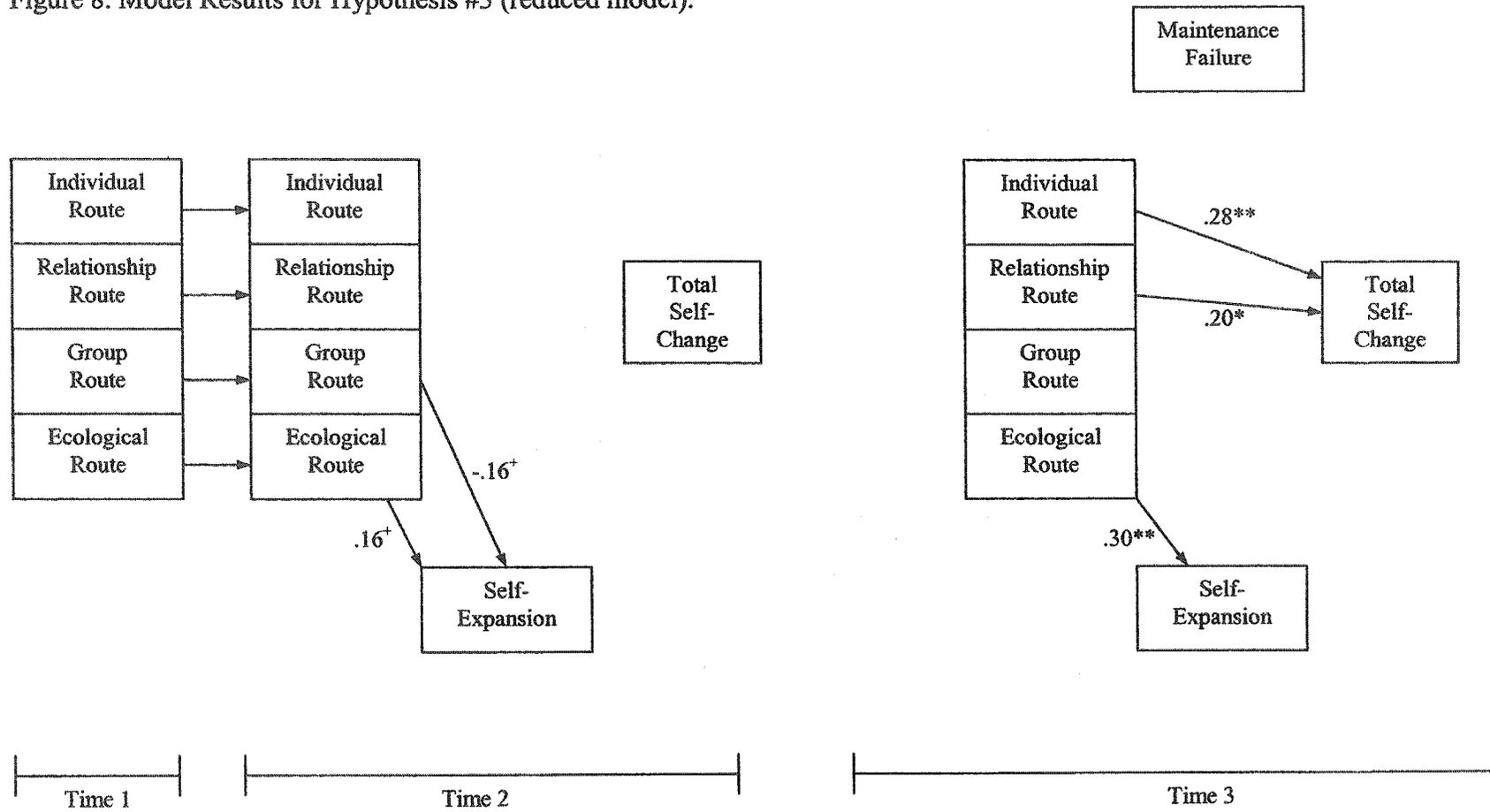


Figure 8. Model Results for Hypothesis #3 (reduced model).



domains. Maintenance failure at Time 3 also did not significantly predict individual self-change.

Figure 8 shows the same model substituting the total self-concept change variable in at Time 2 and Time 3 for the four self-concept change variables shown in Figure 8. This reduced model fit the data well,  $\chi^2(82, N = 136) = 103.63, p < .05; GFI = .93, CFI = 0.95, RMSEA = 0.04$ ; see Figure 8. As was the case in the expanded model, increased contact with the new environment predicted self-expansion at both Time 2 and Time 3, and increased volitional attempts to change predicted maintenance failure at Time 3. Contrary to prediction, neither maintenance failure nor self-expansion predicted total self-change at either time point.

