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A LONGITUDINAL STUDY OF A DEVELOPMENTAL-CONTEXTUAL MODEL OF
WORK VALUES DURING ADOLESCENCE

A Thesis in
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by
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Abstract

I employ data from a sample of participants examined longitudinally from the 9th to the 12th grade and regression-based statistics to examine the development of work values and their mutual dependence with part-time work experiences during the high school period. Work values are presumed to be organized within a value system and to be distinguished both in terms of the nature of the work (e.g., part-time work and career-oriented work values) and in terms of the substance of the work (e.g., mastery, economic, and interpersonal work values). The substance of work experiences is presumed to be conceptually grouped in a similar fashion (e.g., part-time mastery, economic, and interpersonal work experiences). I propose and test discrepancy- and cohesion mechanisms to explain and predict work value stability, change, and development and a dynamic model of work values and experience to explain and predict the co-dependence of values and experience during the high school years. The results generally support four general findings. First, values appear to be durable means of evaluation that are organized within a systems framework. Second, the proposed discrepancy reduction and cohesion mechanisms appear to prompt and maintain the integrity of the value system and harmony within the person-in-context unit of analysis. Third, the part-time settings open to high school students appear to be a work context that influences the course and development of the value system and the value system appears to influence the selection of work experiences. Finally, person- and context-level variables appear to have a complex but limited influence on the discrepancy reduction and cohesion mechanisms prompting and maintaining the integrity of the value system and the harmony within the person-in-context unit of analysis.

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Chapter 1

Introduction

Summary Statement

Although researchers have investigated the role of human values in vocational choice, aspirations, and development for more than 70 years (Dukes, 1955), our understanding concerning the development of work values has been limited by the use of cross-sectional data and by the small number of studies that have employed longitudinal data spanning more than two years of data collection (Cotton, Bynum, & Madhere, 1997; Johnson, 2001a; Skorikov & Vondracek, 1997). Whereas Deci and Ryan (1985) and Eccles and colleagues (Eccles & Wigfield, 2002) have placed a great deal of emphasis on motivation in its intrinsic and extrinsic forms to understand, among other issues, academic performance during adolescence, this study seeks to extend adolescent research into a more abstract and regulatory aspect of the motivation construct, namely the value system.

A longitudinal examination of values might further our understanding of the mechanism through which dispositional and regulatory aspects of adolescent functioning can affect vocational behaviors and motivations and/or goals and how they reciprocally influence values. Such an investigation could also help us to examine the validity of the prevailing theoretical formulations that conceptualize the value system as a trait-like psychological structure that becomes increasingly stable throughout the adolescent period, on the one hand, and theoretical formulations and empirical findings that focus on intra-individual variability of values on the other hand (Schulenberg, Vondracek, & Nesselrode, 1988).

Theoretical Foundation

The presumed dynamic link between personal-level factors like values and contextual contingencies has been discussed at length within a developmental-contextual meta-model of career development (Vondracek, Lerner, & Schulenberg, 1986), psychologically-based approaches like action theory (Oppenheimer, 1991a) and rational choice theory (Boudon, 2001), and sociologically-based approaches like life course theory (Elder, 1998) and self-selection theory (Heinz, 2002). These models converge around the general presumption that person-level factors like values are the product of an agentic organism responding to socially-constructed environmental contingencies¹ (Vondracek & Porfeli, 2002b). These models diverge in the relative emphasis on the person and environment sides of the equation (Elder, 1998; Shanahan & Porfeli, 2002). Psychologically-based approaches typically emphasize the role of human agency over contextual factors and favor initiating research from the perspective that person-level factors lead to contextual-level variability. Sociologically-based approaches, on the other hand, tend to emphasize the role of the context over human agency and favor initiating research from the perspective that contextual variability and structure lead to interindividual differences.

A human value for the purposes of this study is presumed to be a durable (with respect to the time dimension), regulatory, and evaluative tool used in a more or less conscious manner during the process of creating, selecting, executing, governing, and evaluating preferred goals, behaviors, and behavioral sequences directed at past, present, or future circumstances and aims (Brown & Crace, 1996; Hechter, Nadel, & Michod,

¹ Contextual contingencies are often classified into contextual units like the family, work, or school setting or a combination of contextual units yielding an estimate of the social structure (Mills, 1959).

1993; Kilby, 1993; Kluckhohn, 1951; Oppenheimer, 1991b; Rokeach, 1973; Schwartz & Bilsky, 1987). Human values are presumed to be arranged within a hierarchically arranged and interconnected dynamic system, which is typically referred to as the value system (e.g., Brown & Crace, 1996; Rokeach, 1973).

Research Questions and Hypotheses

In general, predominant theories of human values suggest that in the face of a perceived discrepancy between values and attitudes or behaviors a person may modify their values to reduce the discrepancy (Rokeach, 1973). Theory also suggests that a person may modify environmental contingencies (e.g., task demands or the reward structure) guiding the selection of effective behaviors to reduce the discrepancy between behavior and values (Boldero & Francis, 2002; Rokeach, 1973). In the face of significant barriers that preclude the necessary behaviors to maintain a value-oriented standard guiding present functioning or achieve a value-oriented goal directing future-oriented behavior, theory suggests that a person may change his or her standard or goal to align with behavioral options delineated by perceived contextual opportunities and constraints (Rokeach, 1973) or s/he may endeavor to modify contextual contingencies to align with his/her value system (Boldero & Francis, 2002; Rokeach, 1973).² In summary, values and/or behavior may be changed to achieve congruence between the two, and values and/or contextual contingencies may be modified to become more consistent with one another.

The present study will employ a sample of adolescents to determine if the discrepancies between values and behaviors or part-time work contingencies predict

² Discrepancies can include behaviors and outcomes that favorably or unfavorably exceed or fall short of a standard or goal.

developmental change in the direction of discrepancy reduction across time. First, the discrepancy between adolescents' values associated with their current part-time work (theoretically treated as standard- or process-oriented values) and their career-related values (theoretically treated as goal- or outcome-oriented values) will be used to predict theoretically presumed discrepancy reduction across time. Second, the discrepancy between adolescents' current part-time work employment opportunities and their part-time work values will be employed to predict theoretically anticipated discrepancy reductions across time. Finally, the discrepancy between adolescents' current employment opportunities and their full-time work values will be used to predict theoretically anticipated movement toward discrepancy reduction across time.

This study will employ nine broad research questions and related hypotheses to explore and test the theoretically presumed nature, role, and development of work values during adolescents' high school years.

Research Question 1

Do relationships exist between two types of work values, namely an adolescent's values associated with current part-time work experiences (i.e., part-time work values (PTWV)) and their values associated with their anticipated career during adulthood (i.e., full-time work values (FTWV))?

Research Question 2

Do PTWV and FTWV develop and influence one another during the high school years?

Research Question 3

Are PTWV and/or FTWV engaged in a dynamic relationship with part-time work experiences (PTWE) during the high school years?

Research Question 4

Is the salience of part-time work values associated with adolescents' expectations in terms of their level of educational attainment?

Research Question 5

Is the salience of part-time work values associated with adolescents' expectations in terms of the prestige of their occupational plans?

Research Question 6

Is the magnitude of the discrepancy between adolescents' PTWV and their FTWV analogue associated with their expected educational attainment?

Research Question 7

Is the consistency between adolescents' part-time work values and associated career-related values associated with the prestige of their expected career?

Research Question 8

Do educational and occupational plans moderate the longitudinal relationship between PTWV's and PTWE's?

Research Question 9

Does sex moderate the longitudinal relationship between PTWV's and PTWE's?

Chapter 2

Literature Review

Meta-Theoretical Foundation

The social-structural, function-centered, or sociological perspective emphasizes the role of a configuration of contextual factors in shaping person- and group-level educational and career pathways and vocational choices and behavior (Shanahan & Porfeli, 2002; Vondracek & Porfeli, 2002b). The social structure is composed of a multitude of hierarchically arranged, socially- and physically-defined contexts that can include labor market conditions, family socioeconomic status, parental educational and occupational attainment, educational opportunities that open and close certain career pathways, labor market conditions that selectively constrict and expand job opportunities, social customs, mores, and laws that selectively exclude and include certain groups from certain occupational opportunities based upon race, educational credentials, work experience or group affiliation, and other factors that yield opportunities and constraints within influential contexts like the family, school, work, and peer group settings (Mills, 1959). In summary, the function-centered approach generally employs contextually-defined factors to explain group- and person-level variability.

This approach, applied to the values construct, suggests that the social and environmental contexts define the composition and relative salience of their inhabitants' values by setting the social-structural boundaries for permissible behavior and personal goals. Barth (1993) examined Baktaman and Balinese cultures to identify their value systems and compared the two cultures to explore how social-structural variability yields cross-cultural differences in the content and salience of the values. Barth (1993)

concluded that the social context defines the potential content of the value system and prescribes a general hierarchy within this prescribed set of values. For example, values associated with economic generosity may have little meaning and may not even exist in a communal social context like Baktaman society, which is relatively devoid of personal property and believes that maintaining personal property attracts evil sorcery that may result in illness or death. Within such a culture, value constructs associated with sorcery, physical health, or (more generally) self interest may be guiding behavior typically ascribed to values associated with altruism, generosity, or group interest prevalent in societies that maintain personal property rights (e.g., the Balinese or capitalistic societies).

The person-centered or psychological perspective emphasizes the role of human agency and person-level factors affecting agency and generally employs person-level, psychologically-oriented mechanisms to explain group- and person-level variability (Shanahan & Porfeli, 2002; Vondracek & Porfeli, 2002b). From this perspective, cognitions, emotions, and vocational behaviors are typically presumed to shape person- and group-level, vocationally-related, psychological functioning and behavior, which, in turn, are presumed to affect educational and career pathways and vocational choices and behavior. Psychological constructs like interests, values, academic and vocational abilities and aptitudes, identity, physical and cognitive exploration, and occupational and educational experiences are typical constructs employed to predict latent outcomes (e.g., educational and vocational aspirations, interests, and values), as well as manifest outcomes (e.g., educational and vocational choices, behavior, and achievement).

The person-centered approach involves the fundamental assumption that human agency contributes to human change and development. Action theory is a psychologically-based theory of human functioning which presumes that human agency is a primary determinant of change and development (Oppenheimer, 1991a, 1991b). Within the values literature, the rational choice theory (RCT) is currently a predominant person-centered model (Boudon, 2001). Rationality within this model is defined as “intentionality, self-interest, and maximization [from a cost-benefit perspective]” (Boudon, 2001, p.62). This position is supported by previous research in which college students, who demonstrated an internal locus of control, tended to exhibit greater value clarity and value salience than those who exhibited an external locus of control (McKinney, 1975).

A *rational* choice, then, presumes a cause and effect relationship directed by an aim toward maximizing utility in the economic sense of the word. Modern expectancy-value theory is another prominent model that presumes that action is the product of human agency and human agency is driven by person-based expectancies and values (Eccles & Wigfield, 2002). Expectancies and values are believed to spring from a person’s interpretation of the link between action and outcome, an interpretation that is influenced by person-based perceptions and influential agents within the social context ranging in scope from a person to a family to the cultural context. If the person concludes that an action yields preferred outcomes (i.e., attainment values), is enjoyable in its own right (i.e., intrinsic values), supports one’s goals (i.e., utility values), and yields relatively few detrimental outcomes (i.e., costs) then the action becomes valued and acts as a source for subsequent motivational processes. In sum, all of these theoretical examples emphasize

human agency and a deliberate, rational, cause-and-effect, and cost-benefit orientation over the potentially influential aspects of the social structure. All orientations, however, incorporate the transaction between person and context, but they vary in their estimate of the impact of the context on the person.

Within the career decision-making literature, Schulenberg, Vondracek, and Kim (1993) pointed out that a *deliberate* and *rational* decision-making framework (e.g., Blustein, 1989) is generally assumed. Such a framework presumes that agentic career exploration (i.e., a complex construct involving exploration of the self in interaction with the external world) will facilitate value system development (e.g., accessibility, clarity, and crystallization), whereby those people who deliberately employ their value system will make more favorable career decisions (e.g., a greater match between person-level preferences and work-related task demands and rewards). In the case of values and career decisions, traditional career theory (Super, 1990, 1995) hinges on the rational choice theory (RCT) presumption that people intentionally employ their values to make career choices because they believe that this procedure will promote their self-interests. Following this logic, the more accessible and interpretable the value system is, presumably the more helpful it can be in working through and making career decisions.³

Schulenberg et al. (1993) suggested that, contrary to RCT assumptions, adolescents may be less apt than adults to employ their value system in a deliberate⁴ or rational manner when making career decisions. If this suggestion is valid, then it presumes a testable assertion, namely that vocational development moderates the relationship

³ Within the work values literature, this presumed dynamic relationship has been labeled “the reinforcement hypothesis” (Mortimer & Lorence, 1979) and has received mixed support (Johnson, 2001a; 2001b; 2002). This particular subset of the human values literature is discussed below in much greater detail.

⁴ In several places within the text, the phrase “more or less deliberate” is employed to assert the qualification concerning rational decision-making.

between work values and vocational behavior, such that advancing vocational development is presumed to increase the association between work values and vocational behavior. Employing chronological age as a rough proxy for vocational development, the relationship between adolescents' values associated with part-time work and the part-time work opportunities they select should increase in magnitude with age.

Developmental contextualism suggests that a synthesis of the person- and function-centered approaches, under the rubric *probabilistic epigenesis*, is the most promising approach to understanding human development and functioning and contextual change over time (Vondracek et al., 1986; Vondracek & Porfeli, 2002b). Such an approach involves the prevailing logic that both human agency and social forces operate to affect person-level functioning and context-level contingencies and that all research questions involving human development should define the unit of analysis as the *person embedded within his or her array of contexts*. This way of thinking is consistent with, for example, a recent synthesis in the identity theory literature that asserts that social roles shape identity and identity shapes and guides the selection of social roles (Stryker & Burke, 2000). The developmental contextual meta model is also consistent with the *dual-points of entry* research strategy, which involves entering a research question associated with human development and functioning from both a person-level function and an aspect of the social structure (Shanahan & Porfeli, 2002).

Meso-Theoretical Foundation

The Human Value Construct

Kluckhohn (1951) defined a value as a trait-like “conception, explicit or implicit, distinctive of an individual or characteristic of a group, of the desirable which influences

the selection from available modes, means, and ends of action” (p.395). Rokeach (1973) defines values as “an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence” and a value system as “an enduring organization of beliefs concerning preferable modes of conduct or end-states of existence along a continuum of relative importance” (p.5). Schwartz and Bilsky (1987) define values as “(a) concepts or beliefs, (b) about desirable end states or behaviors, (c) that transcend specific situations, (d) guide selection or evaluation of behavior and events, and (e) are ordered by relative importance” that are based in “three types of human requirements: biologically based needs of the organism, social interactional requirements for interpersonal coordination, and social institutional demands for group welfare and survival” (p. 551). Within a discussion of the determinants of action and action theory, Oppenheimer (1991b) finds that values serve an evaluative function producing positive and negative affective energy in response to behavior and external objects and events. Drawing from the work of Kluckhohn, Rokeach, and others, Kilby (1993, p. 36) defines values as “conceptions of the desirable or the worthwhile” that involve subjective feelings like “worthy, important, better or best, good or right (and their opposites).” Within this definition, conceptions are considered to be beliefs, dispositions, constructs, or subjective meanings that can range from being conscious to unconscious, from involving a high degree of specificity to being completely ambiguous, and from being more or less salient with respect to other values. Brown and Crace (1996) define values as “cognized representations of needs that, when developed, provide standards for behavior, orient people to desired end states (Rokeach, 1973) and form the basis for goal setting [and]... for attributing worth to situations and

objects [and]... for judging the utility of extrinsic reinforcers” (p. 212). Feather (1990) suggests that a value functions as a motive that transcends the immediate situation and is employed to cast a cognitive-affective *valence* (along a dimension akin to favorable to unfavorable or positive to negative) on events and objects. Hechter (1993) reduces much of the detail of previous descriptions by defining values as “relatively general and durable internal criteria for evaluation” (p. 3). In summary, these definitions suggest that a value is a durable (with respect to the time dimension), regulatory, and evaluative cognitive affective tool used in a more or less conscious manner during the process of creating, selecting, executing, governing, and evaluating past, present, or future goals, behaviors, behavioral sequences, and events directed at past, present, or future circumstances. Values are presumed to cast a valence on objects and events that ranges from positive to negative and this valence may be employed to evaluate or motivate action (Boldero & Francis, 2002; Feather, 1992) but is not presumed to necessarily dictate particular actions or choices. The value system represents a hierarchical arrangement and interconnected network of values (e.g., Brown & Crace, 1996).

The preceding definitions and summary provide a sense of the conceptual space designated to the values construct, but these definitions do not directly distinguish values from other widely accepted constructs like attitudes, goals, motivations, needs, social norm and preferences. Kilby (1993), for example, distinguishes between values and motivation by suggesting that a motive is a need, desire, or drive that is more sensitive to immediate conditions, while a value transcends present circumstances, needs, or desires thus validating the value construct as a “conception of the desirable” (p.36) that exists across time and space. Hechter (1993) distinguishes the value construct from preferences

and norms by suggesting that preferences are more labile than values with respect to the time dimension and norms act as external criteria for action while values act as personal criteria. Oppenheimer (1991b) distinguishes between interests and values by suggesting that interests are more closely aligned with the selection and maintenance of a specific set of behaviors aimed toward a common goal and values are more closely aligned with the affective regulation and evaluation of specific behaviors. Brown and Crace (1996, p. 212) suggest that values are presumed to be a relatively circumscribed number of “internalized standards” employed to evaluate actions and end states while interests can number in the dozens and do not serve the evaluative function reserved for values. Making all of the distinctions between values and potentially related constructs is well beyond the confines of this study but the reader is directed to several publications that contain extended discussions on the subject (Epstein, 1989; Kilby, 1993; Rokeach, 1973). In general, the literature maintains that the values construct resembles behavioral standards and motivation, but involves a unique combination of regulatory and evaluative components that cut across the temporal dimension.

Broad Values Classifications

According to the definition of the values construct above, values demonstrate a great range of utility that can vary with respect to a person’s orientation toward time. During a period of behavioral planning and goal setting, when the focus is toward the future, people may employ their value system to narrow the range of effective behaviors to a smaller set that is both effective and preferable. In the present moment, values can act as standards to select and modify behaviors when a person experiences unanticipated or changing contingencies, is unable to thoughtfully plan a behavioral response, and must

take action. During a period of reflection, values can be employed to retrospectively evaluate and learn from the outcome(s) of a behavior or behavioral sequence. In summary, values can be viewed as a useful and flexible tool to guide, modify, and evaluate past, present, and future behaviors.

Rokeach (1973) classified human values in terms of the extent to which they represent a means of maintaining and guiding current conduct (i.e., “modes of conduct” (p. 7)) and the degree to which they represent a preferred end state. Rokeach (1973) referred to the former as “instrumental” values and suggested that they involve issues that center on morality and personal competence. Violating instrumental values tends to yield “pangs of conscience or feelings of guilt” (Rokeach, 1973, p. 8) because these violations yield a discrepancy between what a person believes to be the proper course of action and the course of action taken and this discrepancy is believed to ultimately be a threat to a person’s self-concept.

Preferred end-states are termed “terminal” values (Rokeach, 1973). Terminal values include person-centered preferred end states like inner peace and financial wealth and interpersonal end states like world peace and social equality. Differences between a person’s terminal values and his or her current status are presumed to motivate behaviors that a person believes will increase his or her probability of achieving the desired end state. Unlike a discrepancy between current functioning and instrumental values, discrepancies between current functioning and terminal values are not believed to yield powerful affective responses (Rokeach, 1973).

Rokeach (1973) asserted that instrumental values ultimately serve to change or maintain behaviors in the pursuit of terminal values. Terminal values serve as grand

destinations and instrumental values serve as grand rules of conduct along the journey. Unrestrained by instrumental values, a person's behavior would likely lead to interpersonal problems that could lead to social sanctions and ultimately hamper efforts to achieve desired end states. Lacking terminal values, a person's behavior could appear aimless and would be relatively inefficient because the constant flux of immediate goals and desires would be the chief factor directing behavior. Desirable end-states, therefore, are pursued and achieved within the confines of internalized moral and social rules of conduct.

Boldero and Francis (2002) contend that values can be conceptually classified according to their role in behavior maintenance and change by determining whether they act as a standard maintaining current behavior (akin to instrumental values) or as a goal or *life task* (akin to terminal values) guiding behavior toward a desired end-state in the future. A person, for example, may value *being* physically attractive or *becoming* physically attractive. If a person believes that they are not attractive and that body mass is an indicator of physical attraction, then they may invoke a goal-like value to *become* physically attractive and weight loss/gain may become a more specific goal associated with this value. Conversely, if a person believes that they are attractive presently and that their body mass is an indicator of their physical attraction, then they may invoke a standard-like value to *remain* or *be* physically attractive and weight *maintenance* may become a more specific goal associated with the maintenance of this contemporaneous value.

Prior conceptualizations of the value construct (Rokeach, 1973) support this distinction between standards versus goals. Boldero and Francis (2002) add to this

distinction, however, by suggesting that humans maintain a value system that may be employed in both a process- and a goal-oriented fashion. Hence, values can be employed in a flexible fashion with respect to the temporal dimension and the categories are, therefore, not mutually exclusive as in previous classification schemes (e.g., Rokeach, 1973). The classification model forwarded by Boldero and Francis (2002) hinges, then, on the person's orientation toward time, an orientation that constantly shifts between the past, present, and future and the classification does not treat a particular value like honesty as either a standard or a goal but as a value that can act as a standard, a goal, or both simultaneously.

This issue is central to this study for two reasons. First, values associated with part-time work are presumed to guide present part-time work experiences during adolescence. Second, part-time work values are believed to be highly, but not perfectly, associated with career-oriented values because the former are believed to represent a standard-oriented reflection of the value system and the latter a goal-oriented manifestation of the same value system. In other words, adolescents' current values associated with part-time work and their work values associated with their anticipated career are not presumed to be two completely compartmentalized value systems. On the contrary, these process- and outcome-oriented values are believed to be reflections of one rather than two value systems; therefore, the predicted association between a goal-oriented value and its outcome-oriented value analog is presumed to be statistically significant and more importantly, statistically meaningful.

Boldero and Francis (2002) also suggest that the affective outcomes associated with value and status discrepancies will vary depending upon whether the focal value is

employed in a process- or outcome-oriented fashion. An undesirable discrepancy between a person's standard and their current behavior or state is predicted to produce negative affect that increases proportionally with the size of the discrepancy, while an undesirable discrepancy between current functioning and a goal-oriented value does not necessarily lead to negative affect. Boldero and Francis (2002) argue that goal setting generally leads to positive affect, and by necessity, goal setting involves the creation of a discrepancy between a person's current and desired status. In terms of the relationship between goal setting and negative affect, rate of progress toward a goal, rather than the absolute size of the discrepancy between the current and desired state, is presumed to be positively associated with affect. An increasing rate of progress is assumed to be associated with increasing positive affect and/or decreasing negative affect (Boldero & Francis, 2002). Returning to the body mass example underscores the intuitive validity of the affective aspect of this model. If body mass is a concrete indicator of a person's value to *be/remain* physically attractive (assuming that the person does not subscribe to the unhealthy belief that one can never be too thin), then monitoring and minimizing deviations between this standard and a person's current weight would be the predominant pattern and deviations could lead to negative feelings like guilt and shame. Conversely, if a person values *becoming* physically attractive and believes that they are overweight, then committing to a weight loss goal may represent a step toward their outcome-oriented value and an increased rate in his/her weight reduction is likely to yield increasing positive affect like pride and joy.

In sum, behavior that serves to reduce discrepancies between a current state and a standard-oriented value associated with present functioning is presumed to be motivated

by a person's desire to maintain *consistency* or *equilibrium*. Whatever the concept label (e.g., consistency, convergence, discrepancy, or equilibrium), this mechanism has received widespread support within the values (Feather, 1990) and economic (Herrnstein, 1993) literatures. Conversely, behaviors aimed at achieving a goal-oriented value situated in the future (e.g., a career that affords economic security) is motivated by an increasing *rate of progress* toward reducing the discrepancy between a person's current state (e.g., student) and his/her desired state in the future (e.g., an employee in an economically secure job/company).

The value classification model forwarded by Boldero and Francis (2002) differs from Rokeach's terminal versus instrumental classification in at least three ways. First, Boldero and Francis (2002) asserted that the affective response associated with a discrepancy between current functioning and a value is qualitatively different depending upon whether the value is currently acting as a standard or a goal. As discussed above, the magnitude of the discrepancy between current functioning and a standard is presumed to be positively associated with negative affect while an increasing rate of discrepancy reduction between ongoing functioning and a desired end state is presumed to be positively associated with positive affect. Much like standards, Rokeach (1973) suggested that the discrepancy between current functioning and instrumental values is positively associated with negative affect, but contrary to the affective prediction associated with goal-related values, Rokeach (1973) offered no association between affect and the discrepancy between terminal values and ongoing functioning. According to Rokeach (1973), instrumental values are a more direct reflection of the self; hence discrepancies between current functioning and instrumental values represent a threat to

the self concept and this threat is experienced as a negative affective response like guilt and shame. Terminal values, on the other hand, were presumed to be grand outcomes, thus discrepancies are expected and do not necessarily yield an affective response.

Second, Rokeach (1973) asserted that instrumental and terminal values represent two mutually exclusive categories whereas Boldero and Francis (2002) suggest that a value may be employed as both a standard and a goal depending on its application with respect to time. A goal-oriented value, once achieved, may become a standard-oriented value and a standard may become a renewed goal. Returning to the weight loss example, once a person believes that s/he has satisfied the goal-oriented value of becoming physically attractive, then the value may be employed as a standard-oriented value and weight maintenance may be a concrete indicator informing the person's proximity to his or her new physical attraction standard. On the other hand, a standard-oriented value may become a goal-oriented value. If a person believes that s/he was physically attractive at some time in the past, believed that body mass was an indicator of physical attraction at that time, and at that time used a system of standards to maintain their weight, then in the present moment, a person may employ this previous set of standards as a new set of goals all in pursuit of his/her value for weight loss physical attraction. The distinction forwarded by Boldero and Francis (2002) appears to be more consistent with developmental thinking in this case because it employs a person's temporal relationship to their values as a means of demonstrating how the application of a value can change across time in response to developmental processes.

Third, Boldero and Francis (2002) center their discussion on a change in current functioning as a means of aligning current behavior with standards and goals. An

alternative means of reducing these discrepancies could be to change the value (i.e., a standard or goal) in order to become more aligned with current functioning and contextual contingencies. Unlike Boldero and Francis (2002), Rokeach (1973) provides specific theoretical value-change mechanisms that center on perceived discrepancies between a person's self concept and their values as a means of changing values to align with current functioning and circumstances whereas Boldero and Francis (2002) center their discussion on behavior changes and situational contingency change.