#### *Hypothesis 4: Testing the moderation effects of change expectations*

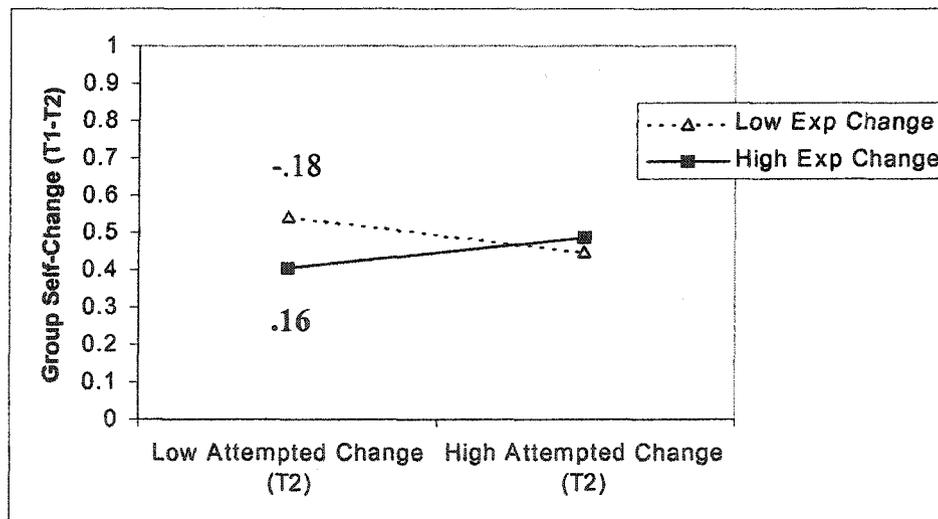
Hypothesis 4 states that the level of change expectations will moderate the magnitude of the association between routes to change and self-concept change. Specifically, people with initially high expectations of change will show stronger associations between the routes to change and self-concept change than people with low expectations of change. To test for interaction effects by change expectations at Time 1, a series of hierarchical regression analyses were conducted using the centered expectations of change scores, the centered routes to change scores, and their interaction terms as the independent variables, and the self-change scores (including total self-change) as the dependent variables. These tests revealed only four significant interaction effects. The first showed that expected change significantly moderated the association between Time 2 individual route and Time 1-Time 2 group self-change (see Table 16 and Figure 9). The relation was positive at high levels of the expected change scale, and negative at low levels of the expected change scale.

Table 16. Summary of Hierarchical Regression Analysis for Expected Change and Time 2 Individual Route Predicting T1T2 Group Self-Change.

Variable	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				
Expected Change	-0.03	0.03	-.09	.01
Time 2 Individual Route	-0.01	0.04	-.01	
Step 2				
Expected Change	-0.03	0.03	-.10	.03*
Time 2 Individual Route	-0.01	0.04	-.01	
Expected Change X	0.11	0.06	.17*	
Time 2 Individual Route				

\* $p < .05$

Figure 9. Expected Change X Time 2 Individual Route Predicting T1T2 Group Self-Change.



This effect was replicated twice more with expectations of change moderating the association between Time 3 individual route and Time 2-Time 3 individual self-change (see Table 17 and Figure 10), and between Time 3 group route and Time 3 group self-change (see Table 18 and Figure 11). In both cases, the relation was positive at high levels of the expected change scale, and negative at low levels of the expected change scale. Contrary to prediction, expectations of change also moderated the association between Time 3 group

route and relational self-change, but this association was negative at high levels of the expected change scale, and positive at low levels of the expected change scale (see Table 18 and Figure 12). Due to the low return rate at Time 3 and the low degree of replication from these hypotheses, no additional analyses were conducted (i.e., initial plans to conduct a stacked model analysis were not carried out).

Table 17. Summary of Hierarchical Regression Analysis for Expected Change and Time 3 Individual Route Predicting T2T3 Individual Self-Change.

Variable	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				
Expected Change	0.01	0.02	.04	.02
Time 3 Individual Route	0.04	0.03	.12	
Step 2				
Expected Change	0.00	0.02	.02	.03*
Time 3 Individual Route	0.02	0.03	.08	
Expected Change X Time 3 Individual Route	0.10	0.05	.19*	

\* $p < .05$

Figure 10. Expected Change X Time 3 Individual Route Predicting T2T3 Individual Self-Change.

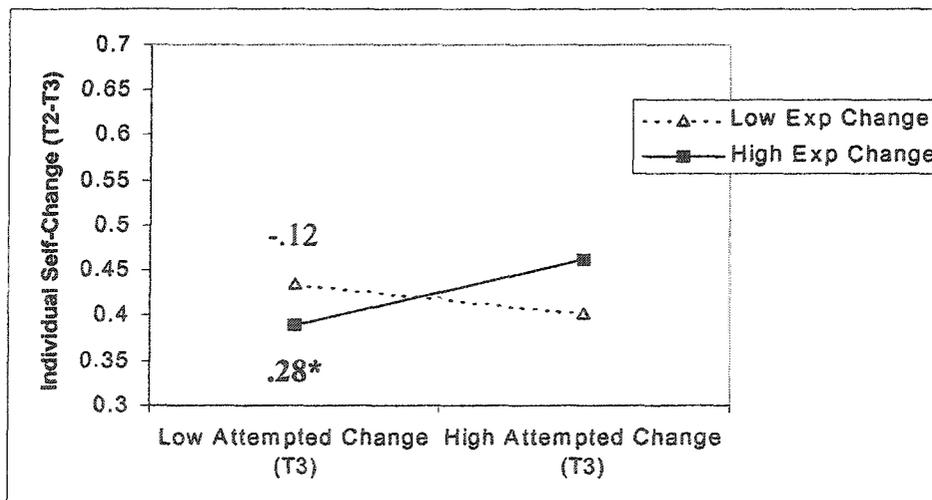


Table 18. Summary of Hierarchical Regression Analysis for Expected Change and Time 3 Group Route Predicting T2T3 Group Self-Change and T2T3 Relational Self-Change.

Variable	T2T3 Group Self-Change				T2T3 Relational Self-Change			
	B	SE B	$\beta$	$\Delta R^2$	B	SE B	$\beta$	$\Delta R^2$
Step 1				.03				.02
Expected Change	-0.04	0.02	-.16*		-0.02	0.02	-.13	
Time 3 Group Route	0.02	0.03	.08		0.01	0.02	.04	
Step 2				.04*				.07**
Expected Change	-0.05	0.02	-.17*		-0.02	0.02	-.12	
Time 3 Group Route	0.03	0.03	.08		0.01	0.02	.03	
Expected Change X Time 3 Group Route	0.09	0.04	.19*		-0.07	0.02	-.26**	

\*\* $p < .01$ , \* $p < .05$

Figure 11. Expected Change X Time 3 Group Route Predicting T2T3 Group Self-Change.

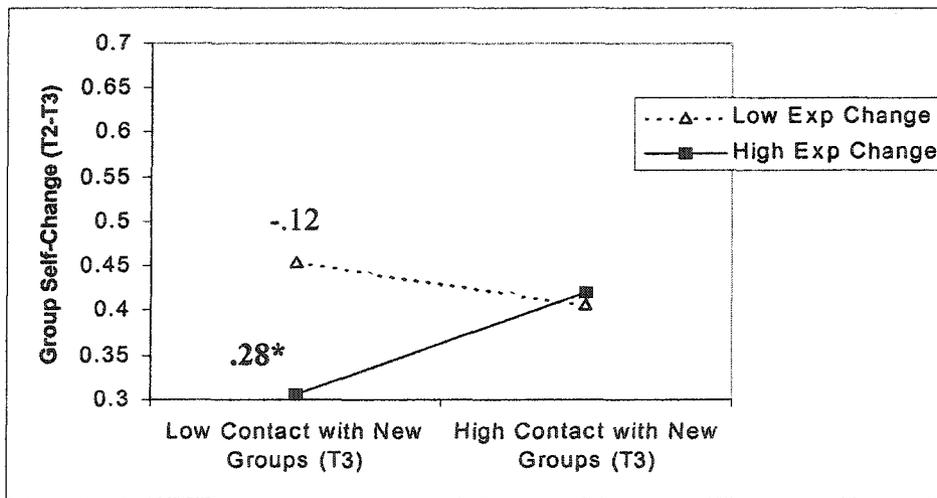


Figure 12. Expected Change X Time 3 Group Route Predicting T2T3 Relational Self-Change.