Rokeach (1973) employed a sophisticated strategy to assess values and behaviors and found, upon confronting college students with discrepancies between their values and behaviors or their values and the values of fictitious peers⁵ (presumably inducing a conscious discrepancy), that college students modified their values and/or their behaviors to become more consistent with one another or more consistent with fictitious admirable peers. This research suggests that perceived discrepancies may yield both rational and intentional value-based and behavioral changes toward discrepancy reduction. This aspect of Rokeach's (1973) model of value change and development is consistent with the presumption that humans can engage in rational and deliberate modifications to their value system supporting rational choice theory (Boudon, 2001) and action theory (Oppenheimer, 1991a, 1991b). Subsequent research supports the intentional aspects of value change but questions the rational aspects of Rokeach's (1973) model, RCT, and action theory.

Waller (1994) tested the possibility that Rokeach's (1973) method of presenting fictitious data concerning the values of peers induced the desire to conform (e.g., a

⁵ Participants were confronted with fictitious data that suggested that their values were discrepant from their peers attending the same college.

peripheral processing style) rather than a motivation to reduce value discrepancies through a process of rational and deliberate cognitive negotiation (e.g., a central processing style). Waller (1994) argued that a people's need for cognition⁶ is associated with their means of resolving psychological conflict. Presumably, people who exhibit a decreased need for cognition tend to be more willing to conform to societal norms in a wholesale fashion when confronted with self versus peers discrepancies while those who exhibit an increased need for cognition tend to employ a more complex cognitive strategy that involves a negotiation more akin to the rational and deliberate aspects of rational choice and action theory. Waller (1994) replicated Rokeach's (1973) method of presenting fictitious data concerning the values of peers and predicted that the need for cognition would predict the magnitude of any subsequent value change. Waller (1994) found that the need for cognition did not predict value change and that value change was statistically significant for both the high and low need for cognition groups. Waller (1994) conducted a follow-up study and found that the lower cognitive need group appeared to be more influenced by the fictitious data and to employ less cognitive negotiation (e.g., a peripheral processing style) while the higher cognitive need group appeared to be less influenced by the fictitious data and to employ more cognitive negotiation (e.g., a central processing style).

The sum of Waller's (1994) findings is consistent with the presumption that perceived value discrepancies tend to result in deliberate discrepancy reduction efforts. These results, however, call into question the universal assumption within rational choice theory that people employ a rational central processing style (Schulenberg et al., 1993)

⁶ Defined by Cacioppo, Petty, and Kao (1984, p. 306) as the "tendency to engage in and enjoy effortful cognitive endeavors" (as cited in Waller, 1994).

and suggest a bit of circular reasoning, namely that the rational cognitive assumption may be more or less appropriate given a person's tendency to employ a rational cognitive style as opposed to a wholesale adoption of an alternate value when confronted with value discrepancies. Although this aspect of the universal mechanism is questioned by these findings, as the data demonstrate the magnitude of the outcome (i.e., discrepancy reduction) may remain equal across strategies because humans may either adopt a rational cognitive strategy or a wholesale norm adoption strategy to resolve perceived discrepancies.

A Proposed Developmental-Contextual Model and Associated Mechanisms for Value System Development

According to developmental contextualism, people are partly defined by the hierarchical array of contexts they occupy and a context is partly defined by the people occupying its confines, hence the unit of analysis within the developmental contextual meta-model is the person-within-their context (Vondracek & Porfeli, 2002a). Moreover, this framework asserts that any change to any aspect of the critical unit of analysis represents, by definition, a change to both the person and the context. Such a theoretical formulation is consistent with theory and research suggesting that the societal context dictates the scope of the value system (i.e., what can be valued) and guides, but does not dictate, the relative salience of various aspects of the value system for each of its inhabitants (Barth, 1993; Brown & Crace, 1996; Hechter, 1993) and for subgroups occupying particular social roles or sub-contexts (Brown & Crace, 1996). Hagstrom and Gamberale (1995), for example, support the conclusion that large-scale changes in the nature and demands of work in post-industrial societies have yielded population-level

shifts increasing the salience of postmaterialistic values (e.g., expressive, mastery-oriented, and intrinsic values) and decreasing the salience of materialistic values (e.g., income and prestige-based values).

The emerging developmental-contextual model of value development extends this contextual perspective by suggesting that a person-level change may effect contextual changes that in turn change the scope and relative salience of the value system for the inhabitants of the context. Therefore, this developmental-contextual model of value development permits personal agency within the confines of a highly influential contextual space and permits both person- and context-level change that presumably occurs in a dynamically interactive fashion across time.

Combining this developmental-contextual theory of values with the constructs of developmental value change and congruence discussed above suggests that *developmental* value change can be the product of changes that begin at the level of the context and/or the person, but either class of change will theoretically lead to greater *stability* and *cohesion* (i.e., increased union or harmony within the system as indicated by stronger correlations) and lesser *discrepancies* between the various constituent, yet interrelated, parts of the person-within-their-context unit. *Stability*, within the context of a discussion of values, is an absence of change in the salience of a value and may be indicated by the within-person level change (e.g., the adjacent wave difference score (T2 – T1)) or the interindividual change (e.g., adjacent wave correlations) in the salience of a particular value over time. *Cohesion* in the present discussion is defined as the degree of association, union, or harmony (e.g., correlation in the conceptual and statistical sense) between conceptually-related elements of the person-within context unit and can include,

for example, cohesion between elements of the value system or an element of the value system and an element of contextual experience. Cohesion may be indicated by the linear association between conceptually related elements (e.g., the correlation between a value as applied in a goal- and a standard-oriented fashion). A *discrepancy* is defined presently as the intraindividual difference between various elements of the person-within-context unit and can include the difference between the salience of a particular human value relative to another conceptually related value (e.g., the difference between a goal-oriented value and its standard oriented value analogue) or the difference between the relative salience of a particular value (e.g., monetary gain) and related aspects of contextual experience (e.g., income).

An adolescent may, for example, take a part-time job that involves much more customer service than his/her previous job. This experiential change may lead to a value system change. The adolescent may increase the salience of interpersonal work values thus reducing the discrepancy between his/her interpersonal values and present experience. This change in work experience may lead the adolescent to develop improved interpersonal skills that, in turn, reinforce the change in the interpersonal value thereby reducing the discrepancy and increasing the cohesion between a value and the behavioral repertoire. If the adolescent remains in their present job, then this experiential stability coupled with a plateau in interpersonal skill development may yield increased intraindividual and interindividual stability in his/her interpersonal values, relatively small discrepancies between values and ongoing work experience and increased cohesion between values, skills and experience.

Change toward increased cohesion and stability and decreased discrepancies between various vocationally relevant factors would be classified as developmental change while changes that result in no organizational change or in disorganization would be considered non-developmental change. Such a model does not preclude the possibility that a *purely* non-developmental change (yielding increased disorganization or no organizational change in the person-within-context unit) in some aspect of human functioning may lead to other changes, including developmental ones. For example, a value change toward disorganization relative to other constituent aspects of the person-within-context unit may prompt cascading alterations to other values, interests, contextual contingencies, and aspirations in order to preserve the newly changed (and probably newly cherished) value and concurrently increase consistency within the person-within-context unit and within the value system. The modifications subsequent to the initial change would be defined as developmental changes.

Value Development as a Product of Dynamic Process

In the face of a developing self-conception, adolescents may more or less deliberately change their values, whether they be standards or goals, to align with their image of who they are becoming (Rokeach, 1973). Likewise, as age-graded roles change through this period, adolescents may feel more or less compelled to adjust the content of or the way they employ their value system to accommodate new capabilities and contextual contingencies (Boldero & Francis, 2002). A fundamental question is, then, how can we identify and distinguish between value development and change occurring within an age-graded context?

A classical distinction between change and development (Wohlwill, 1973) would suggest that value development is a special case of value change. Ford (1994) asserts that developmental change has become a superordinate construct encompassing change associated with growth, maturation, learning, and processes of decline. Ford (1994) defines *growth* as physical changes in mass, *maturation* as the differentiation, integration, and elaboration of physical and cognitive structures and behavioral capabilities and *learning* as “relatively enduring” (p. 7) and incremental change. Whereas growth and maturation are presumed to be heavily influenced by genetic and other biological factors, learning is presumed to be more influenced by experience. Applying Wohlwill’s (1973) distinction between change and development and Ford’s (1994) classification of developmental change to the values construct would suggest that value development is a special case of value change that is theoretically most consistent with learning and, to a lesser extent, maturational change.

Within the action theory model (i.e., an organismic model based in the psychological tradition) of human functioning (Oppenheimer, 1991a, 1991b), a lack of congruence between any combination of values, actions, and desired outcomes will generate a state of disequilibrium that is experienced as a *need*. Needs presumably motivate an adaptive strategy involving modifications to the person and the environment in order to satisfy the need (i.e., regain a sense of equilibrium/congruence between values, actions, and desired outcomes). In sum, value discrepancies prompt a response (e.g., behaviors) because equilibrium is the preferred state of the value system.

Action theory (Oppenheimer, 1991a, 1991b), rational choice theory (Boudon, 2001) and the life-span theory of control (Heckhausen & Schulz, 1995) agree in their

presumption that humans plan and execute behaviors with an aim toward maintaining a balance between values, action, and desired outcomes/consequences. Action theory presumes that value system development is indicated by an increased specificity of the values contained within the system, increased stability of each value, and increased coordination between the value system and action (Oppenheimer, 1991b) and is therefore akin to the definition of maturation presented by Ford (1994). The vocational literature tends to adopt a model that is consistent with this developmental and, more specifically, maturational aspect of action theory. Increased coordination and congruence (i.e., organization) between vocational behavior and values, interests, and abilities is traditionally an indicator of a developmental change within the career development literature, often termed vocational maturity, while decreased coordination and congruence is typically considered change that is not developmental in nature (Holland, 1997; Krumboltz, Mitchell, & Jones, 1976; Lent & Brown, 1996; Super, Savickas, & Super, 1996; Vondracek et al., 1986).

Ford (1994) stated that the relationship between values and action is indirect and “a function of multiple and simultaneously operating goals and regulatory criteria, one’s perception and interpretation of the constraining and facilitating conditions of the current situation, one’s behavioral repertoire, one’s self perceptions relevant to that situation, one’s estimates of the intents and probable actions of others, and the affects one is experiencing at the time (p. 493).” The relationship between values and behaviors is complex and this complexity increases exponentially to the degree that values, behaviors, and other internal and external factors change and develop. As changing personal needs and desires interact with values and ever-changing contextual affordances and barriers

(perceived, as well as objective contingencies), personal motives and immediate goals presumably shift to maximize a person's opportunities for success and minimize the pitfalls that may lead to failure in the pursuit of their needs and desires. In short, learning is an aspect of developmental change, experience prompts learning, and the developmental course and nature of values appears to be most akin to developmental change of the learning sort (Ford, 1994).

The preceding value construct definitions and the immediately preceding description of the theoretical mechanism linking values and behavior reveal that the theoretical relationship between value, behavioral, and contextual contingency change is based upon a few key assumptions. First, and consistent with Rokeach (1973), the theoretical relationship between behaviors and values is dynamic; values are presumed to *affect* and to be *affected by* behaviors, plans, and goals. Just as values can serve to select and modify behaviors, the outcomes of action can be employed to modify values. This notion is underscored by Feather's (1982 (as cited in Feather, 1990)) definition of human values as "organized summaries of experience that capture the focal, abstracted qualities of past encounters" (p. 159).

Second, and consistent with Boldero and Francis (2002), values can be employed to guide the behavior associated with the act of meeting contextual task demands and/or evaluate the outcomes related to the successful and unsuccessful completion of these tasks. Paid work, for example, generally involves a set of required tasks and a compensation schedule for the successful completion of these required tasks. Compensation can take many forms like income, improved social relationships, promotion, respect, and job stability. A person may value the act of mastering a work

task or being deemed a master of that task or a person may value the process of becoming wealthy or being a wealthy person. Therefore, a value may be process- or outcome-oriented, thereby acting as the set point or standard of a negative feedback loop (e.g., the defined temperature on a thermostat) or as an essential criterion or finish line marking the achievement of a goal.

Third, a value can be simultaneously or sequentially employed in both a process- and outcome-oriented fashion and these applications may be more or less *discrepant* with one another, motives, and other more temporally-labile goals and preferences and these applications may reflect more or less *cohesiveness*. Given that a particular value may be applied to guide present- and future-oriented behavior and a person's goals may be discrepant with present circumstances, a process-oriented value (i.e., a value-oriented standard) may be discrepant with its outcome-oriented analog (i.e., a standard-oriented goal). By extension, values may be more or less discrepant with current goals and motives. When values, goals, and motives are highly consistent and part of a highly cohesive network, humans (and those who study them) may treat them as virtually interchangeable (Epstein, 1989), but this does not necessarily mean that they are the same. A person, for example, may value "honesty" as a process-oriented value or may aspire to become an "honest person" as a grand outcome-oriented value, but he or she may elect or feel compelled to employ deception to achieve a more immediate work goal, because being honest may be incongruent with current contextual contingencies. In business negotiations, one's proclaimed *final offer* may, in fact, be something less than final, but if a person's employer expects the most lucrative deal possible, then a person may operate contrary to their values to achieve a more proximal goal or he/she may

modify their values to accommodate his/her work demands and tasks. Although many people may not perceive or even be concerned with such a discrepancy between their work demands and values, others may make career choices and changes as a means of avoiding or resolving such discrepancies.

Fourth, humans learn cognitive strategies and can and generally do employ them in a *deliberate* and *rational* (e.g., rational choice theory) fashion, therefore yielding the dynamic relationship in which values guide action and the outcomes of action can sustain or prompt a change in values. This developmental learning process is presumably demonstrated when people employ their value system to select various goals and enact various behavioral strategies and subsequently employ the outcomes of action to modify the value system (Boudon, 2001; Ford, 1994).

Finally, *stability*, *discrepancy reduction*, and *cohesion* are presumed to be fundamental tendencies of a functional human system (i.e., mechanisms) that drive the relationship between values, behaviors, and contextual contingencies, and they are significant indicators of value development (e.g., Ford, 1994; Kalleberg, 1977; Rokeach, 1973). Evaluating these mechanisms can involve the comparison of two or more values, of the standard- and goal-oriented analogue of one value, of a value or its application and an associated behavior, of a value or its application and an environmental contingency, or any combination thereof.

Rokeach (1973) employed an experimental design to manipulate the perceived difference between a person's values and attitudes. The resulting data suggested that participants who perceived larger discrepancies between different classes of values and between attitudes and associated values experienced greater dissatisfaction and greater

value change toward reducing the discrepancy over time than did those participants who exhibited smaller discrepancies. These results suggest that greater perceived discrepancies tend to lead to greater discrepancy reduction over time and they support the assertion that congruence is a common human aim.

Value-behavior consistency (i.e., no discrepancy) and congruence appear to be preferred human conditions that involve a process of engaging in personally desirable behaviors that meet contextual demands and lead to preferable and/or needed outcomes. In other words, a presumed human aim underlying value-behavior congruence is to engage in behaviors that are effective, preferable (i.e., in terms of a process-oriented values set point), and result in favorable outcomes (i.e., in terms of a goal-related criterion and outcome-oriented values end state). Thievery, for example, may be an effective means of acquiring preferred and/or needed outcomes but such behavior may be highly discrepant with one's values and therefore personally reprehensible; hence, thievery may be congruent with current contextual contingencies, certain outcome preferences and needs, and even a person's behavioral repertoire. This strategy may, however, be incongruent with one's process-oriented values acting as standards guiding and evaluating present functioning. Gainful employment is one alternative means of effectively achieving favorable outcomes in a way that may be less discrepant with one's value-oriented standards. Gainful employment may not be a perfect substitute for thievery because work obligations may conflict with other outcome-oriented values associated with, for example, romantic and/or filial relationships or leisure pursuits. Although work may not be a perfect means of achieving one's needs, given other

contextual contingencies (e.g., laws forbidding and consequences associated with thievery), gainful work is the most common strategy.

Continually engaging in repugnant, yet effective, behaviors (i.e., those behaviors that meet contextual demands and personal needs or preferences), preferable yet ineffective behaviors, or repugnant and ineffective behaviors will presumably yield negative affect and/or a failure to meet contextual demands and personal needs and desires. These unfavorable consequences should, in theory, prompt a change toward increased congruence between one's process-oriented values, those behaviors that effectively meet current contextual demands, and valued end-states.

Should a person identify that any combination of their values (e.g., process- or end state-oriented), behaviors, and contextual contingencies are incongruent and conclude that satisfactory congruence cannot be achieved, then s/he may more or less deliberately evaluate the mutability of all three to determine the most efficient way to achieve congruence through change (Rokeach, 1973). According to this model, the catalyst of behavioral change is, therefore, a perceived discrepancy between values and any combination of demands, rewards, and behaviors. Theoretically, values are presumed to be a trait-like aspect of the self-concept and fundamental psychological structures (e.g., self-concept or identity) are presumed to undergo gradual probabilistic epigenetic changes during the adolescent period relative to less central psychological structures (Schulenberg et al., 1988)⁷; therefore, a theoretically derived hierarchy of target selection follows where people are presumed to prefer contextual change to behavioral change and behavioral change to value system change. This hierarchy of preferences is, however,

⁷ Contrary to dominant theoretical formulations which subscribe to values as a trait-like quality, Schulenberg et al. (1988) employed a time-series data sampling approach and p-technique factor analysis to demonstrate that people exhibit variability in their expressed values over short periods of time.

independent of contextual opportunities and constraints that affect the likelihood of change efforts at the various levels (Kumka, 1985). A categorization of change efforts and precipitating circumstances is as follows.

1. **Change efforts can be directed toward environment contingencies.**

Behaviors can be directed to achieve a change in a person's environment as a means of modifying environmental contingencies to become less discrepant and more cohesive with current values and behavioral possibilities. In terms of contingencies, the target may become the task demand, the compensation schedule, or a combination of both. For example, a person may conclude that the environmental contingencies (i.e., behavioral requirements and/or reward structure) within their career field or work setting require a skill set that is inconsistent with their current behavioral repertoire and/or values. Given this identified inconsistency, environmental contingencies (i.e., behavioral requirements and/or reward structure) can become the target of change efforts: A person may negotiate with physical or social structures, persons, and/or groups dictating present task demands to modify their job tasks, the salience of such tasks, or aspects of the compensation schedule to arrive at a set of contingencies that is more congruent with one's values and the strengths and weaknesses of his/her behavioral repertoire. A person may conclude that contextual contingencies are not sufficiently mutable. In this case, migration to an alternative context that is more consistent with and supportive of a person's range of behavioral possibilities and values may be the most efficient option.

2. **Change efforts can be directed toward a person's behavioral repertoire.**

Behaviors can be directed to achieve a change in a person's behavioral repertoire as a means of developing effective behaviors that are less discrepant and more congruent (e.g., increased cohesion) with current values and environmental contingencies when values and contingencies are deemed to be relatively difficult to change. For example, a person may devote behaviors and resources toward learning new skills at a trade school as a means of expanding their occupational behavioral repertoire in ways that are more consistent with his/her values (i.e., behavior-value congruence), more effectively meet task demands (i.e., behavior-task demand congruence), or improve the chances of acquiring valued outcomes (i.e., behavior-task outcome congruence) or any combination of all three. A person may value the social demands associated with a job in retail, but may not be satisfied with the financial rewards. In this case, the person may aim to develop requisite management skills to maintain the social task demands while increasing the chances of greater financial compensation.

3. **Change efforts can be directed toward the value system.** Cognitions and behaviors can be employed as a means of modifying values to be more consistent and cohesive with current behavioral possibilities, environmental contingencies, and other aspects of the values system. If an aspect of the value system is perceived to be incongruent or at odds with current contextual contingencies and/or one's behaviors and behavioral and contextual change (e.g., modification or migration) is deemed to be difficult or impossible, then

a person may consciously or unconsciously direct change efforts toward aspects of the value system that lead to change in the salience of particular values or the addition or deletion of values that serve to increase the congruence between values, behaviors, and contextual contingencies. Kumka (1985), for example, found in a 10 year longitudinal study of adult males (during their 20's) that the men who faced an inconsistency between their values and their occupations were more than twice as likely to change their values to become consistent with their occupations than vice versa. The sample from this study was drawn from a population of college freshman and is therefore quite selective. The results of this study suggest that certain classes of the occupational context may be more difficult to change (e.g., through change to the chosen occupational context or a change in occupational choice) than work values through the transition from school to work. Men who have pursued a four-year post-secondary education focused upon a particular career and who move into professional and managerial positions may find it easier to modify their values than their career choices or circumstances within their chosen career.

4. **Change efforts can be directed simultaneously and/or sequentially toward a person's environmental contingencies, behavioral repertoire and/or value system.** Perhaps the most common strategy involves combinations of relatively smaller simultaneous and/or sequential changes to a person's environmental contingencies, behavioral repertoire and value system. A person may identify, within a circumscribed time period,

incongruent values within the value system, an inconsistency in the way s/he applies a value with respect to time (i.e., a discrepancy between a process- and outcome-oriented application of a particular value), and discrepancies between his/her value system, environmental contingencies, and behavioral repertoire. Although a large modification to one aspect of the equation could possibly resolve the conflict, major changes to, for example, the value system are not preferable or likely given their theoretical link to the self concept. Thus, smaller and incremental changes to all three seem more theoretically probable and preferable. Furthermore, the link between values and the self-concept suggests that changes to the environment would be preferred over changes to the self and changes to the behavioral repertoire would be preferred over changes to the value system. As discussed above, a person's goal-oriented value to become an honest person may be inconsistent with their present standard-oriented value to be deceptive in their workplace practices. Such value system application discrepancies may be resolved by engaging in a complex combination of incremental and sequential change efforts directed at a person's value system, behavioral repertoire, and/or environmental contingencies as a means of maintaining relative stability to critical aspects of one's life like job security for example, while making slight changes to the demands of one's job, the way job demands are achieved, and one's values associated with honesty.

Values, therefore, can serve to modify behaviors and related aspects of the context, and conversely, behaviors, plans, contextual contingencies and their related outcomes can

serve to modify existing values and contextual contingencies (e.g., Brown & Crace, 1996; Kumka, 1985). At the level of the person, the product of this bi-directional evaluation can lead to value system changes and/or to changes in the range and nature of effective and desirable behaviors, both of which act as the respective editor and source of current and future behaviors, plans, values and their standard- and goal-oriented analogues. At the level of the context, this dynamic relationship can lead to changes in task demands, task outcomes, or, at the extreme, contextual migration. In practice, gradual and simultaneous and/or sequential changes to person- and context-level aspects of the equation seem most probable, and changes to the context are preferred over those change efforts directed at the person-level functions, given the theoretical link between values and the self concept. The discovery and reduction of inconsistencies between different classes of values and between values and related behaviors and environmental contingencies seems endemic to adolescence when self concepts are taking shape and shifting to align with (i.e., become consistent with) emerging and stabilizing values and aspirations, expectations, and demands associated with adulthood roles (Super, 1990).

Brown (1995; Brown & Crace, 1996) has contributed to the career literature by forwarding the values-based, holistic model, which is derived from several propositions concerning the values construct and its relevance to human functioning. The propositions are derived from established theoretical sources within the broader values literature (e.g., Feather, 1992; Rokeach, 1973) and a range of empirical findings. Brown (1996) diverged from the weight of values research by asserting that the source of values is best characterized as a product of gene-environment interactions and pointed to previous research suggesting that genes explain approximately 40% of the variance in values.

Brown (1996) asserted that the value system behaves as a *dynamic cognitive chromosome* and suggested that the mechanism connecting values to behavior and perception is akin to the mechanism involved in gene expression.

More consistent with the weight of the values literature and the model employed in this study, Brown (1996) suggested that a value changes and develops in response to transactions between the person and the environment that variably reinforce or suppress a value; therefore, values are partly predicted by contextual contingencies. Value reinforcement and suppression is tied to the perceived congruence between a value and a behavior, and a value and an outcome and increased congruence is presumed to yield increased personal satisfaction. Furthermore, development is presumed to be indicated by an increased ability to deliberately access and verbalize one's values and by an increased stability (with respect to the temporal dimension) in the value system. These two elements are subsumed under the term values crystallization. Finally, and most relevant to a discussion of work values, the importance of a particular role (e.g., the worker role) is partly determined by the (anticipated or experienced) opportunity to remain consistent with (as in a standard-oriented value) or satisfy (as in a goal-oriented value) salient values.

Although Brown (1995; Brown & Crace, 1996) has distinguished the value-based holistic model from the life-span life-space theory forwarded by Super (e.g., Super et al., 1996) by arguing that values were not considered a central element in the latter theory, Super (e.g., 1957; 1990; 1992; 1995) has asserted throughout his career that work values represent a critical element of career choice and development processes alongside interests, needs, and the self-concept and has conducted a great deal of research (Super,

1962, 1973, 1995; Super & Mowry, 1962; Super & Sverko, 1995) to demonstrate this assertion. Super developed a widely used measure of work values (Super, 1973; Super, Osborne, Walsh, & Brown, 1992) and asserted and found that values are distinct from interests and needs (Super, 1957, 1995), conform to a particular conceptual structure (Super, 1962; Super & Hendrix, 1968), and play a critical role in occupational choice, stability and satisfaction (Super, 1995). Furthermore, Super directed an international research effort with teams of scholars that confirmed many of his assertions and findings related to the influence of the social structure on work values (Super & Sverko, 1995).

In summary, several aspects of Brown's values-based, holistic model (Brown, 1995, 1996; Brown & Crace, 1996) are consistent with the bulk of the values research and the model developed and employed in the present study (e.g., crystallization) while other aspects (e.g., the value system as a dynamic cognitive chromosome) are novel, have not been supported by empirical evidence, and have not been adopted by the field. The inconsistencies, although relevant to the broader values literature, are not directly relevant to the present study.

Micro-Theoretical and Empirical Foundation

Theory and research demonstrate that work values (a) represent a central aspect of vocational development (Brown & Crace, 1996; Super, 1990, 1995), (b) influence and are influenced by vocational aspirations and choices (Huntley & Davis, 1983; Schwarzweller, 1960; Singer & Steffle, 1954; Underhill, 1966; Young, 1984), (c) are influenced by opportunities, barriers, and more generally, experiences in the work and educational context (O'Brien, Feather, & Kabanoff, 1994), and (d) become a salient aspect of vocational development during the adolescent years (Super, 1995).