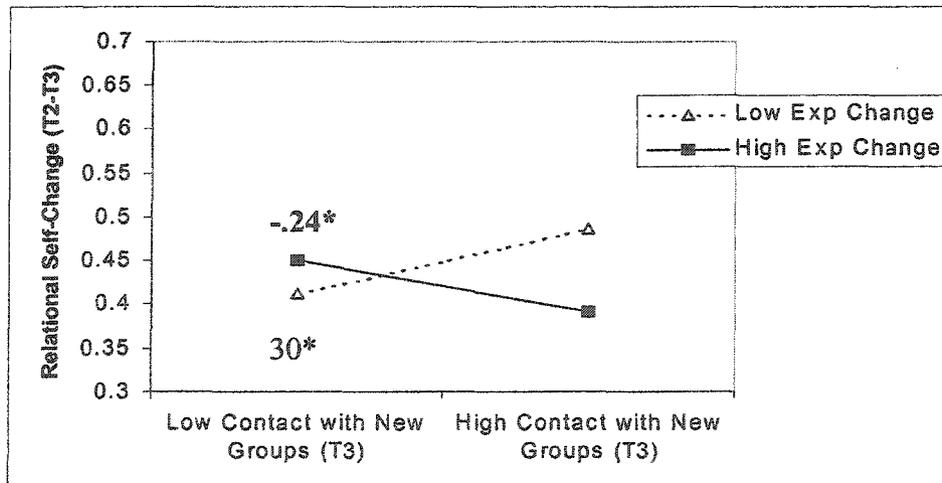


Table 19. Correlations with Well-Being.

Variables	Time 1 Well-Being	Time 2 Well-Being	Time 3 Well-Being
<i>Time 1</i>			
Individual Route	-.15 <sup>+</sup>	-.08	-.01
Relationship Route	.06	.15 <sup>+</sup>	.03
Group Route	.14 <sup>+</sup>	.19*	.23*
Ecological Route	-.03	-.11	-.14 <sup>+</sup>
<i>Time 2</i>			
Individual Route	.00	-.17*	-.06
Relationship Route	.04	.08	.18*
Group Route	.12	.18	.23*
Ecological Route	-.02	-.13	.02
Maintenance Failure	-.10	-.14 <sup>+</sup>	-.19*
Self-Expansion	-.07	-.14 <sup>+</sup>	-.09
Individual Self-Change	-.09	-.23*	-.20*
Relational Self-Change	-.11	-.15 <sup>+</sup>	-.06
Group Self-Change	-.02	-.04	-.03
Ecological Self-Change	-.13	-.15 <sup>+</sup>	-.04
Total Self-Change	-.14 <sup>+</sup>	-.22*	-.11
<i>Time 3</i>			
Individual Route	-.09	-.14 <sup>+</sup>	-.27**
Relationship Route	.05	.03	.02
Group Route	.17*	.13	.28**
Ecological Route	.03	.02	.04
Maintenance Failure	-.02	-.08	-.28**
Self-Expansion	-.07	-.14 <sup>+</sup>	-.14 <sup>+</sup>
Individual Self-Change	-.14 <sup>+</sup>	-.20*	-.35**
Relational Self-Change	.07	.09	.02
Group Self-Change	-.07	-.12	-.18*
Ecological Self-Change	.07	.09	.07
Total Self-Change	-.03	-.05	-.19*

\*\* $p < .01$ , \* $p < .05$ , <sup>+</sup> $p < .10$ .

*Hypothesis 5: Testing the associations between the self-change process and well-being*

The next set of analyses examined the associations of the routes to change, mechanisms of change, and self-concept change variables with well-being (see Table 19 for correlations). A series of simultaneous linear regression analyses were conducted at each time point with psychological well-being as the outcome variable (see Table 20). The cross-sectional results at Time 1 showed that the individual route was a negative predictor of well-being, whereas the group route was a positive predictor of well-being. The group route at Time 1 also predicted well-being at Time 2 and Time 3. At Time 2, these results were

Table 20. Routes to Change, Mechanisms of Change, and Self-Change Variables Predicting Psychological Well-Being.

Predictor Variables		Outcome Variables		
<i>Time 1</i>	<i>Time 1 Well-Being</i>	<i>Time 2 Well-Being</i>	<i>Time 3 Well-Being</i>	
Individual Route	-.15 <sup>†</sup>	-.07	-.02	
Relationship Route	.10	.17*	.04	
Group Route	.15 <sup>†</sup>	.17*	.22**	
Ecological Route	-.04	-.14	-.14	
<i>Time 2</i>	<i>Time 2 Well-Being</i>	<i>Time 3 Well-Being</i>		
Individual Route	-.22*	-.10		
Relationship Route	.07	.13		
Group Route	.20*	.20*		
Ecological Route	.16 <sup>†</sup>	-.02		
Maintenance Failure	-.05	-.17 <sup>†</sup>		
Self-Expansion	-.02	.05		
Individual Self-Change	-.17 <sup>†</sup>	-.15 <sup>†</sup>		
Relational Self-Change	-.09	.00		
Group Self-Change	.03	-.03		
Ecological Self-Change	-.13	.00		
<i>Time 3</i>	<i>Time 3 Well-Being</i>			
Individual Route	-.16			
Relationship Route	-.15			
Group Route	.22 <sup>†</sup>			
Ecological Route	.00			
Maintenance Failure	-.27*			
Self-Expansion	.01			
Individual Self-Change	-.49**			
Relational Self-Change	.19			
Group Self-Change	-.18			
Ecological Self-Change	.13			

\*\* $p < .01$ , \* $p < .05$ , <sup>†</sup> $p < .10$ .

replicated, with cross-sectional results showing the individual route predicting well-being negatively and the group route predicting well-being positively. The ecological route at Time 2 also predicted Time 2 well-being positively, and individual self-change predicted Time 2 well-being negatively. The group route at Time 2 also predicted Time 3 well-being positively, whereas Time 2 maintenance failure and T1T2 individual self-change predicted well-being negatively. At Time 3, the group route was again a positive predictor of psychological well-being, and maintenance failure and individual self-change were negative predictors of Time 3 well-being. In summary, the group route consistently predicted well-

being positively, whereas the individual route, maintenance failure and individual self-change tended to predict well-being negatively.

## DISCUSSION

Over the past several decades, researchers have developed programs designed to examine the self and the processes involved with it. Despite this investigative fervor, few have pursued the self-concept change process. The present study was conducted to provide some insight into how this process works, particularly during relocation when social and physical environments may change dramatically. The results of this research suggest that some elements of the change process deserve further examination, whereas other elements proposed earlier may not be involved at all.

### Analysis Summary

Hypothesis 1, which stated that each of the four routes to change would positively predict self-concept change within their corresponding self-domains, was not supported. The results of the current study suggest that the proposed correspondence effects (i.e., routes predicting change in their corresponding self-domains) may not explain the change process, at least at the lower-order levels of change. For example, increasing contact with new friends or a new romantic interest may not lead to changes in the relational self-domain. In contrast, the results provided some evidence for Hypothesis 2, which proposed cross-over effects among the routes to change and self-concept change (i.e., routes predicting change in non-corresponding self-domains). For example, increasing contact with new friends or a new romantic interest may lead to changes in individualized components of the self (e.g., personality characteristics). These cross-over effects were particularly evident at Time 3 of the current study.

Why would cross-over effects predict change more so than correspondence effects? A possible explanation for the cross-over effects being stronger than correspondence effects is that correspondence effects may actually maintain characteristics in self-domains rather than change them. For example, increasing contact with new friends may stabilize relational aspects of the self (e.g., being thoughtful, or responsive to other people's needs). In contrast, increasing contact with physical aspects of the environment or focusing on one's own desire to change may lead to destabilization of non-corresponding aspects of the self such as relational aspects. Another possible reason that the correspondence effects were not evident in the current research is because correspondence effects may be more evident in higher-order change processes. For example, increasing contact with new groups in the environment may stabilize lower-order group-self aspects, but may shift the overall self-concept towards defining the self in terms of group identity. Thus, individual aspects of the group self-domain do not change, but the level of weight given to that domain as generally self-descriptive increases. These higher-order change processes were not examined in the results, but further analysis with these data may provide a better understanding of the effects of routes to change on higher-order aspects of the self.

Hypothesis 3, which stated that a) the individual route would be associated with maintenance failure whereas the other three routes would be associated with self-expansion, and that b) self-expansion would be more strongly associated with self-change than maintenance failure, was only partially supported. Overall, the results did not provide much evidence for the mechanisms of change mediating the association between the routes and self-change. As was the case for most of the results, evidence for the hypothesis came from the results at Time 3, especially for ecological self-change. As hypothesized, increased

volitional attempts at change at Time 3 predicted maintenance failure, and increased contact with the new environment at Time 3 predicted self-expansion. Expanding the self at Time 3 then predicted ecological self-change (although the regression results showed that self-expansion also predicted changes in the individual and relational self-domains as well).