Although a great deal of theoretical work has been published on the subject of values, many gaps on the empirical side of the literature remain. Little work has been done, for example, to examine if and to what extent adolescents' work values play a part in the selection and pursuit of part-time work opportunities and how part-time work experience influences adolescents' work values (Mortimer, Pimentel, Ryu, Nash, & Lee, 1996). Research has, however, demonstrated that part-time work has a significant impact on subsequent behavior and development across a variety of life domains (Bachman & Schulenberg, 1993; Skorikov & Vondracek, 1997; Steinberg & Dornbusch, 1991). Moreover, prevailing theory suggests that values become increasingly stable during the adolescent and early adult years (Kluckhohn, 1951; Krau, 1987; Rokeach, 1973; Super, 1995), yet little longitudinal research has been conducted to verify this core assumption and, in fact, some research demonstrates that young adults exhibit significant variability in their expressed values (Schulenberg et al., 1988) while other research suggests relative stability through the transition to adulthood (Madill et al., 2000).

Work Values and Work Experiences

The Impact of Work Values on Work Experiences

A substantial body of research has examined if and to what extent values predict occupational aspirations (Arnold, 1993; Brown, 2002; Helwig, Hiatt, & Vidales, 1989; Krumboltz, Blando, Kim, & Reikowski, 1994; Prince, 1960; Schwarzweller, 1960; Singer & Steffire, 1954; Young, 1984) and many fewer studies have examined the relationship between work values and career choices (Judge & Bretz, 1992). The net of these two

classes of research suggests that work values are associated with occupational aspirations and the typical inference is that values influence career choices.⁸

No studies have been located that examined if and to what extent adolescents shape their work experiences within a particular job setting on the basis of their work values. Stone and Mortimer (1998) suggested that adolescents may select their part-time work experiences on the basis of their values but believe that the causal link from work values to work experiences may be weakened by the restricted range of jobs available to adolescents. Furthermore, jobs held by adolescents (e.g., restaurant and retail sectors) tend to offer little variability in job tasks; hence an adolescents' ability to tailor their job experience to suit their values may be seriously limited. These assertions suggest that the causal link between values and part-time work choices and experience may be constrained by the occupational context of adolescent life.

The Impact of Work Experience on Work Values

A moderate amount of research has demonstrated that work experience influences values (Johnson, 1999, 2001b; Mortimer & Lorence, 1979). A much smaller body of research has examined and supported the assertion that part-time work influences the development of work values during adolescence (Mortimer, Pimentel et al., 1996), while other research has found no association between part-time work experience and values change (Cotton et al., 1997).

Other research has examined the relative impact of work and leisure experiences on work values during the transition out of high school (O'Brien et al., 1994). Adjusting for prior differences on adjustment, academic potential, and social class, the results indicated that young adults who were employed endorsed protestant work ethic values (i.e.,

⁸ Only a few studies suggest no relationship between values and career aspirations (Segal, 1992)

industriousness, asceticism, and individualism) to a greater extent than those who were unemployed and neither the main effect of leisure activity quality nor the interaction between being employed and leisure activity quality significantly predicted protestant work ethic values. O'Brien et al. (1994) suggested that employment may promote protestant work ethic values because the worker role is socially valued and socially valued roles are more likely to influence a young adult's emerging and solidifying identity, which is presumably associated with values.

The Dynamic Relationship between Work Experience and Values

A line of research emerged during the 1970's after researchers like Kohn (1969) demonstrated that a person's values and the contextual demands and opportunities present in their work context may be dynamically linked. Subsequent to this research, a growing body of literature suggests that people select and modify work contexts to suit their values and the opportunity and demand structure of work contexts serve to shape a person's work values not only during adulthood (Kohn & Schooler, 1973, 1983; Mortimer & Lorence, 1979), but also during the transition to adulthood (Johnson, 2001a, 2001b, 2002) and during the adolescent years (Mortimer, Pimentel et al., 1996).

Kohn and Schooler (1973; 1983) examined the general theory (Kohn, 1969) that aspects of the work setting affect the person and the person affects the work setting. Kohn and Schooler (1973) found evidence to support this general hypothesis but also found that, in general, aspects of the work setting had more of an influence on the person than the person had on the work setting. In other words, although people exhibit some personal agency by selecting work environments and opportunities within these environments consistent with aspects of their personality, this personal agency occurs

within the bounds of the work environment and this environment wields considerably more influence over the person than the person holds sway over the context. These findings were subsequently supported by a program of research spanning more than two decades (e.g., Kohn & Schooler, 1983; Kohn & Slomczynski, 1990)

Kalleberg (1977) employed a nationally representative sample of the civilian adult labor force ($n = 1,496$) to examine the degree to which work values and rewards (i.e., experiences)⁹ independently predict job satisfaction.¹⁰ This model assumes that values and rewards represent two distinct constructs that may both independently predict job satisfaction in a linear manner. Kalleberg (1977) found that rewards were positively associated and values were generally negatively associated with satisfaction. Moreover, rewards provided greater independent prediction than values with the standardized regression coefficients for the rewards constructs being in the 0.3 - 0.4 range and the coefficients for the values constructs ranging in the 0.02 - 0.05 range but practically being almost zero. The interaction terms created between various work rewards and values did not significantly predict work satisfaction. Kalleberg (1977) concluded that work values do not interact with perceived rewards to meaningfully affect job satisfaction and the rewards associated with work far surpassed work values in their ability to predict work satisfaction. In other words, employed people who reported more work rewards and/or a lower valuation for work values tended to report being more satisfied with their current job than those who reported fewer work rewards and exhibited a greater valuation for work rewards, but rewards were the primary determinant of job satisfaction.

⁹ The term “experience” is used in place of rewards in the present study to avoid imposing an evaluative label onto items that may or may not be perceived as rewarding by all people.

¹⁰ See the measurement section of this study for more information concerning the measurement scheme employed by Kalleberg (1977).

Kalleberg (1977) employed these findings to argue against efforts to rely upon the difference between work values and rewards to predict job satisfaction. Specifically, Kalleberg (1977) asserted that the discrepancy approach essentially treats values and rewards as being relatively equivalent predictors of job satisfaction when the data presented suggested that the work reward construct is the more powerful predictor of job satisfaction; therefore, any model failing to incorporate this finding may be making an unreasonable assumption.

Although the present study does not aim to assess satisfaction directly, satisfaction is a presumed and fundamental element of the proposed theoretical orientation. Specifically, congruence between values and behaviors or the outcomes of behaviors is presumed to be satisfying while incongruence is not, hence the theory assumes an inverse relationship between general satisfaction and the value-behavior or value-outcome discrepancy.

Kalleberg (1977) clearly criticized the discrepancy model, but he provided little explanation concerning the process by which values and perceived rewards contribute to job satisfaction over time other than to suggest that the perceived rewards/experience construct employed in the study may represent a psychological interaction of values and *objective* work characteristics. Kalleberg (1977) speculated that the value system may sensitize a person to notice more and/or make more judgments concerning certain objective characteristics (which is presumably another concept label for *objective rewards*) over others and this sensitization process presumably yields perceived rewards/experience. In other words, *objective rewards* and the *value system* presumably interact to yield *perceived rewards*. Kalleberg (1977) did not explain, however, how

such a process would lead a person to increase or decrease their estimate of the availability of a particular reward within their work setting but the primary inference is that values affect the perception of rewards/experience.

Research suggests, for example, that values may influence a college students' perception of the salient roles within their target profession (Olive, 1964). In contrast, the prevailing theoretical model presented in this study suggests that values and perceived experiences reciprocally influence one another over time. The latter model not only suggests that, to a certain extent, perceived experiences are the product of values, but also that this link is primarily the result of a behavioral selection process rather than a psychological process involving the influence of values on perception. Future research could examine this difference by employing an objective assessment of an experience/reward, such as income, to determine if and to what extent a financial work value and income interact to predict a person's evaluation of their income. Empirical evidence that precedes Kalleberg's (1977) assertions suggests that "it is improbable that systematic biases [springing from needs and values] in respondents' reports about their jobs contribute much to explaining the relationships between occupational conditions and psychological functioning" (Kohn & Schooler, 1973, p. 106).

Subsequent to Kalleberg's work, Kalleberg and Loscocco (1983) found that age was positively associated with job satisfaction. They suggested that older workers tend to be in higher quality and higher paying jobs and this tendency may explain the association between age and greater job satisfaction. Aside from this potential mechanism, they also argued that the association between age and job satisfaction (positive correlation) may be partly explained by value change that reduces the discrepancy between values and

experience. Their data demonstrated that job rewards and satisfaction tended to increase and the salience of intrinsic and financial work values tended to decrease with advancing age. Predicting job satisfaction with job rewards and work values, they also found a negative relationship between intrinsic values (most akin to mastery values in the present study) and job satisfaction and a positive relationship between job rewards and job satisfaction. The net of these associations suggests that as the discrepancy between work rewards and the salience of work values decreased with advancing age, job satisfaction increased. Kalleberg and Loscocco (1983) concluded that these age-based trends may reflect an adaptive process that increases the consistency between what people value in their work and what they may possibly gain from their work so as to optimize job satisfaction.

The present study employs a discrepancy model of value development on the grounds of a long and distinguished body of theoretical and empirical work suggesting its importance in the process of value development. A fundamental difference between the present study and Kalleberg's (1977) work is that Kalleberg aimed to demonstrate the relative, independent predictive power of work values and rewards/experience on job satisfaction with a cross-sectional design, while the present study aims to examine if and to what extent work values and perceived experiences are linked to one another across time and presumes that increased congruence will be associated with increased job satisfaction (although satisfaction is not directly assessed in the present study).

Based upon previous research suggesting that greater financial compensation predicted a greater valuation for extrinsic rewards (Mortimer & Lorence, 1979), Mortimer et al. (1996) extended this line of research by suggesting that values and

experience may be dynamically linked across time. In order to examine this assertion, Mortimer et al. (1996) employed a longitudinal sample of approximately 1000 adolescents to assess whether work experiences longitudinally predict intrinsic and extrinsic values and vice versa during the high school years. The present study employs the data set examined in the Mortimer et al. (1996) study and seeks to further explore the theoretically-derived assertion that work experiences and work values conform to a dynamic model across time; therefore, Mortimer's study will be discussed at some length.

Previous research and theory (e.g., Kohn & Schooler, 1983) suggesting that, for example, work experiences have an impact on personality factors (e.g., values) prompted Mortimer et al. (1996) to explore whether part-time work experiences influenced adolescents' career-oriented values and vice versa, controlling for academic achievement and known demographic influences on values like sex, race, and SES. The participants were 1000 adolescents recruited in the 9th grade and subsequently assessed annually for four years¹¹ when most were in the 12th grade. Mortimer et al. (1996) found that intrinsic and extrinsic values¹² did not differ for boys on the basis of whether or not they were employed across the 9th to 12th grades. In contrast, employed 9th and 12th grade girls tended to place a greater emphasis on their intrinsic career-oriented values. Employed 12th grade adolescents tended to place a greater emphasis on their intrinsic career-oriented values than did their unemployed age mates. These findings lead to the preliminary conclusion that employment status did not consistently predict values, but for girls part-time work experience was associated with having a higher intrinsic value orientation toward adult work.

¹¹ The study maintained 93% of the participants over the four years.

¹² Values associated with one's anticipated full-time job upon completing their education.

Further exploring the potential dynamic link between work experience and values, Mortimer et al. (1996) estimated a path model in which work experience¹³ was presumed to concurrently affect work values, work values were predicted to influence work experiences one year later, and lastly, the stability of work values across the two years was estimated. This general model was estimated three times in order to assess longitudinal trends from wave 1 to wave 2, from wave 2 to wave 3, and from wave 3 to wave 4. This three model estimation procedure was chosen over a single model approach including all waves of data because only a subset of the adolescents remained employed over the course of the four year period.

From these models emerged three categories of findings that are directly relevant to the present study. First, job skills gained in one's part-time job (an aspect of the larger work experience construct) significantly and positively predicted the salience of intrinsic career-oriented values one year later across all three models estimated (i.e., the longitudinal relationship held from wave 1 to wave 4). Second, intrinsic career-oriented values significantly and positively predicted job skills gained in one's part-time job from waves 2 to 3 and from waves 3 to 4, thus suggesting that adolescents may develop the capacity to employ their values to select particular part-time work experiences, a capacity that does not present itself until approximately the 10th grade. Finally, career-oriented intrinsic and extrinsic values exhibited increased cross-wave stability from wave 1 to wave 4. Combining the first two categories of findings supports the assertion that particular experiences may be dynamically linked to particular values; in this case the

¹³ Work experience was operationally defined by items describing a combination of job skills (e.g. items included "learn to get along with others", "learn skills useful in life", and "learn to take responsibility for your work"), an item concerning the opportunity to be helpful to others, an income evaluation item, and job stressors ("I have too much time to do everything well" and "my job requires that I work hard").

acquisition of job skills appears to be dynamically linked to intrinsic career-oriented values. The third finding supports the previously discussed assertion that value development is indicated by increasing value stability during the adolescent and young adult years.

Other research lends some support to these findings demonstrating a developmental trend. Wijting, Arnold, and Conrad (1977) employed a sample of students from grades 6, 9, 10, and 12 to examine the relationship between career-oriented work values and work experiences. The work experience items included part-time work experience questions and knowledge of their parents' occupations. Employing canonical correlation to ascertain the relationship between the set of work values items and the set of work experience items, Wijting et al. (1977) concluded that work values were only weakly associated with work experience across all four age groups, but the strength of the association increased with age. These two findings led Wijting et al. (1977) to conclude that the association between work experience values during the adolescent period is weak. The increasing magnitude of the association with increasing age, however, suggests that the link between work experience and the work value system may become stronger as the value system develops.

Johnson (2001a; 2001b; 2002; Johnson & Elder, 2002) has conducted a program of research that focuses on many of the issues examined in this study. As a point of distinction between this research and the present study, Johnson's research examined a longitudinal sample of people beginning in their senior year of high school who were assessed biennially until the age of 32-33 while the present study employs a longitudinal sample of high school students beginning in the ninth grade and ending four years later;

hence, this study examines work values during adolescence and Johnson's research focuses on the transition from school to work. Furthermore, Johnson's research focused exclusively on what is defined within the context of this study as career-oriented values while the present study aims to examine two sets of values, one associated with part-time work and the other related to anticipated career choices post high school. Despite these fundamental differences, the research questions and theoretical issues addressed by Johnson are centrally related to the present study.

Johnson (2001b) examined the fundamental assumption present throughout the values literature that value system development is indicated by increasing stability (i.e., crystallization). Johnson (2001b) assessed both level/intraindividual (i.e., group level mean change in value salience) and molar (i.e., rank order) stability across the 14 year period including and beyond the senior year of high school and found evidence to support level instability and molar stability in work values. Specifically, the salience of values declined across the 14 year period for every item employed to create the value constructs; however, the ratings of some items declined much more than those of others (e.g., making friends on the job declined the most and the desires to learn and to be creative declined the least). Additionally, the variability in the participants' responses increased suggesting that they were becoming more selective in their value-based responses. On the other hand, Johnson (2001b) found evidence to support increasing molar stability or rank-order crystallization in work values across the 14 year interval. Across the four value domains (e.g., extrinsic, intrinsic, altruistic, and social values), the cross-wave correlation coefficients from wave 1 to wave 2 ranged from 0.59 to 0.73 and from wave 7 to wave 8 they ranged from 0.75 to 0.85.

Johnson (2001b) also examined the influence of work experiences on the change in molar work values from one wave to the next for waves 5 through 8 (spanning six years given the biennial assessment scheme). By predicting a value at time $(t + 1)$ with the corresponding value at time (t) , Johnson (2001b) effectively created a residualized gain score and then predicted the gain in values (i.e. rank order change or molar change) across the interval with work experiences at time (t) . It should be noted that Johnson (2001b) did not characterize the approach as a residualized gain score analysis. Johnson (2001b) found that work experiences had some small effect on later work values and she also found some instances of a crossover effect in which a work experience influenced a conceptually similar, but not identical, value across a two year (i.e., one wave) interval. For example, intrinsic work rewards were found to predict intrinsic values a year later (i.e., a work experience directly influencing a work value) and social rewards were found to influence altruistic work values (i.e., a crossover effect). Johnson (2001b) concluded by suggesting that the data presented little support for the reinforcement hypothesis and that the few significant associations supported more of a crossover effect than a direct effect between work experiences/rewards and values.

In contrast to this conclusion, examining the findings from a residualized gain perspective changes the interpretation of the data in at least two ways. First, prevailing values theory (Rokeach, 1973) and the conceptualization developed within this study suggest that meaningful value change will occur when values and experiences are discrepant. Johnson (2001b), without making it explicit, examined the influence of previous experience on a change in work values relative to the sample without including a variable indicating the magnitude of the discrepancy between the work

reward/experience and the conceptually associated work value. Presumably, a particular score on the work reward measure could represent a large discrepancy from one person's values and a small discrepancy from another person's values. If it is further presumed that the magnitude of the discrepancy is normally distributed with a mean of zero and some variance across the sample for each value on the work reward measure, then the theoretical association between a reward and the residualized gain in the conceptually identical value domain would approach zero. This theoretically predicted finding is generally supported by Johnson's (2001b) findings. Second, the crossover effects, specifically a work reward predicting the residualized gain in a related but not identical work value, may be conceptualized under a similar theoretical blanket. Although no theory reviewed in this study appears to bear on this theoretical question, socially-oriented rewards may exert an influence on the residualized gain (i.e., molar change) in altruism values if (a) altruism values are partially independent from social values, (b) the independent variance in altruism values is associated with social rewards, and (c) social rewards affect altruism values in a manner akin to a linear dosage effect whereby any amount of the reward received will yield a monotonic linear increase in the value. If, however, socially-oriented and altruism values essentially sum to be one meta-construct of values (i.e., little independent variation between social and altruism values), then the deviation between social rewards and altruistic values would be the critical determinant of altruism value change. In short, Johnson (2001b) employed a reward measure to assess value change rather than the theoretically identified difference between a reward/experience and the analogous value. The identified crossover effect may be akin to an incremental dosage effect, where the more people receive, the more a related (but

not identical) value will exhibit molar change. The present study will examine the impact of the difference between part-time work experience and the respective part-time work value on the residualized gain (e.g., regressing a value at time $(t + 1)$ onto itself at time (t)) and the effect of the discrepancy on within-person change (e.g., a difference score).

Johnson (2001a) examined people making the transition from high school to work in order to assess the theoretical assertions that people select work experiences that reinforce their work values (i.e., the reinforcement hypothesis; Mortimer & Lorence, 1979) and that work environments affect relevant features of the personality (Kohn & Schooler, 1973, 1983), and to examine how and to what extent values change during this period. Johnson (2001a) found that across a 14 year span (two occasions of measurement for each person) the stability of the value domains (e.g., extrinsic, intrinsic, altruistic, and social values) ranged from 0.39 to 0.58, thus suggesting that 16 to 21% of the variance in adult work values was explained by people's work values during their senior year of high school. Intrinsic, altruistic, and social rewards significantly predicted their respective adult work values.¹⁴ The absolute value of the standardized coefficients ranged from 0.08 to 0.28, suggesting a statistically significant but weak association between rewards and values. Furthermore, particular work experience domains also appeared to influence related work value domains (e.g., intrinsic work rewards positively influenced social and altruistic values). With the exception of altruism values and rewards, the associations between work values during high school and work rewards during adulthood were

¹⁴ Work rewards were assessed during the second occasion of measurement when adult work values were assessed. The rewards questions were tied to the most recently reported work experience during the second occasion of measurement. Thus, for most people, the rewards and adult work values responses reflect the same time period. In terms of causal inference, modeling experiences as predictors of values is more consistent with the reinforcement hypothesis than with temporal sequence; therefore, the direction of causal inference could be reversed or estimated as a bi-directional causal relationship.

statistically insignificant. In terms of the altruism dimension, altruistic values during high school positively predicted ($\beta = 0.38$) altruistic rewards/experiences during adulthood. With the exception of extrinsic work values, the number of years worked during the 13 to 14 year interval inversely predicted work values during adulthood. The greater the duration of a person's work experience, the less importance they tended to place on work values. Intrinsic- and social-oriented work values during high school positively predicted educational attainment, such that people who valued learning, creativity and on-the-job social relationships tended to attain higher educational credentials.

In a subsequent study, Johnson (2002) employed the same participants and eight waves of data spanning the same 14 year interval but using 8 waves of data (i.e., the senior year and seven biennial assessments) rather than the first and last wave as in the previous study to examine the effect of the number of hours employed per week in a part-time work setting during high school on the change in work values during adulthood. The growth models demonstrated that the salience of extrinsic, altruistic, and social work values decreased in a statistically significant and meaningful manner, while the salience of values associated with job security and influence on the job demonstrated statistically significant but less meaningful increases over the 12 year interval following high school. Employing the growth data for all of the values as an outcome, Johnson (2002) examined the influence of various experiences on the initial level of work values two years post high school and the rate of change in work values during the interval. Relevant to the present study, Johnson (2002) found that increased hours per week spent in part-time work during high school significantly predicted an initial (i.e., the first wave following

high school) increased valuation for work aspects associated with influence on the job and a lesser valuation for leisure work values (i.e., vacation time, slow pace, having time for leisure pursuits). Additionally, students in the academic track in high school tended to value the opportunity to be influential and altruistic in their work opportunities which they perceived to be related to their anticipated career more and to value work-related leisure opportunities and job security less than their peers in other school tracks (presumably less academically-oriented tracks). In terms of the magnitude of change, increased part-time work hours predicted decreases in altruistic values across the 12 year period. Students from other school tracks exhibited a greater decline in extrinsic values over time than their peers in the academic track.

Based upon these findings, Johnson (2002) concluded that the early adult period may represent a period of value adjustment spurred by the realities, and particularly the limitations, of the adult world of work. The participants presented significant decreases in the valuation they placed upon extrinsic, altruistic, and social work values during the 12 year period and Johnson (2002) speculated that work settings may not afford experiences to sufficiently satisfy these values; hence, people decrease their valuation of these work aspects to become more consistent with the opportunity structure. Johnson (2002) did not provide much discussion concerning the relationship between school track, part-time work hours, and values, but the data suggest a link between the two experience factors and work values such that more time spent engaged in part-time work and being in the academic track was associated with an increased initial (i.e., the first wave following high school) valuation of the opportunity to influence one's work setting and a decreased valuation of leisure work values. The two value domains may combine to

reflect a broader construct like industry (Erikson, 1968, 1993), work ethic, or work motivation, and if so, then part-time work and an academic track may be promoting a sense of industry (Erikson, 1968).

Johnson and Elder (2002) further explored the impact of educational attainment on work values by examining how and to what extent post-secondary education affects the trajectory of work values during the early adult years, employing the same sample of young adults. Their results indicated that those young adults who attended some form of post-secondary education differed markedly in terms of their work value trajectories from those who did not pursue an education beyond high school. Relative to those people who did not attend some form of post-secondary training, participants who pursued some form of post secondary education exhibited lesser declines in extrinsic values, lesser declines in altruistic values, greater declines in security values, and greater inclines in the value associated with being influential on the job as they moved through their third decade of life. In general, pursuing a post-secondary education was associated with the maintenance of values held in the senior year of high school (the exception being the job influence value), while failing to pursue an advanced education generally resulted in the salience of work values declining to a much greater extent across the third decade of life. Of course these differences may be attributed to other differences in the two groups, and this is a threat to their conclusions, but Johnson and Elder (2002) concluded that these trajectory differences may map onto differences in the job opportunity and demand structure available to those who do and do not gain a post-secondary educational credential. Johnson and Elder (2002) also suggested that the contextual contingencies present in post-secondary educational settings may directly shape values during the

course of the educational experience and educational settings may indirectly affect their students' values by making jobs with a certain type of reward structure available to them post graduation.

The statistical findings and conclusions presented by Johnson (2001a; 2001b; 2002; Johnson & Elder, 2002) are pertinent to the present study in several ways. First, the present study aims to test the theory that the work value system becomes more crystallized (i.e., stable) during the adolescent period. Johnson (2001a) found that career-oriented work values were moderately stable during the transition from school to work. Second, the present study will examine to what extent adolescents select part-time work settings that are consistent with their expressed part-time and career-related values. Johnson (2001a) found that, with the exception of one of the four value domains, the participants did not systematically select full-time work settings yielding rewards consistent with their career-related values during adolescence. Third, the present study will examine the influence of the part-time work setting on part-time and career-related values. Johnson (2001a) found that increased work rewards were associated with increases in the salience of related work values during adulthood and the amount of work experience acquired during adulthood diminished the salience of work values relative to peers who worked a fewer number of years. Furthermore, certain work experience domains influenced analogous work value domains as in the case of intrinsic work rewards influencing social and altruistic values. On the other hand, Johnson (2002) also found that an increased number of hours per week engaged in part-time work during high school predicted a decrease in the salience of values associated with leisure activities

afforded by work and an increase in the importance of values tied to the opportunity to be influential in the work place.

Lastly, this study will examine the dynamic relationship between career-related values and educational/career expectations. Johnson (2001a) found that intrinsic- and social-oriented work values positively predicted educational attainment. This finding was consistent with previous research in which Miller and Simon (1979) found that college-bound youth tended to emphasize intrinsic (e.g., mastery-oriented) and altruistic (interpersonal-oriented) values while work-bound (non-college-bound) youth tended to emphasize financial compensation, security, and prestige values. Furthermore, Johnson and Elder (2002) found that the rate of value change varied as a function of whether or not a person pursued a post-secondary education. Therefore, the link between values and educational experience appears to be dynamic, values affect educational outcomes and educational experiences affect value change. These latter findings further suggest on a more general level that the rate of value change may be influenced by the anticipated and/or actual timing of the transition from school to work. Johnson and Elder (2002) found that the rate of change was greater for non-college-bound youth than for college-bound youth who, in effect, anticipated a later transition to the work force. This suggests that the functioning of the proposed discrepancy reduction and cohesion mechanisms associated with value development may hinge on the timing of the transition to work. The discrepancy reduction process may be more influential and, therefore, more statistically apparent for those students who expect a more imminent transition (e.g., non-college-bound students) and less so for those students who expect a later transition (e.g., college-bound youth). Likewise, students who expect a more imminent transition from

school to work may exhibit greater cohesion between conceptually related work values and between work values and commensurate work experiences.

Relevant to this issue and shifting the focus off Johnson's work temporarily, Schneider and Stevenson (2000) found that most adolescents expect to pursue a post-secondary education and most of those adolescents aspire to pursue at least a Bachelor's degree. They also found that most adolescents aspire to occupations that require at least a Bachelor's degree at rates significantly higher than the actual present and projected demand in the labor force. Adding to the dilemma, termed *misalignment* by Schneider and Stevenson (2000), few adolescents and parents had a clear understanding of the specific educational prerequisites these occupations demand. Schneider and Stevenson (2000) found in a nationally representative sample of more than 7000 adolescents that most adolescents (56.2%) either under- or overestimated the educational prerequisites of the occupation for which they aspired. If these findings generalize to the sample of high school-aged adolescents examined in the proposed study, then the discrepancy reduction process may not be validated by the present study because of the focus on adolescence. The discrepancy reduction process of work values development may only be influential when people are actively planning or are involved in their work career. The adolescents employed in the proposed study may not anticipate an imminent transition to the world of work and even more of them may not have a well-developed image of the pathway leading from the world of secondary and/or post-secondary education to the world of work.