The association between volitional attempts to change and maintenance failure may be due to the tendency for attempts to change to involve an aspect of the self that is perceived negatively (e.g., I don't want to fail my classes any more). In contrast, the association between contact with the new environment and self-expansion may be due to an increased awareness of new opportunities for self-expression. Limited experiences in a new environment constrain people's affordances, attunement, and effectivities (Baron and Misovich, 1992), but immersing oneself in the new environment can provide various new ways for thinking and behaving. Thus, individualized routes to change may lead to restricting the self-concept whereas acquainting oneself to the new environment as a whole may lead to opportunities for broadening the self-concept.

Hypothesis 4, which stated that expectations of change moderates the associations between the routes to change and self-change, was not supported. People's expectations of change only moderated a few of the associations between the routes to change and self-concept change, and most of the moderation effects occurred at Time 3. During their second semester, students who believed when they arrived at college that the experience would change who they are showed a stronger tendency to associate volitional attempts to change with individual self-change and contact with new groups with group self-change. Thus, people with high expectations of change may show stronger correspondence effects than people who do not expect to change. In contrast, people who did not expect to change had a

stronger cross-over effect of contact with new groups on relational self-change. These results suggest that expectations of change may moderate the process through which the self changes. For people with high expectations of change, changes in the environment may be more easily categorized as relevant to the corresponding self-domain; they may be more able to identify of the types of changes they encounter. For people with lower expectations of self-change, changes in the environment may be less easily assigned as relevant to particular self-domains.

Hypothesis 5, which stated that self-concept change is negatively related to psychological well-being, but only in instances where the changes to the self-concept involve individualized and volitional self-changes, was supported. Changes in the individual self was associated with poorer well-being, but changes in the other domains were unrelated to well-being. In addition, attempts to change the self and maintenance failure were also associated with poorer well-being, but other routes were either unrelated or positively related to psychological well-being (i.e., contact with new groups). These results provide some evidence that the change process may not be detrimental in all cases. In fact, routes to change that involve social contact may actually be beneficial to mental health (in accordance with Baumeister & Leary, 1995). The individualized route to change and individual self-change variables replicated previous research because many times assessment of self-concept change is restricted to only changes in individual aspects of the self (especially personality traits). People who make volitional attempts to change who they are may be more likely than others to be dissatisfied with a relatively stable aspect about themselves. Changes to one's personality (particularly among Americans) may be viewed as a loss of identity, which may then lead to more negative feelings about the self. Defining the change process in terms of

these individualized components may explain the consistent finding that self-concept change is detrimental to mental health, when in actuality it can be helpful.

Overall, the results at Time 3 tended to support the hypotheses, whereas little to no support was found at Time 2, although self-concept change scores were higher for Time 1-Time 2 than they were for Time 2-Time 3. What occurs between the first and second semester of college that is not evident between the beginning and middle of the first semester that can account for these results? Most students go back to their original home environment for three to four weeks between their first and second semesters of their freshman year. This extended stay at home could make salient the degree to which they have changed since moving to college. When they return to their college environment, they may perceive it as their “home,” and increase their absorption of new aspects of the environment. The results support this idea in that the ecological route was the highest at Time 3. This shift in perspective of the college environment from new-to-old deserves further attention, and additional analyses are needed to determine why the routes are better predictors of change during the second semester than during the first semester.

#### Implications

The current research has several implications for the field of social psychology. First, very little attention is given to self-concept change. Most of the research on the self focuses on the ways in which individuals maintain their self-concept, and the degree to which “stable” personality traits affect one’s behavior. The current research, although not the first study examining self-concept change, seeks to make an important contribution to the self literature by expanding upon established theories of self-concept change. One of the contributions it makes is integrating several theories into a single model of the self-concept

change process. By dividing the self into four domains (individual, relational, group, and ecological), and the influences of change into four routes, the process can be understood in terms of which specific elements in the new environment predict change in particular self-domains. Identifying factors in the new environment that influence change, in addition to recognizing the types of changes these factors induce, has implications for the self literature as well as for the literature on social development, cultural psychology, and counseling psychology. All of these fields have a vested interest in gaining knowledge about how changes in the environment can influence changes in self-perception. In particular, this research demonstrates that changes in the environment can influence change in the self in a way that permeates self-domain boundaries. For example, spending more time with newly found friends can influence change in a person's personality, group identity, or feelings of "home" in the new environment, but does not necessarily change how much the person feels about his or her place within those relationships. These cross-over effects of the routes to change on self-domains may serve a useful purpose in targeting specific aspects of the self that are detrimental to normal functioning.