The forgoing discussion suggests that anticipated role transitions and their salience and timing may have an influence on the salience of various values and the proposed

processes of value development. Combined with the work of Schneider and Stevenson (2000), this suggests that the discrepancy- and cohesion-driven processes of value development may not be influential during this period because most adolescents may anticipate a delayed transition to work and may, therefore, not be affected by discrepancies within the work values system. It should be noted, however, that a substantial body of research suggests that grade school-aged children (e.g., Goldstein & Oldham, 1979) and children as young as 4 years of age (Trice & King, 1991) demonstrate progress on tasks associated with vocational development and an immense literature (e.g., Brown & Brooks, 1984, 1990, 1996) suggests that adolescence and young adulthood represents a critical period for vocational development during the life span when the world of work becomes one of the most salient aspects of one's life. This literature increases the confidence that a sample of high school adolescents, demonstrating a normative range of educational and career aspirations, is an appropriate sample to test the discrepancy reduction model proposed in the present study.

Returning to Johnson's research at a higher level of theoretical abstraction, Johnson's research is applicable to the aims of this study in at least two ways. As Johnson (2001a) pointed out, the findings are generally consistent with the reinforcement hypothesis and the conclusion forwarded by Kohn and Schooler (1973; 1983) suggesting that the work setting has more of an influence on aspects of the personality than the reverse. Related to these theoretical assertions, this study will examine the empirical links between part-time work values and experiences to determine if they conform to a dynamic relationship across time, to assess whether work values or work experiences have the greatest influence upon the other, and to determine whether the difference

between part-time and career-oriented values predicts educational expectations and occupational aspirations.

Sex Differences

Stein (1972) found few mean level changes in several personal value domains (e.g., practical mindedness, achievement, variety, decisiveness, orderliness, and goal orientation) and interpersonal value domains (e.g., social support, conformity, independence, recognition, benevolence, and leadership) from 9th to 12th grade. Of the personal values, adolescent females exhibited a greater emphasis on orderliness values during the 9th grade than 11th grade. In terms of interpersonal values, all adolescents demonstrated a decreasing endorsement of conformity and benevolent values and adolescent males exhibited an increasing endorsement of recognition values across the high school years. In the present study, social connectedness is most akin to a combination of social support and benevolence, mastery is akin to a combination of achievement, variety, and independence, and economic security is not represented in Stein's (1972) set of value domains.

Rowe and Snizek (1995) found that the literature examining sex differences in the expression of work values can be classified into those that support a gender socialization model and those that support a social-structural model. The socialization literature suggests that socialization experiences that differ by sex largely account for observed sex differences, while the social-structural position identifies the present work context as the primary factor yielding sex differences. The former points to the family, school, and peer contexts as the determinants of the sex differences in work values observed in adult populations while the latter suggests that differential demands and contingencies (e.g.,

reward structure) based upon sex in adult work contexts results in the observed sex differences. Examining the validity of these two theoretical models, Rowe and Snizek (1995) found few sex differences in a sample 7,436 full-time adult workers and concluded that neither the socialization nor the social structural model were appropriate because both rest on the assumption that sex differences in values exist. They also found that age (confounded by cohort), education, and occupational prestige were consistent predictors of work values. These findings suggest that social-structural factors may yield values variability, but Rowe and Snizek (1995) failed to identify or discuss this link between their findings and theory.

Hagstrom and Gamberale (1995) reviewed some Swedish research (published in Swedish) conducted on a sample of 2349 (17 to 21 year-old) high school seniors, which suggested that males tend to place a greater emphasis on materialistic (e.g., good pay) values and females tend to value postmaterialistic aspects of work. Conversely, Halaby (2003) found that males favored entrepreneurial-oriented work values (e.g., discretionary power, autonomy, esteem, and variety) while females preferred bureaucratically oriented work values (e.g., pension guarantee, job security, training, and cleanliness). The entrepreneurial value orientation tends to involve more financial reward at the expense of greater financial risk while the bureaucratic orientation tends to yield greater financial security at the expense of less financial reward.

Johnson (2001a) suggested that the relationship between work experience and job value change may be weaker for females because they tend to be more committed to family roles. An increased commitment to family roles could lead to an overall decrease in the importance of job values and experiences and a decreased relationship between job

experiences and values, because for women, family roles rather than work roles may be perceived as their primary means of defining and satisfying their values.

Generalizing Johnson's (2001a) assertion, the salience of specific work values may be influenced by the present and anticipated roles of the person. Given that males and females tend to be socialized to enter, maintain, and emphasize different roles within the work and family settings and this difference often involves females making a greater commitment to the caregiving role and males making a stronger commitment to the breadwinning role within the family, the salience of work values is presumed to differ by sex in ways that are consistent with the assumed differences in expected family roles. Females are presumed to favor interpersonal work values while males are presumed to favor economic security (e.g., financial compensation) work values.

Furthermore, Johnson's (2001a) assertions suggest that the impact of work experiences on the value system is presumed to be moderated by a person's commitment to the work role relative to other life roles (i.e., relative life role salience). Given the theoretical link between work values and identity (Vondracek, 1995), this notion is consistent with role-identity theory (Stryker, 1987; Stryker & Burke, 2000). Role-identity theory suggests that "identities are defined as internalized sets of role expectations" (Vondracek, 1993, p. 10), hence a person's roles partly define their identity. The moderating influence of sex on the association between work experience and values observed in U.S. samples (Brown & Crace, 1996; Johnson, 2001a) is presumed to be partly the product of sex-specific socialization differences that have directed women to emphasize the family caregiver role over the paid worker role and men to do the reverse. In the present study, sex (which is presently believed to be an

indicator of role salience differences) will be examined as a potential moderator of the association between values and experience and between part-time and full-time work values.

Bridging Macro-, Meso-, and Micro-Theoretical Perspectives of Work Values

The present study is guided by several nested theoretical approaches that have been classified into macro-, meso-, and micro-theoretical foundations. At the macro-level, theory suggests that humans are embedded within human contexts and that human contexts are defined by their inhabitants; hence, human functioning must be examined from within this frame. At the meso-level, theory defines the human value as a cognitive-affective valence that is employed to evaluate past, present and future circumstances. Theory also suggests that human values are organized into a human value system that is influenced by and influences human functioning in a dynamic fashion and exhibits developmental change in the form of maturation and learning. With respect to time, a value may represent a standard to evaluate present and past functioning and events or as superordinate goal influencing more specific goal-setting processes directed toward future functioning. Finally, at the micro-level, theory suggests that work values represent a distinct, meaningful, and influential class within the human value system; work values guide and are guided by vocational behavior, and learning is the primary force driving value and value system development. Given this range of theoretical abstraction, this study is poised to address theoretical issues that are relevant to a range of literatures that not only include the vocational literature but also other lines of research that employ human values as an integral aspect of scientific inquiry.

Hypotheses

Research Question 1 Hypotheses

Values are presumed to be organized within one cohesive, interconnected, and hierarchical network/system (e.g., Brown & Crace, 1996; Rokeach, 1973); hence, from a path modeling perspective all values are presumed to be more or less associated with one another. The magnitude of the association is presumed to be a function of the conceptual distance between two values. In the present study, a conceptual relationship between PTWVs and FTWVs is assumed to exist, to be distinguished as a set of standard-oriented (PTWV) and goal-oriented (FTWV) values (Boldero & Francis, 2002), and to be indicated by the linear association between the two.

H_{1,1}: There is a positive relationship between part-time work values and contemporaneous career-related values during adolescence (see Figure 1).

Research Question 2 Hypotheses

Value system development is theoretically indicated by increasing *stability* within a particular human value and increasing *cohesion* and a decreasing *discrepancy* between various conceptually related values within the system (Boldero & Francis, 2002; e.g., Kalleberg, 1977; Oppenheimer, 1991b; Rokeach, 1973).¹⁵ *Stability* of a particular value may be indicated by rank-order stability across time (e.g., the correlation between waves for a particular human value) or intraindividual stability (e.g., the average difference of a human value across waves and the change in the variability of the difference across waves). *Cohesion* between values within the value system may be indicated by the linear association between them (e.g., correlation between two values at the same occasion of

¹⁵ Refer to the literature review and the section entitled “A proposed Developmental-Contextual Mechanism for Value System Development” for more elaborate definitions of *stability*, *cohesion*, and *discrepancy reduction*.

measurement) and the *discrepancy* in the salience of different values may be indicated by the difference and the variability of the difference between any two conceptually similar values at the same occasion (i.e., part-time mastery values at time one minus full-time mastery values at time one).

In short, the adjacent wave correlations of a particular value are expected to increase (i.e., increasing rank-order stability), the adjacent wave differences of a particular value are predicted to decrease along with the variability of the difference (i.e., increasing intraindividual stability and interindividual differences in the salience of a value), the cross-sectional correlation between conceptually-related values is predicted to increase across time (i.e., increased cohesion within the value system), and the cross-sectional difference in the salience of two conceptually related values is predicted to decrease across waves along with the variability of the difference (i.e., a decreased discrepancy).

Combining the ideas of *stability*, *cohesion*, and *discrepancy* yields a complex process of value change and stability across time. Theory suggests that value system development is indicated by a combination of increasing stability, cohesion and consistency. The notion of stability suggests that the importance a person places upon a particular value relative to the population will become more stable across time. If the salience of a value changes and cohesion is an influential mechanism, then for example, as the salience of a part-time work value increases (or decreases) across time, presumably the salience of its career-related analogue should increase (or decrease) as well and this pattern should become stronger across time. Theory also suggests that value system development is indicated by a decreasing discrepancy in the salience of conceptually related values across time. The difference in the salience of two conceptually-related

values should decrease as the value system develops. For example, the difference between a part-time work value and its career-related analogue should decrease across time because they are presumably standard- and goal-oriented reflections of the same value.

Combining the process of cohesion and discrepancy reduction suggests that the two processes interact to yield value system development. For people who exhibit no discrepancy between a part-time work value and its career-related analogue (i.e., a difference score of zero), if a value changes then the other should change in the same direction to preserve or increase consistency (i.e., a smaller difference) and cohesion (i.e., a larger correlation). In order for a person to maintain or increase cohesion and maintain or decrease discrepancies, as the salience of a person's part-time work value increases (or decreases) so must the salience of the career-related analogue. The nature of this relationship will be different, however, for people who exhibit large discrepancies (i.e., a large difference between two conceptually related values).

For people who exhibit an increased discrepancy in two conceptually-related values at an earlier occasion, the values will presumably change across time to become less discrepant. The more salient value may decrease, the less salient value may increase or a combination of both may occur across time to achieve discrepancy reduction that approaches zero. If decreasing discrepancies is a fundamental aspect of value system development, then the relationship between the change in a part-time work value and its career-related analogue is likely to be different for people who exhibit large discrepancies relative to those who exhibit small discrepancies. Those who exhibit smaller discrepancies at an earlier occasion will presumably exhibit small discrepancies at later

occasions while those who exhibit larger discrepancies at earlier occasions will exhibit decreasing discrepancies at later occasions. In brief, small discrepancies will tend to be maintained over time, while larger discrepancies will tend to be reduced over time. In statistical terms, the magnitude of the discrepancy between a part-time work value and its career-related analogue at an earlier occasion will moderate the relationship between the change in a part-time work value and its career-related analogue across time. As the absolute value of the discrepancy increases, the relationship between the change in a part-time value and its career-related analogue across time should move from being positive to negative.¹⁶ Increases in a highly discrepant value across time will be associated with decreases in its value analogue. This pattern yields a predicted inverse or negative association between the change in the two discrepant values.

H_{2,1}: A value will exhibit increasing rank-order stability from one wave to the next across the four occasions. In terms of the Figure, $\beta_1 < \beta_2 < \beta_3$ and $\beta_4 < \beta_5 < \beta_6$ (see Figure 2).

H_{2,2}: A value will exhibit increasing intraindividual stability (i.e., decreases in the absolute value of differences) from one wave to the next across the four occasions (e.g. $|\text{value at T2} - \text{value at T1}| > |\text{value at T3} - \text{value at T2}|$).

H_{2,3}: If a positive contemporaneous relationship exists between part-time work values and career-related values (see H_{1,1}), then the magnitude of this relationship will increase with increasing age (a proxy for increasing value-system cohesion and maturity) during adolescence (see Figure 3). In terms of the Figure 3, $r_1 < r_2 < r_3 < r_4$.

¹⁶ The discrepancy may be positive or negative (PTWV > FTWV or vice versa), therefore the absolute value is employed.

H_{2,4}: Larger differences (in terms of the absolute value) between a part-time work value and its career-related analogue will yield smaller differences at a later occasion while smaller differences at an earlier occasion will typically result in no change. In other words, small differences at an earlier occasion are presumed to be relatively uncorrelated with the change in the discrepancy between a part-time work value and its career-related analogue across time while larger contemporaneous differences (i.e., either large positive or negative) will be associated with larger decreases in the difference between a part-time work value and its career-related analogue over time. The association will conform to a linear or cubic function and the point of inflection is presumed to be located at the origin. Small differences are presumed to be relatively uncorrelated with discrepancy change across time. Large positive (or negative) contemporaneous differences will be associated with larger decreases in the difference over time.

H_{2,5}: The absolute value of the discrepancy between a part-time work value and its career-related work value will moderate the relationship between the change in PTWV and FTWV across time (see Figure 4).

Research Question 3 Hypotheses

From empirical and practical perspectives, the part-time work literature demonstrates that part-time work experiences (PTWE) influence adolescents and adolescents select into and shape their part-time work experiences (Bachman & Schulenberg, 1993; Mortimer, Pimentel et al., 1996; Skorikov & Vondracek, 1997; Steinberg & Avenevoli,

1998; Wu, Schlenger, & Galvin, 2003); therefore, research examining dispositional and regulatory factors like work values may enhance our understanding of why and which adolescents select particular part-time work experiences and career goals, how work experiences and goals modify or reinforce work values, and how all three develop concurrently and in presumably a dynamic fashion (Schulenberg et al., 1988) across time. In the present study, a conceptual relationship between values (PTWV and FTWV) and experience is assumed to exist, to differ across standard-oriented (e.g., PTWV) and goal-oriented (e.g., FTWV) values such that the association between PTWE and PTWV is presumed to be greater than the association between PTWE and FTWV, and to be indicated by the varying linear associations between PTWE and PTWV and PTWE and FTWV.

At a more abstract level, this model involves testing the validity of the cohesion and discrepancy reduction mechanisms as they are involved in the interrelationships between standard- (i.e., PTWV) and goal-oriented (i.e., FTWV) work values and contemporaneous work experiences. Given that standard-oriented values are presumed to regulate functioning directed toward contemporaneous experiences and events and goal-oriented values are presumably directed toward anticipated experiences and events, then the relative cohesion in the form of the linear association between a standard-oriented value and related current work experience is presumed to be stronger than the association between a goal-oriented value and said work experience. By logical extension, the association between changes in a standard-oriented value and related contemporaneous work experience is presumed to be stronger than the association between a goal-oriented value and said experience. Adding the presumption that standard- and goal-oriented

values are presumed to be different applications of one value system to this logic, suggests that changes in contemporaneous experience will affect goal-oriented values less through a direct change and more so through changes in standard-oriented values which, in turn, affect the value system and subsequent goal-oriented value applications.

As in research question 2, discrepancy reduction, as well as the interaction between discrepancy reduction and cohesion mechanisms, are presumed to be operating to yield smaller differences and stronger associations between a value and related experience.

H_{3,1}: There is a positive contemporaneous relationship between part-time work values and part-time work experiences during adolescence (see Figure 5).

H_{3,2}: If a positive contemporaneous relationship exists between part-time work values and analogous part-time work experiences (see H_{3,1}), then the magnitude of this relationship will increase with increasing age (a proxy for values being increasingly influential in the expression of behaviors and the selection of experiences and vice versa) during adolescence (see Figure 6).

In terms of the Figure 6, $r_1 < r_2 < r_3 < r_4$.

H_{3,3}: **Larger differences (in terms of the absolute value) between a part-time work value and its work experience analogue will yield smaller differences at a later occasion while smaller differences at an earlier occasion will typically result in no change.** In other words, small differences are presumed to be relatively uncorrelated with the change in the discrepancy between a part-time work value and its work experience analogue across time while larger contemporaneous differences (i.e., either large positive or negative) will be associated with larger decreases in the

difference between a part-time work value and its work experience analogue over time. The association will conform to a linear or cubic function and the point of inflection is presumed to be located at the origin. Small differences are presumed to be relatively uncorrelated with discrepancy change across time. Large positive (or negative) contemporaneous differences will be associated with larger decreases in the difference over time.

H_{3,4}: The discrepancy between a part-time work value and its part-time work experience analogue will moderate the relationship between the change in PTWV and PTWE (see Figure 7).

H_{3,5}: There is a positive contemporaneous relationship between career-related values (FTWV) and part-time work experiences (PTWE) during adolescence (see Figure 8).

H_{3,6}: If a positive contemporaneous relationship exists between career-related work values and analogous part-time work experiences (see H_{3,5}), then the magnitude of this relationship will increase with increasing age (a proxy for values being increasingly influential in the expression of behaviors and the selection of experiences and vice versa) during adolescence (see Figure 9). In terms of the Figure 9, $r_1 < r_2 < r_3 < r_4$.

H_{3,7}: If a positive contemporaneous relationship exists between part-time work values and analogous part-time work experiences (see H_{3,1}) and a positive contemporaneous relationship exists between career-related work values and analogous part-time work experiences (see H_{3,5}), then the magnitude of the

contemporaneous associations between PTWV and PTWE will be greater than the magnitude of the contemporaneous associations between FTWV and PTWE (see Figure 10). In terms of the Figure 10, $r1 < r5$, $r2 < r6$, $r3 < r7$, and $r4 < r8$.

H_{3,8}: If a positive contemporaneous relationship exists between part-time work values and analogous part-time work experiences (see H_{3,1}) and a positive contemporaneous relationship exists between career-related work values and analogous part-time work experiences (see H_{3,5}), then PTWV will mediate the relationship between PTWE and FTWV (see Figure 11).

Research Question 4 Hypotheses

The salience of work values and experiences associated with part-time work may be greater for non-college-bound adolescents relative to their college-bound age mates because the transition from school to work is more imminent for non-college-bound adolescents (Vondracek & Porfeli, 2003). Moreover, the salience of part-time work values may increase as the transition from school to work looms near for non-college-bound youth.

H_{4,1}: The mean salience of a PTWV will be positively associated with an adolescent's expected level of educational attainment, such that smaller discrepancies will be associated with decreased expectations in terms of educational attainment.

H_{4,2}: The magnitude of the mean salience differences tested in H_{4,1} will increase (as reflected in the size of the mean differences and the F-value of the omnibus test) from wave 1 to 4.

Research Question 5 Hypotheses

Related to research question 4, part-time work experiences and values may be deemed as more relevant to non-college bound youth, given that present vocational behavior and experiences are temporally closer to expected occupational behaviors and experiences.

H_{5,1}: The mean salience of a PTWV will be positively associated with the prestige of occupational plans, such that students who place a greater importance on PTWV will expect to enter less prestigious occupations after the completion of their educational career.

H_{5,2}: The magnitude of the mean salience differences tested in H_{5,1} will increase (as reflected in the size of the mean differences and the f-value of the omnibus test) from wave 1 to 4.

Research Question 6 Hypotheses

As discussed above, FTWVs are conceptually identified as goal-oriented values guiding and being influenced by behavior directed toward the future and PTWVs are presumed to act as standard-oriented values guiding and being shaped by behaviors and experiences directed toward the present. Values associated with a future career (i.e., FTWVs) become values associated with present vocational behaviors (i.e., values associated with work in the present moment) as adolescents approach the period when career expectations can become realized, namely the transition from school to work. In other words, the discrepancy between FTWVs and PTWV's should decrease and cohesion should increase as a function of the imminence of the transition from school to work. Given that this transitional period is more imminent for non-college-bound high-

school students, they may demonstrate smaller discrepancies and greater cohesion between a FTWV domain and its associated PTWV domain than college-bound youth. Theory suggests that this would be particularly true during the later years of high school as the transition draws near for non-college-bound high school students.

H_{6,1}: The magnitude (i.e., absolute value) of the discrepancy between a PTWV domain and its associated FTWV domain (e.g., part-time work mastery values minus career-related mastery values) will be positively associated with an adolescent's expected level of educational attainment, such that smaller discrepancies will be associated with decreased expectations in terms of educational attainment.

H_{6,2}: The magnitude of the mean salience differences tested in H_{6,1} will increase (as reflected in the size of the mean differences and the f-value of the omnibus test) from wave 1 to 4.

Research Question 7 Hypotheses

As discussed in research question 6, the magnitude of the discrepancy between a FTWV domain and its associated PTWV domain may be associated with future educational and career aspirations.

H_{7,1}: The magnitude (i.e., absolute value) of the discrepancy between a PTWV domain and its associated FTWV domain (e.g., part-time work mastery values minus career-related mastery values) will be positively associated with the prestige of adolescents' occupation aspirations, such that smaller discrepancies will be associated with less prestigious career aspirations.

H7,2: The magnitude of association (beta) between the absolute value of the PTWV-FTWV discrepancy the prestige of career aspirations will increase from wave 1 to 4.

Research Question 8 Hypotheses

Extending the logic of research questions 6 and 7, the salience of work values may differ across adolescents on the basis of their educational and career plans. Research demonstrates that the rate of value change through the transition to adulthood varies as a function of the timing of the transition from school to work (Johnson & Elder, 2002). Research also indicates that most adolescents expect a delayed/extended school to work transitional period (Schneider & Stevenson, 2000). This suggests that, at a minimum, the strength of the discrepancy reduction process may vary as a function of the anticipated timing of the transition from school to work. Specifically, the discrepancy reduction process may be weaker for adolescents who anticipate a more delayed transition (e.g., undergraduate and graduate school aspirations) and stronger for those who anticipate a more imminent transition (e.g., no postsecondary educational aspirations). The reported findings (Johnson & Elder, 2002; Schneider & Stevenson, 2000) suggest that while the discrepancy reduction process may be valid for young adults it may not be valid for adolescents because many, if not most, plan to pursue a baccalaureate degree and, therefore, anticipate a delayed transition from school to work. As discussed in research question 6, the magnitude of the discrepancy between a FTWV domain and its associated PTWV domain may be associated with future educational and, by logical extension, career plans.

H_{8,1}: Educational expectations moderate the relationship between PTWV, PTWE, and their discrepancy at an earlier occasion such that those who expect to enter a postsecondary educational pathway that includes at least a bachelor's degree will exhibit weaker relationships across time than those who do not aspire to a postsecondary educational pathway (see Figure 12).

H_{8,2}: Educational expectations moderate the relationship between PTWV, FTWV, and their discrepancy at an earlier occasion such that those who expect to enter a postsecondary educational pathway that includes at least a bachelor's degree will exhibit weaker relationships across time than those who do not aspire to a postsecondary educational pathway (see Figure 13).

H_{8,3}: Career aspirations moderate the relationship between PTWV, PTWE, and their discrepancy at an earlier occasion such that those who aspire to enter more prestigious occupations will exhibit weaker relationships across time than those who aspire to enter less prestigious occupations (see Figure 14).

H_{8,4}: Career aspirations moderate the relationship between PTWV, FTWV, and their discrepancy at an earlier occasion such that those who aspire to enter more prestigious occupations will exhibit weaker relationships across time than those who aspire to enter less prestigious occupations (see Figure 15).

Research Question 9 Hypotheses

The salience of work values may differ by sex, because in the U.S., males tend to be more socialized to roles associated with paid work and females tend to be socialized to the caregiver role (Johnson, 2001a). Research suggests that sex may moderate the

relationship between work values and experience because of these sex-based socialization differences (Brown & Crace, 1996; Johnson, 2001a).

H_{9,1}: Sex moderates the relationship between PTWV and PTWE such that males are presumed to exhibit a stronger association than females (see Figure 17).

H_{9,2}: Sex moderates the relationships between PTWV, PTWE, and their discrepancy at an earlier occasion such that males are presumed to exhibit stronger relationships than females (see Figure 18).

Figures

Figure 1.
Path model of H_{1,1}.

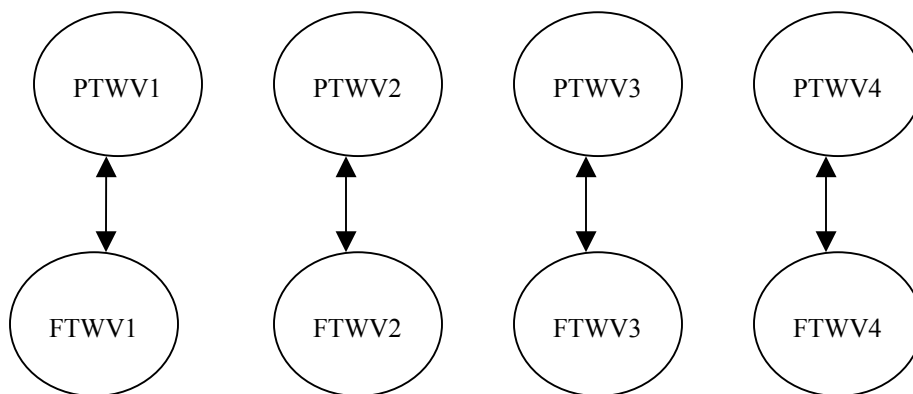


Figure 2.
Path model of H_{2,1}.

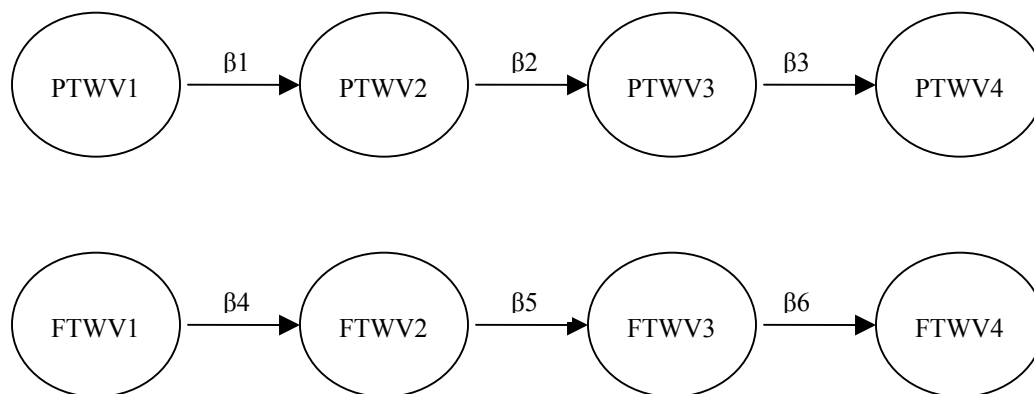


Figure 3.
Path model of H_{2,3}.