The second contribution this research makes is that it operationalizes self-concept change in a way that is rarely used. This research establishes a functional technique in studying self-concept change that utilizes several measures of the self-concept (reflecting the self-concept's multifaceted nature), defines the self hierarchically, and examines change in terms of the self-descriptiveness of particular aspects rather than change in the positive or negative evaluations of those aspects, which is more common. By defining the self-concept in terms of an assortment of self-descriptive characteristics, self-concept change is defined as the degree to which the cognitive activation of those characteristics differs across time.

Rather than assessing these changes through mean scores, which may not pick up on several opposing cognitive activations, the current research employed intraclass correlation coefficients as summary scores for the degree to which a collection of cognitive activations shift, regardless of whether the activations became stronger or weaker over time. Although this operationalization reflects self-concept change on a lower-level, trait-by-trait basis, it nevertheless provides a more appropriate summary of shifting cognitive activations than an overall mean score can provide. In addition, the results of the current study suggest that even lower-level changes to the self can be important to psychological outcomes such as feelings of worth; these changes do not have to be at the top of the self-hierarchy to affect the individual.

Third, the current research provides insight into which of the four routes (individual, relational, group, or ecological) is the strongest predictor of self-concept change. The individual and relationship routes were the strongest predictors of self-concept change at Time 3. Thus, aspects of the environment can predict change in the self in addition to the amount of change the individual chooses to pursue. The results of this research showed that close relationships in particular have an important role in the self-concept change process. This suggests that close relationships (e.g., friends, a romantic partner) not only have a strong impact on how the self is defined as expressed, but also influence how the self-concept changes.

This influence of relationships (especially new relationships) has important implications for invoking change in therapeutic sessions. The progress made in therapy sessions or by other types of interventions to improve individuals' self-concepts may be offset by exposure to close others who promote a dysfunctional self-concept in the

individual. However, this also suggests that clinical interventions that involve the formation of new, positive close relationships can offset the influence of more global aspects of the person's life (e.g., the exposure to drugs or weapons in their current environment). If lower-level self-aspects are causing dysfunction in the individual, a combination of promoting desire to change, and the creation of new, constructive and supportive relationships may be the most effective way to bring about change.

In contrast, the other routes (group and ecological) may serve different but equally important functions. Establishing contact with new groups consistently predicted psychological well-being across the three time points, and contact with the new environment as a whole consistently predicted self-expansion (although this was more prominent at Time 3 than at Time 2). The group route may therefore serve an affective function in the self-concept change process. Exposure to new groups may not promote change in the individual's identity, but it may create a sense of belonging, which is just as important in new surroundings than one's ability to adapt the self to fit the environment. Immersing oneself in the new environment and "making oneself at home" in the new surroundings could promote a different form of self-concept change than the shifting activation of descriptors. Instead, the ecological route could promote change through the adoption of new characteristics. Thus, the group and ecological routes may not be helpful in changing current aspects of the self, but they can be useful elements of the new environment that foster feelings of worth and growth.

#### Limitations and Future Directions

The current research provides some insight into how the self-concept change process works, but there are still some methodological and theoretical aspects that need to be attended to and improved before this program can continue. The first of these is that the

operationalization of self-concept change using intraclass correlation coefficients reflects change at the lowest, trait-by-trait level. Although this is an important first step for this research, it does not indicate whether or not higher-order changes occur. For example an individual could experience several lower-order changes to their personality and other individualized self-aspects, but all of these changes may balance out, so that the degree to which the individualized self-concept reflects the overall self is maintained.

The next step in this research program is to examine these higher-order changes. Rather than using intraclass correlation scores to measure lower-order change, I will create mean scores from all of the items in each self-domain (i.e., individual, relational, etc.), which will reflect the degree to which that domain is self-descriptive overall. Thus, I will have three mean scores for each domain, representing the degree to which each domain is self-descriptive at each time point. Next, I will use regression analyses to examine the extent to which the four routes predict higher-order change in each domain. These analyses paired with the results from the current research will be used to show how the four routes predict change at various levels in the self-concept hierarchy.

Another limitation includes the overlap in the conceptualization and operationalization of the relationship and ecological routes. The ecological route was measured based on the frequency of contact with "home," but many participants may have interpreted these items to imply contact with one's family and friends, which is specific to the relationship route. An addition, providing participants with their previous answers prior to rating themselves on the pre-selected self-domain scales may have primed participants to think in terms of how they are different. This priming effect of change may have resulted in inflated differences in the agreement of ratings between time points.