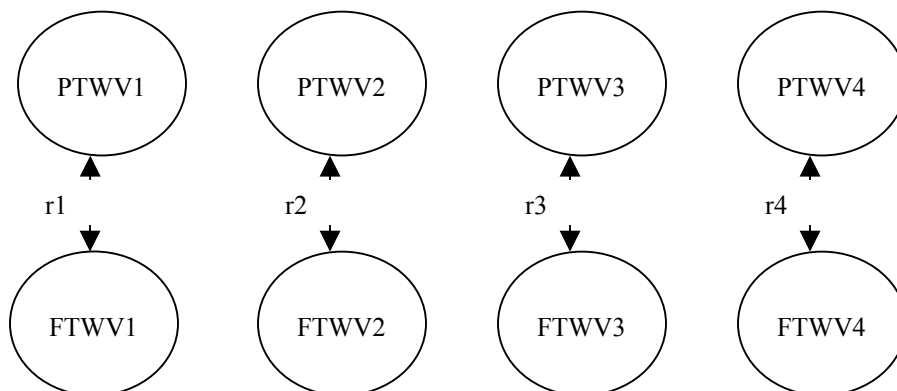


Figure 4.
Path model of H_{2,5}.

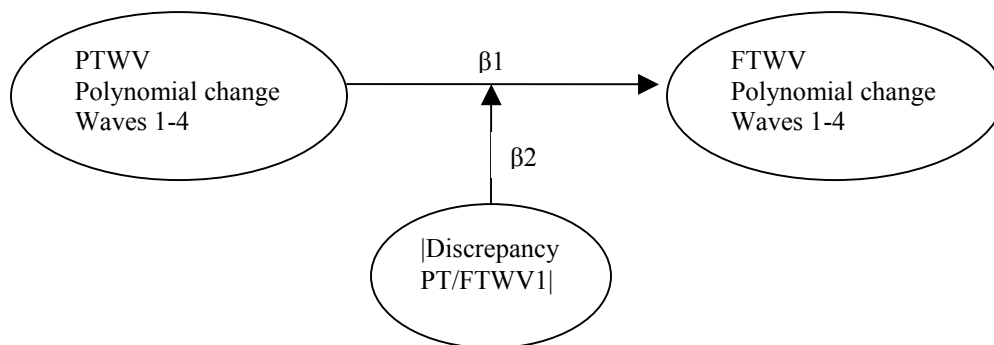


Figure 5.
Path model of H_{3,1}.

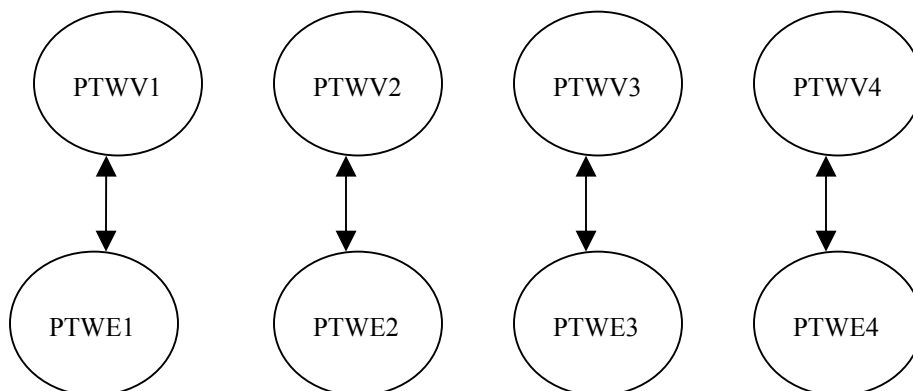


Figure 6.
Path model of H_{3,2}.

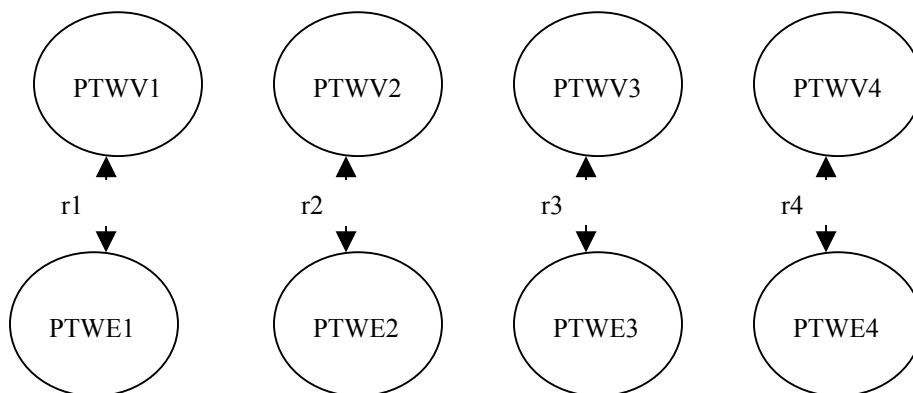


Figure 7.
Path model of H_{3,4}.

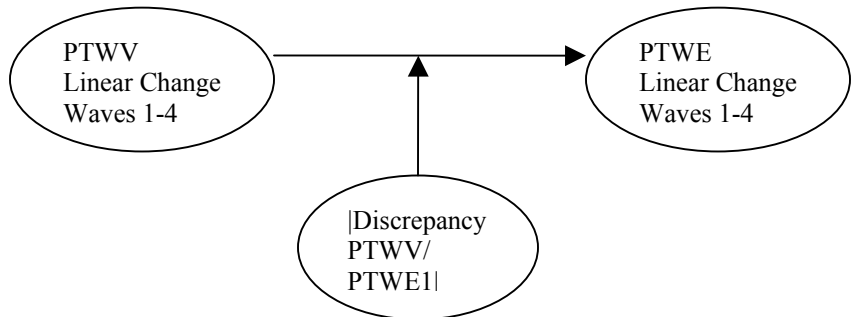


Figure 8.
Path model of H_{3,5}.

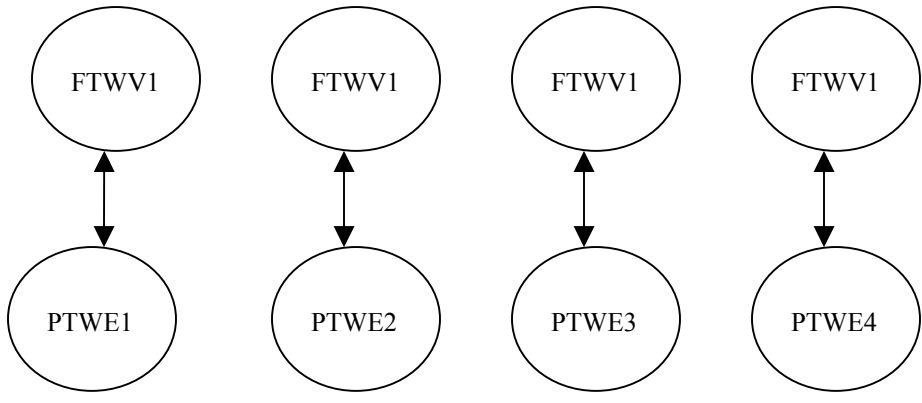


Figure 9.
Path model of H_{3,6}.

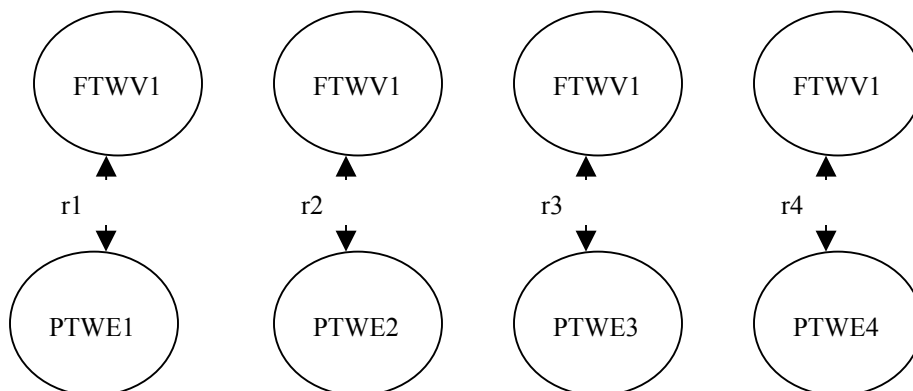


Figure 10.
Path model of H_{3,7}.

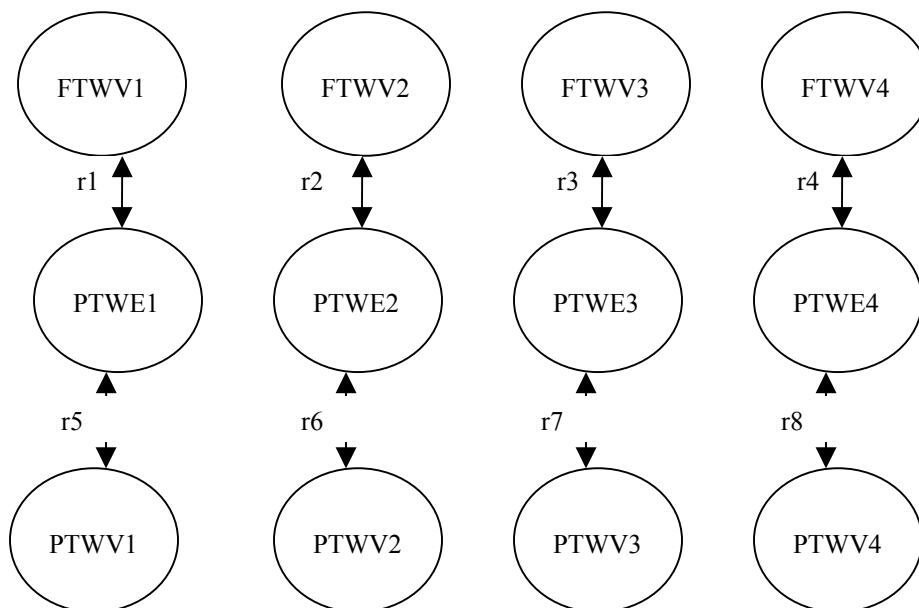


Figure 11.
Path model of H_{3,8}.

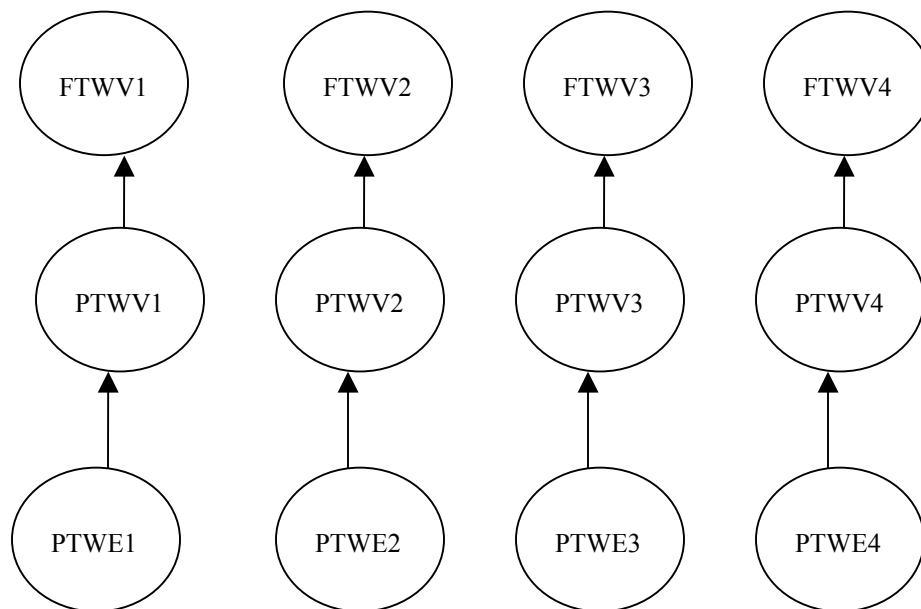


Figure 12.
Path model of H_{8,1}.

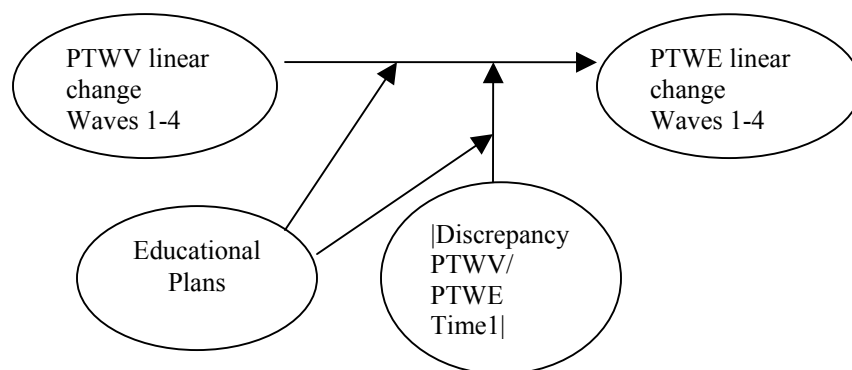


Figure 13.
Path model of H8.2.

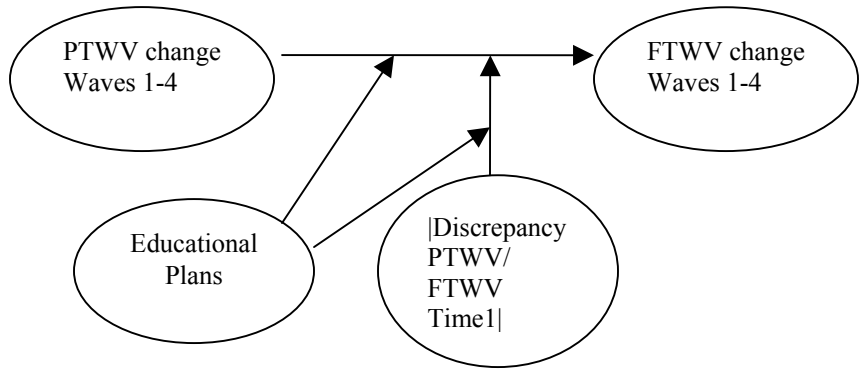


Figure 14.
Path model of H8.3.

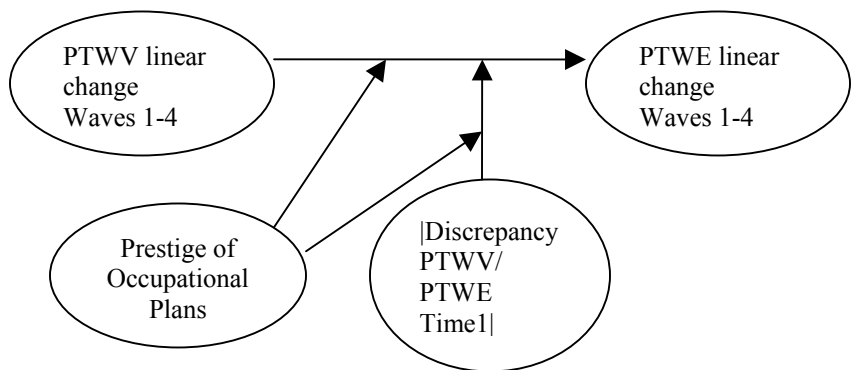


Figure 15.
Path model of H8.4.

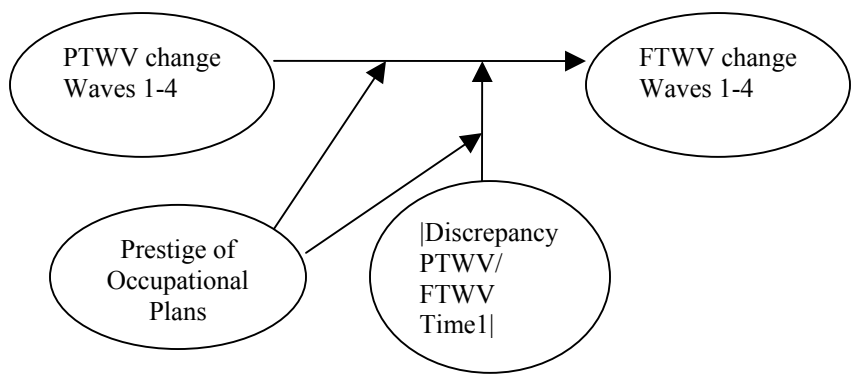


Figure 16.
Path model of H9.1.

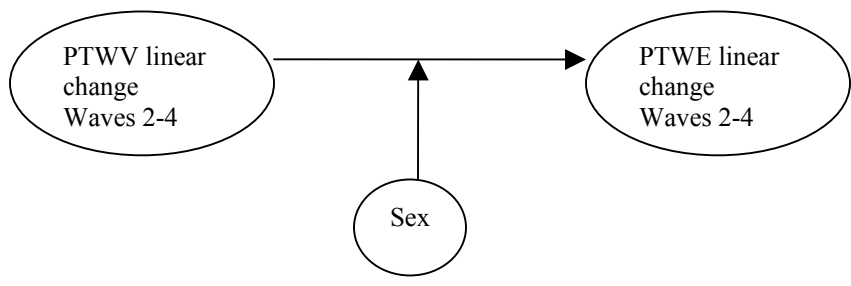


Figure 17.
Path model of H9,2.

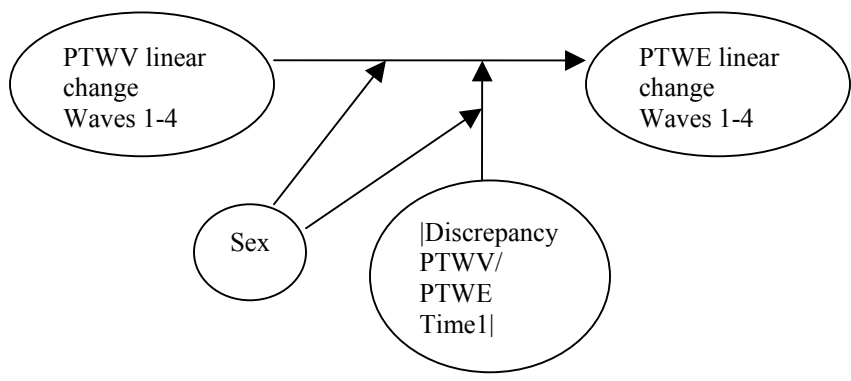
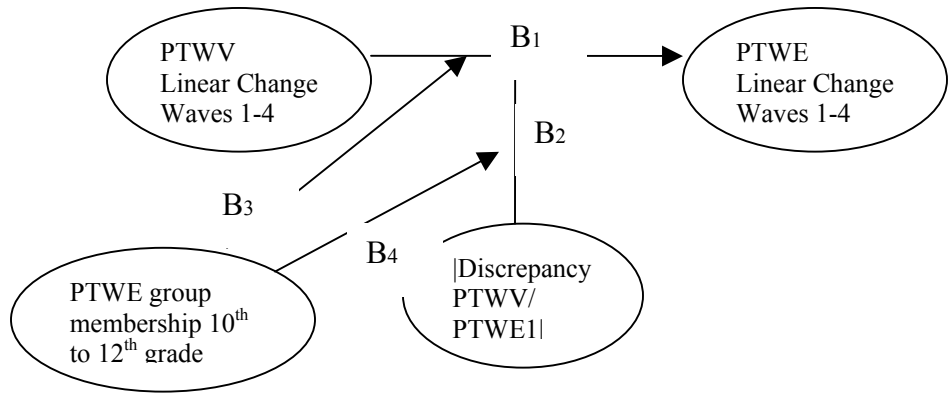


Figure 18.
Path model testing whether the pattern of work experience across the 10th to 12th grades moderates the proposed relationship in H3,4.



Chapter 3

Methods

Participants

A random selection of 1785 students and their parents were invited to participate in the research; consent to participate was obtained from 1,139 parents and their adolescent child, resulting in a 64% response to invitation rate. The present analyses focus on the 1010 students who agreed to participate in the early months of 1988.¹⁷

Participants were randomly selected and recruited from the St. Paul (Minnesota) School District during the 9th grade and evaluated annually through the 12th grade as a part of the Youth Development Study (YDS, Jeylan T. Mortimer, Principal Investigator). Of those 1785 9th grade students who were invited to participate, 1,139 (64%) consented, and of these 1,105 completed all aspects of the study during the wave 1 administration. Ninety-three percent of the panel was retained across all four years. Of this group of 9th grade students, the present study employs data from 1010 participants.¹⁸ Mortimer, Finch, Shanahan, and Ryu (1992) found that the panel was representative of the student body of the St. Paul community at the onset of the study on a range of demographic variables.

Although the sample is reflective of the St. Paul community, the generalizability of the results to the population of U.S. citizens may be limited because the St. Paul community differed from the U.S. population along several key demographic variables including race,

¹⁷ Actually, 1000 of these filled out questionnaires in Wave 1, 1988. But since 1010 participants agreed to participate, 1010 participants were sent surveys each year as the research progressed. A few of 10 participants who did not complete the survey during the first wave did come into the sample at a later occasion.

¹⁸ Participants who are Hmong (N=105) were omitted from these analyses because of language barriers and differences in data collection methodology.

income, unemployment, and educational attainment. Employing 1990 U.S. Census data, the city of St. Paul was inhabited by about one-half as many African Americans, twice as many American Indians, Eskimos, or Aleuts, twice as many Asians or Pacific Islanders, and one-half as many other racial groups.

Although the St. Paul community experienced greater economic prosperity than the U.S. population during the 1980 U.S. Census (Shanahan, Porfeli, Mortimer, & Erickson, In Press), by 1989 the trend had reversed (see Table 1). Median household income, median family income, and per capita income differences support this conclusion and suggest that St. Paul residents earned slightly less income than the U.S. population in 1989 (see Table 1).¹⁹ This income difference is supported by large differences in the rate of parents of children aged 6-17 years old who were not in the labor force during the 1990 census. In 1989, 16.5% of households in St. Paul had no parent in the labor force while this rate was almost half that Figure (8.4%) at the national level.²⁰

The reported economic differences do not appear to be consistent with educational attainment differences, because St. Paul residents tended to be more educated than the U.S. population (see Table 1). Furthermore, unemployment figures (see Table 2) do not support the reported economic differences because the residents of St. Paul enjoyed a lower unemployment rate during 1990 and 1991.

In summary, the present sample of students from St. Paul appears to be representative of the population of students in St. Paul (Mortimer et al., 1992). The St. Paul community, however, was different than the U.S. population on several key racial, economic, and educational indicators (1990 U.S. Census; The U.S. Department of Labor). These

¹⁹ The unemployment data from the 1990 U.S. census reflects unemployment during 1989.

²⁰ See Appendix A for an extended excerpt from the U.S. Census Bureau on the definition of “not in the labor force”.

differences may limit the generalizability of the results of this study to populations consistent with the St. Paul community.

Procedures

All of the data from the target variables employed in the present study were collected from the participants via a pen-and-paper questionnaire. The participants were granted the opportunity to complete the questionnaires in school during one of two scheduled administrations. Participants who were unable to attend either administration received and returned their completed questionnaires through the mail. Participants were compensated \$10 for their participation.

Measures

Part-Time (PTWV) and Full-Time (FTWV) Work Values

Participants were introduced to the topic of work values with the following text:

“When seeking employment, some students just try to find part-time work, and do not care very much about the kinds of jobs they get. Others look for certain things in a job.”

Participants were then asked, “How important would each of the following be to you if you were seeking a part-time job after school or on weekends during this school year?” and provided with a series of work values listed in Table 3. Participants were then presented with the following stem, “What about when you finish school, and are out working full-time? How important would each be to you?” and the same list of work values. Students were asked to rate the work values and provided with a four-point Likert scale ranging from “not at all important” to “extremely important”.

Each value construct (e.g., economic security, interpersonal, and mastery) was the sum of the identified items (see Table 3), which had been recoded to reflect whether they represented the positive or negative aspect of the construct.

Part-Time Work Experiences (PTWE)

Participants were asked to assess various aspects of their current part-time work experiences on Likert scales ranging from 1-4 or 1-5 depending on the question. The items are contained in Table 4. The anchors for the Likert scales reflected the nature of the question, in some cases referring to the frequency of an experience and in others referring to the presence or absence of an opportunity.

Each work experience construct (e.g., economic security, interpersonal, and mastery) was the sum of the identified items (see Table 4), which had been recoded to reflect whether they represented the positive or negative aspect of the construct.

PTWV-FTWV Discrepancy Scores

Discrepancies between PTWV and FTWV were computed by subtracting the PTWV construct score (e.g., part-time work mastery values) from the FTWV construct score (e.g., part-time work mastery values) for each participant. Given that the number of observed items remains constant between a PTWV domain and the associated FTWV (e.g., part-time and career-related mastery values), discrepancies tending toward the negative demonstrate that a participant places a greater value on the PTWV construct than the FTWV construct and positive values reflect the reverse.

PTWV-PTWE and FTWV-PTWE Discrepancy Scores

Discrepancies between PTWV and PTWE and between FTWV and PTWE were computed by subtracting the value construct score (e.g., part-time work mastery values)

from the associated work experience construct (e.g., part-time work mastery experiences) for each participant. Given that the number of observed items for a given value domain is not equal to the number of items used to create the analogous experience domain (e.g., part-time work mastery values and experiences), smaller (i.e., tending toward the negative) discrepancies demonstrate that a participant places a greater importance on the value than on the experience and larger (i.e., tending toward the positive) values reflect the reverse.

Complexity and Prestige of Occupational Aspirations

After adolescents reported their career aspirations, the career aspirations were coded in terms of their DOT code (U.S. Department of Labor, 1977), which includes a classification in terms of data, people, and thing complexity.²¹ Data complexity ranges from 0 being very complex (i.e., synthesizing) to 6 being relatively uncomplicated (i.e., comparing). People complexity ranges from 0 being very complex (i.e., mentoring) to 6 being relatively uncomplicated (i.e., taking instructions or helping). Finally, thing complexity ranges from 0 being very complex (i.e., setting up, which is more complex than precision working the next step down) to 6 being relatively uncomplicated (i.e., handling). The occupations were also classified in terms of their U.S. Census codes (U.S. Bureau of the Census, 1982). The U.S. Census codes were used to classify the prestige of the adolescent's career aspirations employing the method espoused by Stevens and Hoisington (1987).