Finally, employing the intraclass correlation coefficients as indicators of change may be preferable to other measures of change, but it is not without its disadvantages. As shown in Table 5, the intraclass correlation coefficient accounts for changes in mean scores across items, but also accounts for the agreement in ratings across time points. Unfortunately, this confuses the interpretation of what exactly these scores indicate. A low intraclass correlation coefficient (which would indicate a high degree of change for this research) could represent a large difference in means, or it could represent a lack of consistency across time points. Thus, the measure of self-concept change employed for this research requires a technique that can differentiate between whether the change score is driven by mean differences or inconsistency in ratings. Future tests of the self-concept change process would benefit by developing a more careful technique of validating measures prior to further tests of the model.

One of the more disappointing aspects of the current research was the return rate at Time 3 (less than half of the original sample returned during their second semester). This is especially harmful to this research because most of the effects that supported the hypotheses occurred at Time 3. One of the reasons participants were hesitant to return for the third session was because several of them were no longer in psychology courses, and perhaps the incentive for returning (i.e., the drawing) was not enough for them to offer another hour of their time. To remedy this attrition rate, several different methods can be employed.

First, all participants should receive a guaranteed incentive for returning, even if the incentive is small (such as an extra credit point or three dollars). This may bring back some of the students who are no longer in psychology courses, increase the Time 3 sample, and allow for more powerful statistical tests of the Time 3 results. Second, some of the

participants may have been hesitant to return because the research lab was no longer in a convenient location for them. Several of the students may have perceived the lab as easily accessible when taking psychology courses, due to the proximity of the lab to the psychology classrooms, but the second semester may have found many of those students attending class on another side of campus. This convenience issue could be remedied by allowing the participants to complete the questionnaires on the internet, using online surveys rather than paper-and-pencil techniques. This would allow many of the participants to complete the questionnaires at home (or at a dorm computer lab) and they could access the questionnaire at any time of the day. Third, only participants with complete data should be analyzed if the intraclass correlation coefficients are to be used in future analyses. Without this technique, differing change levels between time points could reflect actual differences or they could reflect a difference in mean scores based on calculations using different samples (i.e., the initial sample versus a subsample of the original one that contains less participants). By implementing these new methodological tools, participants may be more inclined to perceive the questionnaire as convenient and worthwhile.

The purpose of the current research was to investigate change in the self-concept using a variety of tools to measure the multifaceted self-concept. Some may argue, however, that the four self-domains are not reflective of the entire self-concept (or even the most important aspects of the self-concept). Researchers who define the self in terms of a narrative sequence of experiences (e.g., Freeman, 1992; Gergen & Gergen, 1988, Young-Eisendrath & Hall, 1988) may perceive this research as ignoring an important component of the self-concept, the episodic self-concept. Although this definition of the self-concept is not included in the current study, this does not mean that it will be excluded in all future applications. The

main reason for not including the episodic self-concept in this study was because it requires a different methodological format than the other measures (i.e., an open-ended writing session with specific instructions for details and subsequent coding by multiple raters), and therefore requires more time and resources than the current program was able to provide. Future research will include assessments of the episodic self-concept for the purposes of displaying replication across the various facets of the self.

Additional applications of this research program will investigate the change process over a longer period of time and identify other moderator variables that influence the process (e.g., social monitoring, openness to experience). Ideally, obtaining assessments of students' self-concepts while they are still in their home environment (i.e., before the transition) would allow for a more comprehensive analysis of the change process. I also plan to develop a computer-based assessment of the self-concept, which will use descriptors generated by the participants rather than pre-selected descriptors. Thus, I will be able to obtain both their ratings (self-descriptiveness) and their response latencies (certainty) to each item. Over time, these assessments will be obtained over the internet so that the research expands beyond college students' experiences.

I also plan to expand this research into other instances of relocation such as moving to another country for work or school. Investigating instances of dynamic change in one's environment may also provide more insight into the influence of the types of change in the environment, whether they are positive changes such as marriage or the birth of a child, or negative changes such as imprisonment or divorce. By expanding this research to include various contexts of change, I plan to generalize my model of self-concept change across people and situations.

### Conclusions

Most people who move to a new environment redefine who they are over time whether or not they expect to change or want to change. Most relocation experiences involve meeting new people, joining new groups, and adapting to the new physical surroundings. As these experiences become more frequent, individuals begin to internalize those new aspects until they feel like "me." Acquainting oneself with new places and people need not result in a dramatic alteration of self-definition, as was the case of Lt. John Dunbar in "Dances With Wolves," but these transitions can lead to new perspectives on the self and how the self is expressed. The current research program and others that follow may provide some insight into this process of self-concept change, and the cognitive and behavioral consequences resulting from it.

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