Construct Validity Issues Associated with the Measurement of Human Values

²¹ Although the DOT classification scheme is not included in any of the a priori hypotheses, it will be employed to test a post hoc hypothesis; therefore a description of it is included here.

Theorists and researchers have identified work or occupational values as one of the primary value domains operating within the value system and within this domain (Brown & Crace, 1996; Pryor, 1982; Super, 1990, 1995), they have tended to identify three core areas, namely, mastery/intrinsic/personal growth, social relationships (with clients or coworkers), and income values.

Theorists have suggested that values may be best understood and examined within domains like work, friendships, and family. Kilby (1993) identified approximately twenty-five value domains, one being values to be accomplished within the occupational context. Kilby (1993) forwarded accomplishment, personal growth, social relationship, productivity, income, and travel and vacation values as possible values within the occupational value domain. Most prominent theories of human values suggest that values operate within the vocational/occupational/work domain (e.g., Rokeach, 1973; Ros, Schwartz, & Surkiss, 1999) and that values are associated with, yet conceptually independent from career-related constructs like vocational interests (Brown & Crace, 1996; Pryor, 1981; Sarbin & Berdie, 1940; Super, 1962). Hence, the present study is confined to the theoretically established work values domain within the human value system.

Within the work values domain, Super (1995) proposed several work values including economic security, stimulative social interaction, and use of abilities values. Pryor (1981) presented values in terms of *work aspect preferences* and classified these preferences into values such as money, life style, security, detachment, prestige, management, altruism, independence, and self development. Kalleberg (1977), submitting 34 work value items to factor analysis, identified five dimensions, namely

intrinsic (e.g., interesting work that permits self direction), convenience, financial, relationships with co-workers, career (e.g., chance for promotion and a chance to get ahead), and resource adequacy (e.g., adequate equipment and information to conduct one's job requirements). Synthesizing a program of research published in journals printed in English and Swedish, Hagstrom and Gamberale (1995) found the structure of work values to be defined by three factors, expressive work goals (e.g., mastery values), working conditions (e.g., job security and safety), and work benefit (e.g., pay and promotion).

The present study employed 11 work values items initially drafted to assess intrinsic and extrinsic work values (Mortimer, Pimentel et al., 1996) by further refining these classifications into mastery (e.g., use of abilities values, independence, autonomy, self development, and expressive work goals) interpersonal (e.g., stimulative social interaction, altruism, and relationships with co-workers), and economic security (income and job security) values constructs. This classification is more consistent with other work values classifications and lends more specificity than the original intrinsic/extrinsic distinction. Moreover, recent research examining the social origins and forces affecting work values has called into question the intrinsic and extrinsic value concepts by suggesting that they are theoretically disconnected from the social origin of the person and other social forces affecting the human value system (Halaby, 2003).

Epstein (1989) classified values as those belonging to the rational cognitive system (i.e., a conscious verbal level) and those belonging to the experiential cognitive system (i.e., a preconscious experiential level). Epstein (1989) asserted that values instruments typically tap into the rational cognitive system of values while observed behavior is more

closely tied to the experiential cognitive value system. By its nature, expressed values springing from the rational cognitive system involve, to a greater or lesser extent, a presumed set of cognitively constructed contextual contingencies, which can range from an idealized world free from barriers that virtually guarantees the satisfaction of one's values to a world replete with overwhelming obstacles that precludes the satisfaction of one's values. When posed with a question like, "to what extent do you value honesty", a person's response may or may not be consciously adjusted for perceived contextual circumstances, but given that each person is defined by their social structural location, the perceived opportunity structure associated with this location should be associated with his/her response. In the event that circumstances are consciously generated, the contextual image may be idealized in that it leans toward a circumstance containing fewer barriers than normative experience would otherwise dictate because the values construct is generally linked to preferences rather than requirements. In the event that an image of the environment is not initiated, then values may be expressed in their idealized form. In either event, the contextual backdrop of articulated values appears to be relatively free from the complexities and specifically the constraints present in the actual environment. In contrast, values derived from behaviors, which spring from actual experience, are logically more intertwined with contextual constraints and are therefore more apt to be influenced by the context in all of its complexity and specifically qualified by its constraints. Hence, the distinction between the rational conceptual system and experiential conceptual value systems may spring from an essential difference in the nature of the context impinging on and prompting each, constructed in a more idealized

form in the former and experienced in its true form, fraught with opportunity and constraint, in the latter.

Construct Validity Issues Associated with Perceived Work Experiences

The present study employed a set of work experience items (e.g., available rewards) that essentially rely upon a participant's subjective assessment of their work setting. Kalleberg (1977) pointed out that perceived work rewards may and do vary from an objective assessment of the same set of items and these differences prompt the need for further research. In spite of this potential difference, Kalleberg (1977) supported the use of subjective assessments of work rewards, because previous research suggested that a person's perceived work reality tended to be more influential than objectively assessed aspects of their work setting on his/her orientation toward the work setting, and the differences between perceived and objective aspects of the work setting tended to be small.

The Conceptual Distinction between Work Values and Experiences

Kalleberg (1977) derived five dimensions of work values and rewards from 34 work value items and 34 matching work reward items. The value items assessed the degree to which a participant valued a particular aspect of the work setting²² and the reward items assessed the extent to which a participant believed that his/her job offered the opportunity to satisfy each of the value items²³. Employing factor analysis, Kalleberg (1977) found that work values and work rewards/experiences represented two distinct, albeit correlated factors.

²² "The worker was asked: 'People differ a lot in terms of which of these things are more important to them. We'd like to know how important each of these is to you'" (Kalleberg, 1977, p. 127).

²³ "Here are some cards that describe different aspects of a person's job. I'd like you to put each white card below the pink card which best reflects how true you feel each is of your job" (Kalleberg, 1977, p. 130).

A Formative versus Reflective Approach to creating Work Values and Experiences

Constructs

Within a review centering on the nature of latent constructs in psychological science, Bollen (2002) distinguished between a *causal* (i.e., formative) and an *effect* (i.e., reflective) *indicators* model. A causal indicators model presumes that the observed variables cause the latent construct while an effect indicators model includes the presumption that the latent construct causes the observed indicators (Bollen, 2002; Edwards & Bagozzi, 2000). Borsboom, Mellenbergh, and van Heerden (2003) suggest that the formative model is most commonly employed in the sociological and economics literature (e.g., estimates of SES) where aspects of the context are presumed to influence aspects of the person (e.g., behavior and emotional states) and the reflective model is most commonly used in the psychological literature (e.g., intelligence, values, and the big five personality dimensions) in which observed behaviors are presumed to be manifestations of unobservable psychological factors. For example, work experiences like a salary raise and a promotion (observed variables) may cause a person to become happy, proud, and/or satisfied (latent person-level variables) while work motivation (a latent variable) may be indicated by work outcomes like a salary raise and a promotion (observed variables). The former is an example of a formative and the latter a reflective conceptualization of a latent construct. Philosophically, the reflective model presumes that a latent variable exists independent of the method employed to observe/assess it while the formative model is based on a constructivist stance suggesting that the latent construct is a product of the human mind and may or may not exist independent from the means of assessment (Borsboom et al., 2003).

In the present study, work values are presumed to conform to a reflective model while work experiences are presumed to be consistent with a formative model. The work values items are presumed to “reflect” work value domains while the work experience items appear to yield or contribute to particular types of work experience dimensions like mastery and interpersonal work experiences.

Reflective latent constructs are typically created on the basis of a linear combination of (i.e., the inter-correlation among) a set of items and yield two forms of variance, variance associated with the construct and error variance. Items may be identified and trimmed a priori with confirmatory factor analysis and a posteriori with exploratory factor analysis on the basis of factor analytical rules and guidelines (e.g., simple structure, positive manifold, the magnitude of factor loadings and chi-square statistics demonstrating the relationship between the structural model and the observed covariance matrix of the observed variables). Although both statistical approaches dictate the use of factor scoring coefficients to compute the reflective latent construct, in practice many researchers simply sum the final set of items. The net result of this practice is that the latent construct, created and assessed from a reflective stance, includes all of the variance of the observed items regardless of their relative contribution of error and construct variance. Formative latent constructs are generally calculated as a sum of the observed variables; therefore, all the variance of each of the observed variables is allocated to construct variance. Statistical tests designed to assess and edit formative models are emerging, but this area is still in an infancy stage of development (Bollen, 2002).

Although the formative and reflective approaches spring from fundamentally different conceptual stances and should be assessed with different statistical approaches,

in practice researchers employing both approaches often employ the same technique; they sum a set of observed variables to arrive at their latent constructs. Given, however, that the reflective model employs the magnitude of the linear association between an item and the construct, this approach is biased toward more favorable statistical estimates of instrument performance like Cronbach's alpha than is the formative model. Given that Cronbach's alpha employs the linear combination among a set of items to estimate the reliability of an instrument and reflective constructs are often created and edited on the basis of a linear combination, then reflective constructs, whether formed via a simple sum or factor scoring coefficients, are predisposed to yield a higher alpha than formative constructs. Test-retest reliability is a less biased indicator of reliability in the present comparison, but such an estimate is often impossible to compute, particularly if the researcher is employing a longitudinal dataset and people are presumed to demonstrate varying rates of change/development (i.e., change rank order) between occasions of measurement. This is true of the present investigation in which occasions are spaced at one year intervals and theory suggests varying rates of change based upon complex interactions of development mechanisms during the interval.

The present study is not focused upon the latent structure of work experiences and values; therefore, the present study will not contain an extended examination of the factor structure of work values and experiences. The latent constructs are employed as a means of reducing the complexity of many items to a manageable subset of latent constructs and are therefore "informally" defined (Bollen, 2002). The present discussion of formative and reflective models, their theoretical and statistical differences, and practical similarities, serves as a rationale for employing confirmatory factor analysis to assess

configural invariance of the value constructs across time, to modify the content of the value constructs on the basis of this analysis, and to employ the resultant factor scoring coefficients to arrive at a numerical representation of the work values constructs. The present discussion also serves as a basis for employing a simple sum of the work experience items to arrive at a manageable subset of latent experience constructs. Moreover, the present discussion serves as a rationale for the omission of traditional indicators of reliability for the work experience items given the bias of Cronbach's alpha in favor of reflective constructs and the lack of adequate test-retest data. Cronbach's alpha is reported for the work values constructs (see Table 5) as an indicator of what the confirmatory factor analysis may yield. The constructs were created via a simple sum of the items and the items were chosen on the basis of conceptual distinctions. They presently suggest weak to moderate reliability for all of the work value latent constructs.

Tables

Table 1.
Demographic Comparison of the City of St. Paul to the United States (1990, U.S. Census).

	St. Paul	United States
Race		
Caucasian	82.40%	80.30%
African American	7.50%	12.00%
American Indian, Eskimo, or Aleut	1.30%	0.80%
Asian or Pacific Islander	7.00%	2.90%
Other Race	2.00%	3.90%
Median Household Income	\$26,498	\$30,056
Median Family Income	\$33,818	\$35,225
Per Capita Income	\$13,727	\$14,420
Educational Attainment (25 years old or older)		
High school graduate (includes equivalency)	81.10%	75.40%
Post-secondary training (degree or not)	51.10%	45.30%
Rate of parents of children 6-17 years old not in the labor force*	16.50%	8.40%

* “Not in Labor Force” is defined by the U.S. Census bureau (http://www.census.gov/td/stf3/append_b.html#EMPLOYMENT) as “All persons 16 years old and over who are not classified as members of the labor force. This category consists mainly of students, housewives, retired workers, seasonal workers enumerated in an off season who were not looking for work, institutionalized persons, and persons doing only incidental unpaid family work (less than 15 hours during the reference week). This rate reflects families in which all parents of children 6-17 years of age who reside in the family home (including single- and dual-parent households) are “not in the labor force”. See Appendix A for an extended excerpt from the U.S. Census bureau web site on this topic.

Table 2.
Unemployment Rate Comparison of the City of St. Paul to the United States (1990 & 1991, U.S. Department of Labor, Bureau of Labor Statistics).

<u>Year</u>	<u>St. Paul</u>	<u>United States</u>
1990	4.7%	5.6%
1991	5.2%	6.8%

Table 3.
Conceptual Classification of the Work Value Items.

<u>Item</u>	<u>Work Values</u>
<u>Construct</u>	
1. Good pay.	Economic Security
2. A steady job, with little chance of being laid off.	Economic Security
3. Good chances of getting ahead.	Economic Security
4. A chance to be helpful to others or useful to society.	Interpersonal
5. A chance to work with people rather than things.	Interpersonal
6. A chance to make my own decisions at work.	Mastery
7. A job where I have a lot of responsibility	Mastery
8. A job that uses my skills and abilities.	Mastery
9. A chance to learn a lot of new things at work.	Mastery

Table 4.
A Conceptual Classification of the Part-Time Work Experience Items.

Items	Work Experience Construct
1. Would you consider your pay “good pay” for the work you do?	Economic Security
2. There is little opportunity for advancement on my job.	Economic Security
3. My job gives me a chance to be helpful to others.	Interpersonal
4. There are nice friendly people to work with.	Interpersonal
5. Overall, how much freedom do you have to make important decisions about what you do at work and how you do it?	Mastery
6. My job uses my skills and abilities.	Mastery
7. My job gives me a chance to learn a lot of new things.	Mastery
8. How often are you interested enough in your job to do more work than your job requires?	Mastery
9. How often do you feel that your work is meaningful and important?	Mastery
10. Most of my interests are centered around my job.	Mastery
11. I am very much involved personally in my job.	Mastery

Table 5.
The Statistical Reliability (Cronbach's alpha) of the Work Value Constructs and their Conceptual Classification.

	Range of Cronbach's alpha from wave 1-4
Part-time work	
Mastery Values	0.69-0.78
Economic Security Values	0.50-0.60
Interpersonal Values	0.64-0.72
Full-time work	
Mastery Values	0.71-0.79
Economic Security Values	0.65-0.70
Interpersonal Values	0.71-0.75

Chapter 4

Results

Measurement Model

The proposed mastery, economic security and interpersonal part-time and full-time work value domains were examined with confirmatory factor analysis to determine if the value domains exhibited configural invariance (i.e., indicators load onto the presumed value constructs) across the high school years and if they conformed to the more restrictive criteria of metric invariance across the high school years (i.e., the factor loadings are constrained to be equal across time). The mastery, economic security, and interpersonal values constructs related to part-time work (PTWV) and all three values constructs related to anticipated full-time work (FTWV) exhibited both configural and the more restrictive metric invariance across time, meaning that the items loaded on the predicted factors across time and the factor loadings were constrained to be equal across time (Wicherts & Dolan, 2004). Specifically, when the indicator items were constrained to load on their theoretically presumed factors across time, and the factor loadings for each item were constrained to be equal across time the non-normed fit indices are greater than 0.90 (FTWV = 0.986 and PTWV = 0.977), the root mean square residuals are less than 0.05 (FTWV = 0.040 and PTWV = 0.046) and all of the goodness-of-fit indices are greater than 0.90 (FTWV = 0.949 and PTWV = 0.948). The combination of these three criteria suggests that the three theoretically-derived value constructs conform to the PTWV and FTWV data across the high school years.

These measurement models were then re-tested to determine if the longitudinal metric invariant factor structure exhibited strict invariance across sex for the PTWV and

FTWV items. If the longitudinal structure conforms to strict invariance, then the number, pattern, and size of the factor loadings, the mean of each factor, and the specific and random errors are all equivalent across groups (Conroy, Metzler, & Hofer, 2003).

Employing the strict invariance criteria to compare the factor model for adolescent males and females, the PTWV and FTWV indicator items fit these data well. The non-normed fit indices are greater than 0.90 (FTWV = 0.983 and PTWV = 0.982), the root mean square residuals are less than 0.05 (FTWV = 0.030 and PTWV = 0.034) and all of the goodness-of-fit indices are greater than or equal to 0.90 (FTWV = 0.900 and PTWV = 0.900). These three criteria support the conclusion that the longitudinal factor structure of values associated with part-time and full-time work identified above is invariant across sex during the high-school years.

Overview of Statistical tests of Research Questions

Relevant descriptive statistics were examined from the perspective of statistical validity and measurement to ensure that the variables employed in this study conform to the assumptions (e.g., normality) of the planned inferential statistical analyses. The target constructs did reasonably conform to normality (Skew and Kurtosis within about ± 1).

As the path models depicted in Figures 1-18 suggest, the research questions and associated research hypotheses will be tested with correlation- and regression-based statistics of varying complexity. H_{2,1}, H_{2,2}, and H_{2,4} of research question 2, and H_{3,3}, H_{3,4}, and H_{3,8} of research question 3, will be examined with OLS regression. The well established, OLS, three-step, regression approach endorsed by Baron and Kenny (1986) will be used to test the mediator hypotheses as well. H_{1,1}, H_{2,3}, H_{3,1}, H_{3,2}, H_{3,5}, H_{3,6}, H_{3,7}, H_{4,1}, H_{4,2}, H_{5,1}, H_{5,2}, H_{6,1}, H_{6,2}, H_{7,1}, and H_{7,2}, will be assessed with the Pearson

correlation statistic and if differences between correlations are specified within a hypothesis, then this will be tested with the test for independent correlations coefficients (Weinberg & Goldberg, 1990). This test is conducted via the following equation:

$$z = \frac{Z_1 - Z_2}{\sqrt{\frac{1}{N_1 - 3} + \frac{1}{N_2 - 3}}}$$

where Z_1 is the z-transformed value of r_1 .

Z_2 is the z-transformed value of r_2 .

N_1 represents the number of pairs of values employed to estimate r_1 .

N_2 represents the number of pairs of values employed to estimate r_2 .

$H_{2,5}$, $H_{3,4}$, $H_{8,1}$, $H_{8,2}$, $H_{8,3}$, $H_{8,4}$, $H_{9,1}$, and $H_{9,2}$ are moderator hypotheses. The nature of the regression-based statistical technique employed to test these hypotheses requires that the data analyst specify a unidirectional relationship even though the conceptual model may suggest a bi-directional relationship. The conceptual model of the value system tested in the present study suggests a bi-directional relationship but the statistical model dictates a unidirectional relationship. Given that OLS regression operates on the observed covariance matrix of the variables (i.e., an estimate of the strength of a bi-directional relationship between all pairs of variables in a model), the estimated magnitude of the relationship in regression coefficient terms is not affected by the direction of the relationship selected by the data analyst. Although the numerical estimate of the regression coefficient may (and usually does) change if the direction of the relationship is changed, the estimated magnitude of the regression coefficient as

reflected in the t-value of the coefficient will remain relatively invariant. This, of course, assumes no colinearity with other covariates.

H_{2,5}, H_{8,2}, and H_{8,4} will be tested with OLS regression employing polynomial trend scores representing linear change because the variables included in the analysis involved few cases of missing data. Although H_{3,4}, H_{8,1}, H_{8,3}, H_{9,1}, and H_{9,2} are moderator hypotheses and are structurally identical or similar identical to H_{2,5}, H_{8,2}, and H_{8,4}, the former set focuss on the change in work experiences across multiple waves of data, and therefore, this set of hypotheses involves some unique missing data problems. When participants were unemployed they did not respond to the work experience items; hence, their work experience data are missing. Given that the majority of participants worked but few consistently engaged in part-time paid work during the high school years, any summary score reflecting change in work experiences across the four waves will yield a significant proportion of missing values because when participants were not working they did not complete the part-time work experience items. Absent a priori efforts to resolve this missing data problem (e.g., imputation efforts), polynomial linear trend scores computed in the traditional manner grossly and unnecessarily restrict the power contained in the work experience data because the procedure employs list-wise deletion. Several strategies will be employed to circumvent this potential missing data problem.

First, the examination of the change in work experience will be limited to 10th through 12th grade because students tended to work with greater frequency during those years²⁴ and as the proposed strategy will reveal, extended to four occasions of measurement drastically increases the complexity of the approach. Second, students who worked during only one occasion of measurement during the study interval (i.e., the high

²⁴ Generally employers seeking formal part-time labor will not hire someone younger than 16 years old.

school years) will be excluded when the research question involves the change in work experiences across time because at least two occasions of measurement will be required to assess change. Third, only the linear polynomial change across time will be examined given that many participants ($n=289$) worked only two of the years spanning 10th to 12th grade.²⁵

Lastly, moderator hypotheses that include the change in work experience across time will be examined in a stepwise fashion. First, the hypotheses will be examined from a sequential-cohort based perspective employing the 10th through 12th grade data. Working participants will be grouped into quasi-cohorts according to their pattern of work experience from 10th to the 12th grade. Groups will include participants who worked at all three occasions or during 10th and 12th grade ($n = 305$), those who worked during only the 10th and 11th ($n = 72$), and those who worked only during the 11th and 12th ($n = 166$) grades.²⁶ Therefore, potentially 53.8% of the sample (543/1010 participants) and 72.4% of those who ever worked during the 10th to 12th grade years (750 participants) will be included in these analyses assuming that these participants completed all of the values and experience questions employed in this model. Second, the moderator hypotheses will be examined to determine if work group membership discussed presently interacts with (i.e., moderates) the relationships in all of the moderator hypotheses involving work experience. This approach, for example, will examine whether the pattern of relationships specified in H_{3,4} (see Figure 22 as an example) varies as a function of the

²⁵ For those participants who worked during all three years spanning 10th to 12th grade, a quadratic polynomial change score could be estimated and examined but is not useful in the present approach because the comparison groups only include data from two occasions of measurement.

²⁶ If all four occasions of measurement were employed then the number of unique quasi work cohorts that worked at least two years would increase from 4 in the proposed approach to 11 work groups thereby substantially reducing the sample size of any one group dramatically.

three work groups above across the 10th to 12th grade interval. Lastly, if work group membership does not moderate the hypothesized relationships, then the work groups will be collapsed and the overall model reestimated to determine if and to what extent, for example (see Figure 7), the relationship between the linear change in part-time work values and part-time work experiences is moderated by the discrepancy between the two regardless of when a participant started working and regardless of the pattern of that work experience. If work group membership influences the hypothesized relationships, then these influences will be examined to determine how the timing (e.g., start work in 10th or 11th grade) and/or configuration (e.g., work during 10th, 11th, and 12 grade versus only two years) of part-time work experience influences the proposed theoretical mechanisms.

Research Question 1: The Relationship between Part-time and Anticipated Full-Time

Work Values

Theory suggests that human values and the work values subsystem are organized into a dynamic system (e.g., Brown & Crace, 1996; Rokeach, 1973). Part-time work (PTWV) and full-time work (FTWV) values are presumed to represent standard-oriented (PTWV) and goal-oriented (FTWV) manifestations of the work values system; hence they are presumed to be related conceptually. According to the process of cohesion discussed earlier, conceptually related values are predicted to exhibit a linear association (e.g., correlation). Therefore and according to H_{1,1}, PTWVs and FTWVs are predicted to exhibit linear associations in the form of correlations (see Figure 1). Tables 6-8 contain the correlation matrices for the part-time and full-time work value domains and the part-time work experiences across the 9th to 12th grades. Table 9 contains the particular correlations between a PTWV and its FTWV analogue from 9th to 12th grade and across

all value domains predicted in H_{1,1}. PTWVs and their FTWV analogues exhibit a moderate to strong linear association across all value domains from the 9th through 12th grades; hence, the results support H_{1,1}.

Research Question 2: The Development of Part-time and Full-time Work Values

Theory suggests that adolescence and young adulthood are critical periods in value system development (Super, 1995). Value system development may be indicated by increasing stability within a particular value and increasing cohesion and decreasing discrepancies between conceptually similar values across time.

Stability may be assessed by employing two different referents, namely the person or the group. Employing the person as the baseline, increasing intraindividual stability is indicated by decreasing cross-wave differences in the salience of a value (i.e., Value salience at time 1 minus salience at time 2). Employing the group as the baseline, increasing *interindividual* stability is indicated by increasing cross-wave correlations, which is an indicator of rank-order stability (see Figure 2). The present sample of adolescents is predicted to exhibit value system development as indicated by increasing intraindividual and interindividual stability.

H_{2,1}

Tables 10 and 11 contain the interindividual stability coefficients for the PTWV and FTWV domains respectively. The interindividual stability coefficients across the PTWV domains were all statistically significant ($p < 0.0001$) and range from a low $r = 0.473$ to a high $r = 0.594$. In terms of FTWV, the stability coefficients were all statistically significant ($p < 0.0001$) and range from a low of $r = 0.410$ to a high of $r = 0.568$. This suggests that PTWV and FTWV domains generally exhibit moderate stability across

time. Examining the stability coefficients across grade level within each domain suggests that adolescents generally exhibit increasing stability in their PTWVs and FTWVs across the high school years. For every PTWV domain and consistent with H_{2,1}, adolescents exhibited greater stability from the 11th to 12th grade relative to the stability exhibited from the 9th to 10th grade. Exceptions exist running contrary to the prediction that all value domains will exhibit increasing stability across the high school years. PTWV within the mastery values domain exhibited decreasing stability from 10th to 11th grade relative to the stability exhibited from 9th to 10th grade. Also, interpersonal values associated with part-time work (PTWV-Interpersonal) exhibit decreasing stability from 11th to 12th grade relative to the stability exhibited from 10th to 11th grade. A follow-up analysis presented below examines whether these longitudinal differences are associated with part-time work, given that both exceptions involve the 10th grade when many adolescents make the transition to formal part-time work.

Given the identified exceptions found in the PTWV domains, the 11-12th grade stability coefficients were contrasted against the 9th to 10th grade stability coefficients for the PTWV and FTWV domains via the test for independent correlations coefficients.

This test is conducted via the following equation:

$$z = \frac{Z_1 - Z_2}{\sqrt{\frac{1}{N_1 - 3} + \frac{1}{N_2 - 3}}}$$

where Z_1 is the z-transformed value of r_1 .

Z_2 is the z-transformed value of r_2 .

N_1 represents the number of pairs of values employed to estimate r_1 .

N_2 represents the number of pairs of values employed to estimate r_2 .

The results are contained in Tables 12 and 13. They consistently demonstrate increasing stability in the PTWV and FTWV domains when the 11th to 12th grade stability coefficients are contrasted against the 9th to 10th grade coefficients. Moreover, these results demonstrate that the stability increase in PTWV-mastery ($z = 2.241$) is less than the stability increase in FTWV-mastery ($z = 3.690$). These results support H_{2,1}.

Comparing and contrasting across the PTWV and FTWV stability coefficients reveals two general findings. First, every FTWV domain demonstrated consistent increases in stability from 9th to 12th grades and all PTWV and FTWV domains exhibited statistically significant increasing stability when the 11th to 12th grade stability coefficients were contrasted against the 9th to 10th grade coefficients. Second, every PTWV domain exhibited greater stability than their respective FTWV domain when comparing the same cross-grade coefficient. For example, every PTWV-mastery stability coefficient was greater than the FTWV-mastery coefficients when the same occasions are compared (e.g., PTWV 9th to 10th stability ($r = 0.523$) > FTWV 9th to 10th stability ($r = 0.440$)).

H_{2,2}

H_{2,2} states that the magnitude of the intraindividual stability of a value, in the form of simple differences from one grade to the next, will decrease across the high school years. After computing the cross-grade differences for all PTWV and FTWV across the three value domains, the differences were transformed into their absolute values because the

focus of this analysis is the magnitude of the intraindividual difference rather than the direction of that difference.²⁷

H_{2,2} was tested with RMANOVA. The magnitude of the cross-wave intraindividual stability values was treated as the repeated factor and was regressed onto a constant. This procedure yields a test of whether the mean- intraindividual linear and quadratic intraindividual change in the repeated factor is statistically different from zero; in this case, the repeated factor was the PTWV and FTWV aspects of the three value domains. The results of this procedure and analysis are presented in Tables 14 and 15. The net of these findings suggests that the magnitude of the intraindividual change in PTWV and FTWV domains from grade to grade either remained constant or decreased over time. Specifically, all of the PTWV domains demonstrated significant decreases in the magnitude of intraindividual change across the high school years (see Table 14). Of the FTWV domains (see Table 15), mastery values exhibited a decreasing *trend* ($p > 0.10$), economic security values exhibited a statistically significant decreasing trend, and interpersonal values exhibited no statistically significant change over time. Of the statistically significant changes in the PTWV and FTWV domains the magnitude of the observed changes was generally small. The partial eta squared estimates for the main effects ranged from 0 to 0.011, suggesting that the observed trends were reflective of slight changes toward greater intraindividual stability across time in this sample of adolescents.²⁸

²⁷ If the focus of this hypothesis were on increases or decreases in the saliency of a particular value across grade level, then the raw difference would be the appropriate indicator, but this hypothesis involves no prediction concerning the direction of the change in saliency. Rather, this hypothesis involves an examination of the cross-grade stability of the saliency of a value.

²⁸ Eta² ranges from 0 to 1. The eta² estimates for the main effect are akin to the R² in OLS regression and the eta² estimates for the polynomial trends are akin to the partial R² estimate in OLS regression.

H_{2,2} was examined with RMANOVA again, but in this case, the change in magnitude was assessed with profile contrasts to determine whether the increasing intraindividual stability was exhibited uniformly or disproportionately across the high school years. Profile contrasts compute the difference between adjacent waves of data. Like the previous analysis, these values were regressed onto a constant to assess whether the change in stability across time was different than zero and to assess the magnitude of the change in intraindividual stability relative to the other waves. This analysis was conducted for each PTWV and FTWV domain. In brief, this set of analyses demonstrates that all PTWV and FTWV domains exhibit increasing intraindividual stability, but the increase in stability is not consistent and is generally small (i.e., small eta-squared values) across the four years and the timing of the increase varies across the value domains (see Tables 16 and 17).

H_{2,3}

Correlations were computed between the PTWV domains and their analogous FTWV domains (see Table 9) across the 9th to 12th grade years. Contrary to the prediction forwarded in H_{2,3} (see Figure 3), increasing cohesion in the form of significant and consistent increases in the positive linear association between PTWV and analogous FTWV domains was not observed. The change in the cohesion of mastery and interpersonal values conformed to a cubic function and economic security values conformed to a quadratic function across the high school years. The trends involved net *decreases* in cohesion for the *mastery* and *economic security value domains* and a net *increase* in the *interpersonal value* domain contrasting the 12th grade school year to the 9th grade year. These net differences between the 9th and 12th grades were not statistically

significant when examined with the aforementioned test for independent correlations coefficients (see Table 18).

H_{2,4}

This hypothesis was examined in two phases. First, the discrepancy between a PTWV domain and its FTWV analogue was examined with RMANOVA to determine if the discrepancy between the two decreased across the high school years. A decreasing pattern would suggest that the salience of PTWVs and FTWVs was becoming more consistent (i.e., less discrepant) across the sample and this is an indicator of value system development at the level of the sample. Second, the target discrepancies between PTWV and FTWV were examined to determine if larger discrepancies at an earlier occasion were associated with smaller discrepancies at a latter occasion. This association tests the assumption that large discrepancies (regardless of which value is more or less salient) motivate a change toward smaller discrepancies presumably because large discrepancies yield negative affect. The two models differ from one another because the phase 1 model tests whether adolescents exhibit group level discrepancy reduction across time, while the latter examines if adolescents who exhibit large discrepancies at an earlier occasion demonstrate discrepancy reduction thereafter. This aspect of the hypothesis will be examined by predicting the discrepancies at a later occasion with the discrepancies at an earlier occasion.

Phase 1

The first phase of H_{2,3} was tested with RMANOVA. The results (see Table 19) demonstrate that the mastery and economic security values domains exhibited statistically significant change that conformed to a negative quadratic function. This suggests that,

from an absolute value perspective, mastery and economic security value discrepancies increased during the 10th and 11th grades relative to the 9th and 12th grades. The net change comparing 9th and 12th grade was zero for mastery values, but for economic security the net change, comparing 9th and 12th grades leaned toward decreasing discrepancies (in terms of absolute value). Interpersonal values exhibited no significant changes across the high school years. Examining the eta squared estimates suggests that all statistically significant polynomial trends are quite small.

These findings yield a few general conclusions. First, the observed quadratic trends toward increasing discrepancies during the 10th and 11th grade years relative to the 9th and 12th grades is contrary to the prediction of H_{2,3}. Second, the economic security value domain was the only domain to demonstrate systematic decreases across time consistent with H_{2,3}. Third, the eta squared estimates demonstrate that all of the statistically significant changes are quite small. From a conceptual perspective, therefore, the discrepancies between the PTWV and FTWV aspects of the three value domains exhibited little systematic change across the high school years.

Phase 2

The second phase of H_{2,3} was tested with OLS regression to determine whether larger discrepancies between a PTWV domain and its FTWV analogue predict smaller changes at the next occasion of measurement. This analysis was repeated for all value domains across all four occasions of measurement. Figure 19 provides the scatter plots and predicted regression lines for the PTWV-FTWV mastery value discrepancies from 9th to 12th grade as examples of the discussion that follows.

Across every value domain and every occasion of measurement, the results (see Tables 20-22) support the conclusion that there is a positive linear association between a PTWV-FTWV discrepancy and the same discrepancy a year later. This positive linear association coupled with the identified curvilinear associations yields five general findings.

First, when adolescents rated the salience of a FTWV domain as greater than the salience of its analogous PTWV domain (a negative discrepancy), then larger discrepancies (in the absolute value sense) predicted smaller discrepancies (in the absolute value sense) a year later.

Second, relatively small discrepancies at an earlier occasion predicted somewhat smaller and generally negative discrepancies a year later. Given that positive discrepancies (PTWV more salient than its FTWV analogue) generally shift toward becoming negative over time, this suggests that adolescents generally change the salience of their values such that the FTWV domain becomes more important than its PTWV analogue as students approach the end of the high school years. At this point, the results do not reveal whether the reverse in salience is the result of the PTWV, the FTWV analogue, or both values changing over time.

Third, the association between the discrepancies at two adjacent occasions tended to approach zero when adolescents rated a PTWV value domain as being more important than its analogous FTWV domain. This tendency is reflected in those regression models that contain a significant negative quadratic function (see Tables 20 and 21 and Figure 19 (see scatter plots of 9th predicting 10th grade and 11th predicting 12th grade function)). The quadratic (the squared predictor term) aspect suggests that the magnitude of the

discrepancy reduction process became exponentially more influential toward the extreme negative end of the x- and y-axis where extreme discrepancies are generally located.

Given that students generally rated the salience (i.e., importance) of FTWV as being greater than the salience of PTWV, the distribution of discrepancy scores was generally situated on the negative side of the positive to negative continuum. Generally, few positive discrepancies exceeded positive four while many more negative discrepancies exceeded negative four.²⁹ Speaking in terms of the absolute value of a discrepancy, the extreme negative discrepancies were much larger than the extreme positive scores. This property of the distribution of discrepancy scores attenuated the magnitude of positive discrepancies, and as predicted in H_{2,3}, smaller discrepancies (in the absolute value sense) generally yielded smaller uncorrelated discrepancies at a later occasion.³⁰

Finally, the relationship between discrepancies at adjacent occasions generally did not conform to a cubic function, and when it did, the position of the point of inflection of the cubic function relative to the scatter plot was not as predicted. The plots of the regression functions presented in Figure 20 suggest that the discrepancy reduction process operates in the expected direction when discrepancies are small to moderate, and they also suggest that at extreme discrepancies the process yields exponentially larger and opposite discrepancies.³¹ Given the nature of these cubic functions the expectation of a cubic function presented in H_{2,3} is not satisfied, but the predicted positive trend toward discrepancy reduction is supported.

²⁹ This is not to suggest that the data exhibited negative skew; it suggests that the mean discrepancy is negative.

³⁰ Small discrepancies may be more the result of a lack of measurement precision or normal slight variations in values than a meaningful salience difference.

³¹ In the absolute value sense, a large positive discrepancy at an earlier occasion yields an even larger positive discrepancy at the subsequent occasion.

Tentative Summary of the Results

Consolidating the discrepancy reduction findings from H_{2,4} and the cohesion estimates presented in H_{2,3} yields a few interesting patterns. As a group, adolescents' mastery and interpersonal values exhibited no statistically significant changes toward increasing cohesion and decreasing discrepancies comparing the 9th and 12th grade years and interpersonal values exhibited no change in cohesion and only a slight, but statistically significant, net change toward discrepancy reduction. As a whole, the magnitude of the correlations across values domains suggests that the level of cohesion varies by value domain. The typical PTWV and FTWV analogue within the interpersonal domain shares between 40 and 50% of their variance while the typical PTWV and FTWV analogue within the economic security domain shares between 20 and 25% of their variance. This suggests that the magnitude of cohesion varies across value domains. These discrepancy data demonstrate that the discrepancy scores for mastery and economic security values conformed to a quadratic trend, suggesting that discrepancies increased from 9th to 10th grade and remained elevated through 11th grade before declining precipitously during the 12th grade. These discrepancy data also support the existence of a discrepancy reduction process. Larger discrepancies tend to become smaller over time and this process is most influential within the value system when a FTWV domain is rated as being more important than its PTWV analogue and when the discrepancy is initially large.

A Working Hypothesis

Given that the high school years represent the period when adolescents tend to make the transition to formal part-time work and 83% of the adolescents in the present sample

worked at some time during this period, the transition to work may disturb the value system and, specifically, the predicted developmental pattern toward increasing cohesion and decreasing discrepancies within the value system as students negotiate differences between their new formal part-time work experiences and part-time work values. These differences could prompt adolescents to adjust the salience of the PTWV domains that not only yield decreased discrepancies and increased cohesion between part-time work values and experiences, but also yield increased discrepancies and decreased cohesion between part-time work values and analogous full-time work values. In brief, movement into part-time work experiences may temporarily destabilize the value system, thereby interfering with the predicted pattern of increasing cohesion and decreasing discrepancies across the high school years.

As an exploratory follow-up study to the findings reported thus far, three groups of adolescents were identified on the basis of their distinct part-time work patterns. Adolescents who repeatedly moved into and out of the part-time labor force across the high school years (termed the inconsistent employment group) were compared with adolescents who reported consistent employment (termed the consistent employment group) and those who reported no employment (termed the consistent non-employment group) across the high school years. Adolescents in the inconsistent employment group reported two transitions into the labor force and/or two transitions out of the labor force – as identified by two years of reported employment during the high school years spaced by at least one year of non-employment. This group, then included adolescents who worked for two years and who did not work for two years during the space of the high school period.

The working hypothesis was that those adolescents who reported stable non-employment would exhibit increasing cohesion and decreasing discrepancies across the high school years while those adolescents who experienced stable and unstable employment would not exhibit the predicted pattern. Although one might expect a different pattern for the stable employment group by virtue of their “stable” employment, this group could have changed employers and/or work contexts within a work setting and this would not have been detected with these data; therefore, this group could include those who experienced work changes but were consistently in the labor force.

Examination of the correlations between PTWV and analogous FTWV domains by employment group (see Table 23) demonstrates a consistent pattern. Focusing on the mean correlations for each employment group across all three value domains, those adolescents who reported consistent non-employment across the high school years exhibited stronger cohesion than adolescents who reported consistent employment and they in turn exhibited stronger cohesion than those who reported inconsistent employment. The predicted pattern of increasing correlations specified in H_{2,3} was not exhibited, however, within any of the employment groups; therefore, the expected difference in the longitudinal patterns of cohesion across employment groups specified in this working hypothesis was not supported by the data. In brief, unstable employment may disturb cohesion within the value system relative to stable non-employment, but it does not appear to disrupt the theoretically predicted but empirically unrealized longitudinal pattern of increasing cohesion across the high school years.

RMANOVA models were computed to test if the adolescents’ pattern of employment influenced the magnitude and longitudinal pattern of the discrepancies

between PTWV and analogous FTWV domains across the high school years. The working hypothesis was that the stable unemployed group would exhibit smaller and decreasing discrepancies across time relative to the stabled employed and unemployed groups because moving into and out of work settings could contribute to increasing discrepancies between a PTWV and its FTWV analogue. The results (see Tables 24-26) clearly demonstrate that the longitudinal pattern of discrepancy change does not differ across employment groups, but for economic security, the stable unemployed group consistently exhibited smaller discrepancies than the unstable employed group. These findings suggest that unstable employment may disrupt the value system by inducing larger discrepancies within certain value domains.

H_{2.5}

OLS regression models were employed to test whether the absolute value of a discrepancy between a PTWV and analogous FTWV moderates the relationship between the polynomial change in both the PTWV and FTWV across time (see Figure 4 for an example model). Models were estimated for the linear and quadratic trends and for the intervals spanning 9th to 12th, 9th to 11th, and 10th to 12th grades.

The results (see Tables 27-29) across all three value domains demonstrate that the PTWV polynomial trend (e.g., linear and quadratic) predicts the FTWV polynomial trend from 9th to 12th grade. This relationship is moderate to strong in magnitude, and it is moderated by the absolute value of the PTWV-FTWV discrepancy during the 9th grade. Focusing on the mastery values domain as an example, Figure 21 depicts the strength and direction of the relationship between the PTWV and FTWV polynomial trends from 9th to 12th grade when the observed PTWV-FTWV discrepancy is low (0), moderate (3.5) and

high (7). The top portion of the Figure demonstrates the association between the linear trends and the bottom portion depicts the association between the quadratic trends. Upon close inspection of the top portion of Figure 21, it is apparent that when the discrepancy is low, the association between the PTWV and FTWV linear trends is positive, which reflects cohesion that serves to maintain small discrepancies between the two over time. When the discrepancy is large the association between the PTWV and FTWV linear trends is negative. This temporary change in cohesion serves to decrease the discrepancy between the two over time. This pattern of association at varying levels of the PTWV-FTWV discrepancy was replicated across the mastery, economic security, and interpersonal values domains.

Although these analyses clearly support the proposed moderator model suggesting that the discrepancy reduction mechanism interacts with the cohesion mechanism, they do not clearly demonstrate if and to what extent the PTWV, the FTWV, or a combination of both tend to shift toward discrepancy reduction when the discrepancy between the two is large (e.g., $PTWV < FTWV$ or $PTWV > FTWV$). As a follow-up to this analysis, the mastery, economic security, and interpersonal values data were standardized. The original value domains were constructed from varying numbers of indicator items; therefore, they were on different scales. The participants were categorized into three discrepancy score groups (33rd and 66th percentile breaks) in order to contrast more extreme discrepancy groups. This transformation of the original data was conducted in order to place the value domains on the same scale so that mean changes over time could be comparable not only between a PTWV and FTWV within a value domain but also across value domains. Using the standardized data and RMANOVA, the discrepancy

group data were employed to predict the change in PTWV and FTWV from 9th to 12th grade in order to determine the nature of the change of the PTWV and FTWV when the discrepancy was either a large positive number (i.e., greater than the 66th percentile) or a large negative number (i.e., less than the 33rd percentile) during the 9th grade.³²

Before proceeding into the presentation of these results, they must first be qualified by the fact that the person-level PTWV and FTWV polynomial trends across the high school years are highly variable and these summary statements are certainly only one way to summarize the observed complexity of the actual trends. The averages for the PTWVs and FTWVs across time from the RMANOVA models are depicted in Figures 22-24 as a means of summarizing how adolescents tend to mitigate the discrepancy between a PTWV and FTWV. These figures, however, should be contrasted against the average person-level polynomial trends under the same discrepancy conditions to ensure that means by grade are reflections of the person-level polynomial change data. The results (see Table 30) demonstrate that the linear and quadratic polynomial trends computed from the means depicted in Figures 22 to 24 are close to being equivalent across all value domains and across the PTWV and FTWV analogues.

Given that the form and magnitude of the average trends depicted in Figures 22 to 24 reflect the person-level polynomial trend data, the figures demonstrate two clear trends concerning value change across time.³³ First, all of the value domains tend to achieve discrepancy reduction in a similar fashion when the PTWV-FTWV discrepancy is large.

³² These percentile breaks were chosen arbitrarily, but recall that this analysis is not employed to test H_{2,5}. This analysis was employed to simply generate means so that change over time could be depicted within extreme discrepancy groups.

³³ Note that the x- and y-axis are on the same scale across Figures 26-28 to permit a comparison of the relative magnitude of the initial discrepancy, the change toward discrepancy reduction, and the relative maintenance of a smaller discrepancy over time.

The tendency is to reduce the bulk of the discrepancy within one year via changes to both the PTWV and FTWV aspects of the value domain and that initial reduction is either maintained or further reduced from 10th to 12th grade. It should be noted that the scale of the change may seem small, but recall that these variables are on a standardized metric (SD = 1). For example, when PTWV is greater than FTWV within the mastery domain (see Figure 22) the PTWV decreases about 1/3rd of a standard deviation and the FTWV increases about 2/5th of a standard deviation from 9th to 10th grade.

Second, when the discrepancy is large and the FTWV is more salient than the PTWV analogue, the discrepancy appears to remain larger than when the PTWV is rated as more salient than the FTWV. Perhaps adolescents who rated a FTWV as substantially more salient than the PTWV analogue made a greater distinction between their part-time work experience and their future career than those who rated the PTWV as substantially more salient than the FTWV. Perhaps adolescents who rate the FTWV as substantially more important than the PTWV aspire to earn a more advanced post-secondary education and/or enter a more prestigious occupation after the completion of their education and see part-time work during high school as being rather independent from their aspirations.

Research Question 3: The Dynamic Relationship between Work Values and Experiences

H_{3.1}

Correlation coefficients were computed to determine whether part-time work values were associated with part-time work experiences during the high school years. The results (see Table 31) vary by domain, with one domain exhibiting almost no association; hence, this hypothesis is supported by these data conditional upon the domain.

The mastery domain demonstrates the strongest association followed by the interpersonal and economic domains respectively. A consequence of these differences is that adolescents appear to exhibit greater cohesiveness between their mastery values and experiences and almost no cohesiveness between their economic security values and experiences. In other words, mastery values and experiences appear to be engaged in a dynamic relationship across the high school years while economic values and experience are not.

H_{3.2}

The longitudinal pattern of the cohesion (i.e., correlation) coefficients between PTWV and PWTE presented in Table 31 suggests that the pattern varies by domain, but none of the domains clearly conform to the hypothesized increasing pattern of cohesion coefficients. The longitudinal cohesion pattern within the mastery domain is best characterized as principally a quadratic pattern. Cohesion tends to increase from 9th to 10th grade and remain stable through 11th grade until declining during the 12th grade. Within the economic security domain, the pattern takes on a cubic form that yields a slight net increase from 9th to 12th grade. From 9th to 10th grade cohesion increases, then decreases from 10th to 11th, and increases from 11th to 12th grade. Like the economic security domain, the cohesion pattern in the interpersonal domain conforms to a cubic pattern and exhibits a slight net increase from 9th to 12th grade, but unlike the economic security domain, the cubic pattern follows the reverse trend. Cohesion decreases from 9th to 10th grade, increases from 10th to 11th grade, and decreases from 11th to 12th grade. In keeping with H_{2.3} and the results presented in Table 18, the correlations from the 12th grade were contrasted against those from the 9th grade to test H_{3.2}. The results (see Table

32) fail to support the hypothesis that the correlation coefficients (i.e., cohesion) between a PTWV and its PTWE analogue increase over the high school years and suggests that part-time work values and experiences maintain a fairly consistent level of cohesion across the high school years and the mastery domain exhibits more cohesion than the other two domains.

H_{3,3}

The presumed longitudinal change toward PTWV and PTWE discrepancy reduction across the high school years was tested in two phases consistent with H_{2,4}. First, RMANOVA was employed to determine whether the average discrepancy score decreased across the high school years. Second, OLS regression was employed to test whether or not a larger discrepancy (either positive or negative) at an earlier occasion (e.g., time 1) predicted a smaller discrepancy at a later occasion (e.g., time 1 + 1) such that this association would conform to a linear or cubic pattern.

Unlike the analyses tied to research question 2, the RMANOVA was broken into change from 9th to 11th grade and from 10th to 12th grade because of the 1010 participants in the study only 156 worked from the 9th to the 12th grade; hence, a RMANOVA employing all four waves of data would effectively exclude the vast majority of the participants in the study. Moreover, the data-analytic approach here differs from the approach taken in research question 2 because all the analyses concerning this hypothesis and all that follow within research question 3 employ centered data of the PTWV and PTWE data. This difference is due to the PTWV data being composed of a different number of items than the PTWE data within each value domain, and in some cases, particular items used to construct the PTWE items were on a different scale (i.e., Likert

scale ranging from 1-4 or 1-5) than the values items (i.e., Likert scale ranging from 1-4). Employing centered data permit a clearer interpretation of the discrepancy scores given that the means of the PTWV and PTWE are equal. Positive discrepancies suggest that the PTWV was rated higher than the PTWE and vice versa.

Phase 1

The results of the RMANOVA (see Table 19) suggest that discrepancy reduction was not exhibited during the 9th to 11th grade interval (n = 200 to 209) or the 10th to 12th grade interval (n = 238 to 250). The results demonstrate, however, only very slight mean discrepancies between values and experiences, suggesting that little discrepancy reduction was possible even if a discrepancy reduction process existed. This is clearly contrasted against the PTWV-FTWV discrepancies, which were generally much larger than the PTWV-PTWE discrepancies. This difference is interesting in light of the relatively weak cohesion between the PTWVs and analogous PTWEs discussed in the context of H_{3,2}. Consolidating the two findings, adolescents exhibited fairly weak cohesion between their part-time work values and experiences, but the discrepancy between the two was small relative to cohesion and discrepancies exhibited between PTWVs and analogous FTWVs presented within the context of research question 2.

Phase 2

The product of the OLS regression models, testing whether larger discrepancies between a PTWV domain and its PTWE analogue predict smaller changes at the next occasion of measurement, is presented in Tables 35-37.³⁴ The prevailing pattern across the experience/value domains suggests a linear association such that a larger (in the

³⁴ Lower portions of each Table examining the discrepancy change from 9th to 11th and from 10th to 12th grades are discussed below.

absolute value sense) PTWV-PTWE discrepancy at an earlier occasion (time 1) predicts a decrease in the discrepancy a year later (time 1 + 1). The top of Figure 25 contains a scatter plot and estimated regression line for a typical linear association between cross-wave PTWV-PTWE discrepancies; in this case, the PTWV-PTWE mastery domain discrepancy during the 9th grade is predicting the same discrepancy a year later. The atypical pattern reflected in the results of three of the nine regression models contained in Tables 35 to 37 is depicted in the bottom portion of Figure 25. This pattern suggests that in cases when the salience of a PTWV is relatively greater than the amount of the valued experience received in the part-time work setting, then little change is predicted. When the reverse situation is true, discrepancy reduction is predicted a year later. This atypical pattern was observed once in each of the value/experience domains and it was observed twice during the transition from 10th to 11th grade and once during the transition from 11th to 12th grade. In brief, H_{3,3} was supported, given that the discrepancy at an earlier occasion generally predicted discrepancy reduction at a later occasion and the association generally conformed to a linear association, although some exceptions were noted.

Given the inherent missing data problem associated with the work experience data, an additional set of analyses was conducted employing the discrepancy at an earlier occasion (time 1) to predict a discrepancy two years later (time 1 + 2) only for those adolescents who did not work in the intermediate year (time 1 + 1). This additional step is on the one hand useful, because with the exception of those adolescents who worked only during the 9th and 12th grades ($n = 40$), it capitalizes on all of the work experience data from adolescents who worked at least two years from 9th to 12th grade. On the other hand, it differs from previous analyses, given that the duration between measured

discrepancies is twice as long. This analysis specifically includes those students who did not work during the 10th or 11th grades and those students who worked continuously from 9th to 11th and/or from 10th to 12th grades and examines the discrepancy change across the two years. Conducting this additional step capitalizes on the data from students who worked during the 9th and 11th grades (n = 59) and from the 10th to 12th grades (n = 102) who would otherwise have been excluded from this set of analyses.

The results (see the bottom portions of Tables 35-37) generally support the pattern of associations identified in the mastery domain in the immediately preceding analyses, but they differ from those identified in the economic security and interpersonal domain. For the latter two domains, the statistically significant associations conform to a cubic function (see Figure 26) congruent with the function predicted in H_{3,3}. These cubic functions suggest that large discrepancies at an earlier occasion are associated with discrepancy reduction two years later while small discrepancies are relatively uncorrelated with later discrepancies. This identified two-year pattern was examined for all the PTWV-FTWV discrepancies examined in H_{2,4}. This cubic pattern was not found in the PTWV-FTWV discrepancy data. Given the number of associations tested within the PTWV-PTWE data, these cubic associations should be treated with caution, but they demonstrate the anticipated pattern expressed in H_{3,3}.

H_{3,4}

The discrepancy between a value associated with part-time work and analogous part-time work experiences is presumed to moderate the relationship between values and experiences. This model is conceptually akin to the model tested in H_{2,5}, and is tested with the same statistical technique (i.e., OLS regression), but H_{3,4} methodologically

differs from H_{2,5} because the work experience data involve a unique problem with missing data. Many participants moved into and out of part-time work during the high school years and those students who were not employed during an assessment period did not complete the work experience questions; hence, their data were coded as missing. If the linear change from 10th to 12th grade were employed, then many participants would be excluded who worked during 10th and 11th grade but not 12th grade as well as participants who worked during 11th and 12th grade but not 10th grade. The benefits of this approach were presented in the overview of statistical procedures above and will not be reiterated here. In short, this cohort-sequential technique maximizes the available data while guarding against the potential that the timing of a participant's work influenced the presumed moderator model (see Figure 18).

The results (see Tables 38-40) demonstrate some relevant consistencies and inconsistencies across the mastery, economic security, and interpersonal domains. In terms of the consistencies, the linear change in values predicts the linear change in experiences and the timing of employment (i.e., employment cohort group status) does not have a statistically significant influence on the linear change in PTWEs or an influence on the moderating effect of the PTWV-PTWE discrepancy on the relationship between the linear change in value and experience across the mastery domain (i.e., B₃ and B₄ are not statistically significant in Figure 18 across all three domains). The lack of an employment cohort effect suggests that the timing of work has no effect on the presumed moderator model.

Regarding the inconsistencies, no main effects or interactions are significant predictors of the linear change in mastery experience aside from the linear change in

mastery values. Within the economic security and interpersonal domains, the interaction between the linear change in values and the PTWV-PTWE discrepancy is a significant predictor supporting the prediction that the PTWV-PTWE discrepancy moderates the relationship between the linear change in values and experience. This inconsistency is not critical, particularly if the presumed moderator model holds across the three domains, absent the employment cohort group effect.

The moderator models for the mastery, economic security and interpersonal domains were reestimated without the employment status grouping variable, given that they had no statistically significant effect in the immediately preceding analyses. The results demonstrate (see Tables 41-43) across all three domains that the PTWV-PTWE discrepancy moderates the relationship between the linear change in values and experience across the 10th to 12th grades. Therefore, the results support H_{3,4}. The r-square estimates of the regression models reveal, however, that only a very small portion of the variance in the change in PTWE is explained by the moderator models.

In order to determine if and to what extent the PTWV, the PTWE, or a combination of both tend to shift toward discrepancy reduction when the discrepancy between the two is large (e.g., $PTWV < PTWE$ or $PTWV > PTWE$), the mastery, economic security, and interpersonal values data were standardized. Similar in nature to the PTWV and FTWV data examined in H_{2,5}, the original PTWE domains were constructed from varying numbers of indicator items within a domain and between domains; therefore, they were on different scales. This transformation of the original data was conducted in order to place the value and experience domains on the same scale so that mean changes over time could be comparable both between a PTWV and PTWE within a value-experience

domain but also across value-experience domains. The new discrepancy scores were categorized into three groups (33rd and 66th percentile breaks) in order to contrast more extreme discrepancy groups.³⁵

Distinct from the strategy presented in H2.5, the PTWV, the PTWE and the PTWV-PTWE discrepancy data were further reorganized to be consistent with the immediately preceding OLS regression models such that time 1 in this analysis reflected either 10th or 11th grade and time 2 reflected data from either 11th or 12th grade, depending on the grades during which a participant worked. For example, for those students who worked during the 10th and 12th grades, time 1 reflected data from the 10th grade and time 2 data reflected data from the 12th grade, but for students who worked during the 10th and 11th grades, the time 1 data and the time 2 data reflected those grades. For every participant in the following analysis, time 1 data precedes time 2 data, but the interval in between may be one or two years and may reflect varying grade levels.

The standardized and categorized PTWV-PTWE discrepancy data were employed in a RMANOVA to predict the change in PTWV and PTWE from time 1 to time 2 in order to calculate the mean PTWV and PTWE scores across the two occasions for those adolescents who experienced large (less than the 33rd or greater than the 66th percentiles) discrepancies between the two (i.e., $PTWV < PTWE$ or $PTWV > PTWE$). The resulting means are depicted in Figures 27 to 29.³⁶

³⁵ These percentile breaks were chosen arbitrarily. Recall, however, that this analysis is not employed to test H2.5. This analysis was employed to simply generate means so that change over time could be depicted within extreme discrepancy groups.

³⁶ Note that the y-axis is on the same scale across Figures 31-33 and relative to Figures 26-28 to permit a comparison of the relative magnitude of the initial discrepancy and change toward discrepancy reduction and the relative consistency after discrepancy reduction. The x-axis is a time scale relative to the person given that time 1 may reflect 10th or 11th grade and time 2 may represent 11th or 12th grade depending on the timing and pattern of an adolescent's employment.

The results (see Figures 27 to 29) reveal that an initially large PTWV-PTWE discrepancy results in discrepancy reduction across time. Aside from this consistent trend, the results also demonstrate that the mastery domain exhibits a fairly distinct picture relative to the economic security and interpersonal domains. The magnitude of discrepancy for the economic security and interpersonal domains is much smaller relative to the PTWV-FTWV discrepancy results presented earlier (see Figures 22-24), suggesting that part-time work values and experiences are generally less discrepant above the 66th percentile and below the 33rd percentile than PTWV-FTWV discrepancies. The relative lack of extreme discrepancy scores within the economic security and interpersonal domains suggests that in general PTWV and PTWE are fairly consistent during the 10th to 12th grade years. When slight discrepancies occur within the economic security and interpersonal domains, the results demonstrate that values associated with part-time work tend to be more changeable than work experiences.

H3.5

The results from the correlation analysis testing the associations between FTWVs and PTWEs across the three domains demonstrates that FTWVs and the PTWE analogues are only weakly, but in a statistically significant fashion, associated with one another across the high school years (see Table 44) within the mastery and interpersonal domains. FTWVs and PTWEs are not associated with one another within the economic security domain. H_{3.5} is therefore supported conditional upon the domain, but the magnitude of the significant associations is quite small.

H3.6

Although the differences between the correlations from the 9th grade and 12th grade data within the mastery and interpersonal domain do not appear statistically different, in keeping with H_{2,3}, the statistical tests were conducted to determine whether the magnitude of the correlation is larger in the 12th grade. Given that no linear relationship exists between FTWV and PTWE within the economic security domain, this test was not performed for the economic security domain. The results (see Table 45) demonstrate no difference between the correlations resulting from the 9th and 12th grade data. H_{3,6} is, therefore, not supported.

H_{3,7}

The tests of the difference between the PTWV-PTWE associations and the FTWV-PTWE associations are presented in Table 46. The mastery domain demonstrated differences in within-wave associations consistent with H_{3,7}. In short, the association between PTWV and PTWE was greater than the association between FTWV and PTWE. This pattern was not, however, replicated across the economic security and interpersonal domains. H_{3,7} was supported for the mastery domain but not for the economic security and interpersonal domains.

H_{3,8}

Given that no linear relationship exists between FTWV and PTWE within the economic security domain (a requisite of the test of the mediator model (Baron & Kenny, 1986)), the hypothesized mediator models are estimated for only the mastery and interpersonal domains. The results presented in Table 9, Table 31, and Table 46 demonstrate that a statistically significant association exists between PTWV and FTWV, PTWV and PTWE, and FTWV and PTWE within the mastery and interpersonal domains.

The presence of these associations is a prerequisite for testing the presumption that PTWV mediates the relationship between PTWV and PTWE. The final aspect of this series of tests involves the OLS regression models presented in Tables 47 and 48. With the exception of the mediator models of the mastery domain during the 12th grade and the interpersonal domain during the 10th grade, the standard-oriented values (PTWV) mediate the relationship between analogous goal-oriented values (FTWV) and experiences (PTWE) across both the mastery and interpersonal domain and across grade level. In the two exceptional cases, the results demonstrate partial mediation, and in the case of the 12th grade mastery domain, the remaining direct effect of FTWV on PTWE is very small. With the exception of these two aforementioned aberrations, the prevailing pattern of results generally supports H_{3,8} and the theoretical model suggesting that the relationship between contemporaneous experience and goal-oriented values is mediated by the standard-oriented values.

A Tentative Summary and a Set of Follow-up Analyses

The results above demonstrate that the discrepancy between a PTWV and its FTWV analogue and the discrepancy between a PTWV and its PTWE analogue moderate the relationships between the polynomial change in PTWV and FTWV and between PTWV and PTWE across the high school years, but the magnitude of the influence of these discrepancies on the PTWVs relative to one another has not been tested. Both types of discrepancies were employed simultaneously in a regression model to determine the relative influence of each on the residualized gain of a value across time.

For example, within the mastery domain, the PTWV at a later occasion (time1 + 1) was predicted by PTWV at an earlier occasion (time1) to generate residualized gain

scores for the PTWV and these scores were employed as an outcome and simultaneously predicted by the PTWV-FTWV discrepancy and PTWV-PTWE discrepancy at the earlier occasion (time1). The regression line generated by predicting PTWV and time1 + 1 with PTWV at time1 represents the typical change in values within the sample and the residuals represent participants' change in PTWV relative to the typical change in values for the group.

In some of the previous analyses the absolute value of the discrepancy was employed, but in this set of analyses the differences between the standardized (i.e., z-scored) values were used because the working hypothesis is that the discrepancy score will be inversely associated with residualized gain. In cases when a large discrepancy exists and PTWV is greater than FTWV at time 1, then residualized gain in the PTWV is predicted to be negative and the gain in the FTWV is predicted to be positive. If a large discrepancy exists and PTWV is less than FTWV at time 1, then the reverse trends are predicted. Hence, the sign and magnitude of the discrepancy are both relevant and the raw discrepancy of the standardized data is the most appropriate predictor. This analysis tests the relative independent influence of each type of discrepancy on the residualized gain in the PTWV. Given that residualized gain is an indicator of person-level change relative to the sample, this is an assessment of interindividual change.

The results demonstrate (see Tables 49-50) that the independent influence of each type of discrepancy differed across the value domains and across time within each domain, but all of the significant associations were negative, further supporting the discrepancy reduction mechanism. For the mastery values domain (see Table 51), the discrepancy between the PTWV and PTWE consistently predicted the residualized gain

in PTWV-mastery across time. In contrast, the discrepancy between PTWV and FTWV was only an independent significant predictor of residualized gain from 11th to 12th grade. Within the economic security domain (see Table 52), the discrepancy between PTWV and PTWE significantly predicted the residualized gain in PTWV from 10th to 11th grade. The discrepancy between PTWV and FTWV significantly predicted the residualized gain in PTWV from 11th to 12th grade. For the interpersonal values domain (see Table 53), the discrepancy between PTWV and FTWV significantly predicted the residualized gain in PTWV across the high school years and the discrepancy between PTWV and PTWE did not significantly predict the residualized gain in PTWV across the high school years.

The preceding analyses were replicated with FTWV as the outcome. For each FTWV domain, the residualized gain scores across adjacent occasions of measurement were predicted by the PTWV-FTWV discrepancy and the FTWV-PTWE discrepancy (calculated by subtracting a FTWV from its analogous PTWV) between the prior occasion of measurement. Given the way that the discrepancies were generated (PTWV minus FTWV and FTWV minus PTWE), the association between the PTWV-FTWV discrepancy and the residualized gain in FTWV is predicted to be positive and the association between the FTWV-PTWE discrepancy and the residualized gain in FTWV is predicted to be negative. If, for example, the salience of the FTWV is greater than the salience of the PTWV then the discrepancy is negative, and if discrepancy reduction is operating, then the FTWV should increase more (i.e., a positive residualized gain) than the average change/stability exhibited by the group. The results (see Table 52-54) vary for each value domain and across time within each domain.

The preceding analyses were replicated but the discrepancy between FTWV and related part-time work experiences (i.e., PTWE) was removed from the model because previous analyses demonstrated (See H_{3,8}) that PTWV mediated the relationship between FTWV and PTWE for the mastery and interpersonal domains and no relationship was found between PTWE and FTWV in the economic security domain. Once again, the results vary by value domain (see Table 55-56).

For mastery values, the discrepancy between FTWV and PTWE during the 9th grade predicted the residualized gain in FTWV from 9th to 10th grade. As evidenced by the decreasing t-values associated with the discrepancy in subsequent models, the magnitude of this association declined across the high school years and was not a statistically significant predictor of the residualized gain in FTWV from 11th to 12th grade. Unlike the mastery domain, the discrepancy between FTWV and PTWV within the economic security value domain remained a statistically significant predictor of the residualized gain in FTWV across the high school years. Like the mastery values domain, the magnitude of the influence, as evidenced by decreasing t-values, declined across the high school years. Within the interpersonal values domain, the discrepancy between FTWV and PTWV was a statistically significant predictor of the residualized gain in FTWV across the high school years, but unlike the mastery and interpersonal values domains, the magnitude of the influence did not systematically decline across time.

Research Question 4: Educational Attainment Expectations and the Salience of Work

Values

H_{4,1} and H_{4,2}

Given the categorical nature of the educational aspirations data (e.g., high school, bachelors, or master degree), ANOVA was employed to determine if and to what extent the educational aspirations of adolescents predict the salience of the PTWV aspect of mastery, economic security and interpersonal values across the high school years (H_{4,1}), and if and to what extent the salience differences increase over time (H_{4,2}). In terms of the educational expectations variable, responses ranged from “less than high school” to “Ph.D., professional degree”.

The statistically significant results (see Tables 58 and 59) suggest that educational aspirations are a significant predictor of economic security PTWVs in the expected direction from 10th to 12th grade and a significant predictor of interpersonal PTWVs during the 12th grade but in the direction opposite expectations. The mean salience of economic security PTWVs by educational expectations from 10th to 12th grade also reveals a disproportionate change in the salience of the PTWV as adolescents’ expectations move from expecting a high school or junior college degree to a 4-year degree or beyond.

Given this disproportionate change, the ANOVA models were reestimated with a reclassification of educational expectations. Those adolescents who expected a high school or junior college degree were classified together and those who expected a 4-year degree and beyond were classified together. In addition, given the nature of the target work value, namely economic issues, and the commonly known relationship between SES and educational expectations, the ANOVA models included SES as a covariate.³⁷ The results (not Tabled) demonstrated no statistically significant differences in the

³⁷ The SES variable is a composite of the parental education and family income data and is created by standardizing the parental education and family income variables and summing the two.

salience of economic security PTWVs across the reclassified educational groups, controlling for SES.

As a final follow-up, SES was removed and the model was reestimated. The results demonstrated (not Tabled) that the F-values generally increased, suggesting that the reclassification of educational expectations was clarifying the nature of the relationship. Those who aspired to a high school or junior college degree placed more importance on economic security than those who aspired to a 4-year degree and beyond. In summary, H_{4,1} was supported within the economic security domain from 10th to 12th grade and H_{4,1} and H_{4,2} were not supported with the mastery and interpersonal domain.

In terms of the economic security domain, the effect of educational expectations was reduced to zero when SES was added as a covariate, suggesting that adolescents' economic situation may be acting as a third variable driving the relationship between educational expectations and the salience of economic security values. This ANOVA model with SES as a covariate was replicated for the interpersonal domain during the 12th grade and this relationship also was no longer significant. Given the effect of SES on the hypothesized relationships it is concluded that both H_{4,1} and H_{4,2} were not supported for all of the value domains and these relationships may be driven by the adolescents' SES.

Research Question 5: The Prestige Associated with Occupational Expectations and the Salience of Work Values

H_{5,1} and H_{5,2}

The associations between the prestige of occupational aspirations and the salience of part-time work values were examined with the presumption that those students who aspired to less prestigious occupations would place a greater value on PTWVs. The

within-wave correlations were computed between the occupational prestige of the adolescents' career aspirations and the salience of PTWVs and then the partial correlations controlling for SES were recomputed for the target variables. H_{5,1} and H_{5,2} were not supported by the within-wave correlations or by the partial correlations for mastery and interpersonal values. Although the correlations between occupational prestige and the salience of economic security values were significant ($p < 0.05$), they demonstrated only a very weak relationship (ranging from -0.095 to -0.115) and, controlling for family SES, the partial correlations were zero. In short, H_{5,1} and H_{5,2} were not supported by the statistical results.

Research Question 6: Educational Attainment Expectations and the Discrepancy between Part-Time and Full-Time Work Values

H_{6,1} and H_{6,2}

Given the disproportionate change in interpersonal values when educational aspirations moved from a junior college degree to a 4 year degree, the reclassification of educational expectations was employed in the ANOVA models testing the mean differences of the absolute value of PTWV-FTWV discrepancy across educational expectation categories. The results (see Tables 60 and 61) associated with mastery and economic security values clearly support the hypothesized relationship between educational expectations and the absolute value of the PTWV-FTWV discrepancy as evidenced by the increasing F-values associated with the omnibus tests and the increasing mean differences across educational expectation groups (particularly focusing on the contrast between the high school and junior college degree versus the 4-year degree and beyond category).

Within the interpersonal domain, the results (see Table 62) deviated from the predicted pattern. The statistically significant ANOVA models support the presumed relationship between the absolute value of PTWV-FTWV discrepancies and educational expectations, but no differences were observed between the high school and junior college degree group and the 4-year degree and beyond group during the 9th or 11th grades. Moreover, the F-values associated with the omnibus tests did not consistently increase across the high school years and the omnibus and planned contrasts were not significant in the ANOVA model of the 11th grade data.

Controlling for family SES, the ANOVA models were reestimated for the mastery and economic security domains. With one exception (9th grade mastery), the target relationships held as did the pattern of increasing salience differences by educational level across the high school years. Interestingly, SES appeared to have more of an influence on the mastery domain than on the economic security domain. In summary, H_{6,1} and H_{6,2} are supported within the mastery and economic security domains and are partially supported within the interpersonal domain.

Research Question 7: The Prestige Associated with Occupational Expectations and the Discrepancy between Part-Time and Full-Time Work Values

H_{7,1} and H_{7,2}

With the exception of the mastery values domain during the 10th grade, the results from the OLS regression models (see Tables 63-65) support H_{7,1} and H_{7,2}, but the magnitude of the statistical associations is small, suggesting that the prestige of career

aspirations has only a small impact on the absolute value of the PTWV-FTWV discrepancy.

Research Question 8: Educational and Occupational Plans as Moderators of the Relationship between Part-time Work Values and Experiences

H_{8.1}

The predicted impact of educational expectations during the 9th grade on the proposed moderator model was assessed (see Figure 12). As in H_{3,4}, these analyses employ a transformed version of the PTWV and PTWE data to compensate for missing data problems. This transformation is discussed at length within the presentation of the results associated with H_{3,4}, but in brief, only the linear change in PTWV and PTWE is examined because the transformation involves change across two occasions of measurement that may be 10th to 12th grade, 10th to 11th grade or 11th to 12th grade, depending upon when an adolescent worked.

Two groups of adolescents were excluded from this set of analyses. First, those adolescents who did not have an educational expectation during the 9th grade were excluded from the analysis (responded: “don’t know”), thereby leaving students who expected anything from “less than a high school degree” to a “Ph.D. or professional degree” in the analysis. These data were reclassified to compare three groups; those who responded with “less than a high school degree”, “a high school or 2-year degree”, or “a 4-year college degree” to a “Ph.D. or professional degree”. Second, those adolescents who expected to receive less than a high school degree were excluded, given that so few adolescents ($n = 5$; 0.09% of the sample) expected to do so. The educational expectations variable was essentially a comparison of two groups; those who expected to receive “a

high school or 2-year degree” versus those who expected to earn a “4-year college degree” to a “Ph.D. or professional degree”.

The results (see Table 66) generally failed to support $H_{8,1}$, but for the mastery domain, a statistically significant interaction between educational plans and the PTWV-PTWE discrepancy suggests that those students who aspired to at least a 4-year degree exhibited a weaker relationship between the PTWV-PTWE discrepancy and the linear change in PTWE across either 1 or 2 years (depending on when an adolescent worked). In other words, the influence of the PTWV-PTWE discrepancy on the linear change in PTWE was stronger in the group of adolescents who expected to earn a high school or 2-year degree in the 9th grade (see Figure 30).

H_{8,2}

The impact of educational expectations during the 9th grade on the moderator models first examined and statistically supported in $H_{2,5}$ was examined (see Figure 13). The results (Tables 67-69) are complicated, given that few consistencies exist across the three domains and given that three double and a triple interaction must be interpreted simultaneously. In order to elucidate these findings, the significant statistical results related to the impact of educational expectations on the model are graphically displayed in Figures 31 to 34.

The results for the mastery domain (see Table 67) suggest that adolescents' educational expectations (1 = less than high school ($n = 12$), 2 = high school or 2-year degree ($n = 298$), and 3 = 4-degree and beyond ($n = 578$)) affect the proposed moderator model for the mastery domain first examined in $H_{2,5}$. The effect of educational expectations only holds for the linear change in PTWV and FTWV. In this specific case

(see Figure 30), the triple interaction must be considered a trend, given the significance value ($p = 0.079$), but the double interaction between educational expectations and the PTWE linear trend and between educational expectations and the PTWV-FTWV discrepancy are clearly statistically significant.

Turning to Figure 31, the statistically significant double interaction between educational expectations and the PTWE linear trend suggests that adolescents who expect to earn less than a high school degree tend to exhibit a stronger association between the linear changes in PTWV and FTWV within the mastery domain. The statistically significant interaction between educational expectations and the PTWV-FTWV discrepancy suggests that the discrepancy has a larger effect on FTWV mastery value change for those adolescents who expect to earn less than a high school degree relative to those students who expect to earn a 4-year degree or beyond. The trend reflected in the triple interaction suggests that the moderating effect of the PTWV-FTWV discrepancy is more influential on the cohesion mechanism (indicated by the association between the linear change in PTWV and FTWV) for those students who expect to earn less than a high school degree relative to those students who expect to earn a 4-year degree or beyond. Summing the findings for the linear trends, the cohesion and discrepancy reduction process generally appears to be stronger for those adolescents who expect to earn less than a high school degree relative to those who expect to earn a 4-year degree or beyond.

Regarding the economic security domain, educational expectations affect aspects of the moderator model of the linear and quadratic trends. The results for the linear trend (see Table 68, top and Figure 32) suggest that educational aspirations affect the

magnitude of the association between the linear trends in PTWV and FTWV and the impact of the PTWE-FTWV discrepancy on the linear change in FTWV. The magnitude of the association between the linear trends in PTWV and FTWV and the impact of the PTWE-FTWV discrepancy on the linear change in FTWV is greater for those adolescents who expect to earn less than a high school degree relative to those who expect to earn a 4-year degree or beyond. The triple interaction is not significant, however, and this suggests that the influence of the discrepancy reduction mechanism over the cohesion mechanism does not vary in terms of adolescents' educational expectations. The results for the quadratic trend suggest that the association between the quadratic trends in PTWV and FTWV is greater for those adolescents who expect to earn less than a high school degree relative to those who expect to earn a 4-year degree or beyond. The significant triple interaction suggests that the influence of the discrepancy reduction mechanism over the cohesion mechanism is greater for those adolescents who expect to earn less advanced educational degrees.

The results (see Table 67, bottom and Figure 33) from the moderator model of the interpersonal domain suggest that the association between the quadratic trends in PTWV and FTWV and the impact of the PTWE-FTWV discrepancy on the linear change in FTWV is stronger for those adolescents who expect to earn less than a high school degree relative to those who expect to earn a 4-year degree or beyond. The significant triple interaction suggests that the moderating influence of the PTWV-FTWV discrepancy on the association between the PTWV and FTWV quadratic trends is stronger (β_2 in Figure 4) for those adolescents who expect to earn less than a high school degree relative to those who expect to earn a 4-year degree or beyond.

Consistent with H_{8,1}, the models associated with H_{8,1} and H_{8,2} were reestimated to contrast these two predominant educational expectation groups (high school or 2-year degree; (n = 298) versus a 4-year degree or beyond (n = 578), given that so few adolescents expected to receive less than a high school diploma (n = 12). The results of these analyses (not Tabled) demonstrate no appreciable differences from the analyses including those students who expect to receive less than a high school diploma. This finding has two meaningful consequences. First, no differences between the two sets of analyses suggests that the adolescents who expect to receive less than a high school degree may be considered extreme in their educational expectations, but they are not wielding any undue influence over the presumed moderator models. Second, the presentation has been framed around contrasting those who expect to earn less than a high school degree relative to those who expect to earn a 4-year degree or beyond, but the presentation of group differences can also be framed around contrasting those who expect to earn a high school or 2-year degree versus those who expect to earn a 4-year degree or beyond. In other words, adolescents who expected to earn a high school or 2-year degree tended to exhibit stronger cohesion and discrepancy reduction processes than those adolescents who expected to earn a 4-year degree or beyond when educational expectations have an influence on the moderator models.

H_{8,3}

The impact of the prestige of adolescents occupational aspirations³⁸ during the 9th grade on the moderator model of PTWV and PTWE, first examined in H_{3,4}, were examined with OLS regression. The results (not Tabled) failed to support H_{8,3}. Specifically, the main effect of occupational prestige and the interaction terms involving

³⁸ Prestige scores are based on the 1980 Census codes (Stevens & Hoisington, 1987).

occupational prestige were not statistically significant, suggesting that the prestige of adolescents' career aspirations do not have an influence on the proposed cohesion and discrepancy reduction processes supporting the dynamic relationship between PTWV and PTWE.

H_{8.4}

As in the previous analysis, OLS regression was employed to examine the presumed influence of the prestige of adolescents' career aspirations during the 9th grade on the moderator model of PTWV and FTWV first tested and generally supported in H_{2.5}. The results demonstrate that the prestige of occupational aspirations has no statistically significant influence over the moderator models of mastery and interpersonal values (see Tables 70 and 72), but it has a significant influence on the moderator model of the linear and quadratic trends in economic security values (see Table 71 and Figures 35 and 36). Regarding the linear trend (see Table 71, top, and Figure 35), the discrepancy has a stronger influence on the linear change in FTWV when the prestige of occupational aspirations is low. In terms of the quadratic trend (see Table 71, bottom, and Figure 36), discrepancy reduction has a stronger influence on the quadratic trend in FTWV and discrepancy reduction has a stronger moderating influence on the association between the quadratic trends in PTWV and FTWV when the prestige of an adolescent's occupational aspiration is low.

Comparing across the results from the analysis of the linear and quadratic economic security trends (see Table 71 and Figures 35 and 36) suggests that the prestige of occupational aspirations has an effect on the initial move toward discrepancy reduction from 9th to 10th grade (reflected in the association with the quadratic trend model)

exhibited in Figure 23 and on the maintenance/reinforcement of that reduction from 10th to 12th grade (reflected in the association with the quadratic trend model). Aspirations, however, appear to have more of an influence on the maintenance/reinforcement, given the stronger associations between aspirations and the quadratic trend model.

Given that occupational prestige is generally correlated with income and occupational prestige associated with the adolescents' career aspirations only had an influence on economic security values, this prompts the question of whether adolescents' career aspirations are a proxy for a delayed transition to the work force (i.e. the presumed proxy in H_{8,4}) or a proxy for expected income. In other words, does the prestige of adolescents' career aspirations reflect an expectation for a delayed transition to the work force (i.e., a proxy for timing) or for an aspect of work, in this case more income (i.e., a proxy for an outcome associated with work)? Adolescents who expect to earn less income may (consciously or unconsciously) modify their value system to account for their anticipated income while those who aspire to more prestigious occupations do not modify it during the high school years.

The immediately preceding analyses were replicated, but the prestige of adolescents' career aspirations during the 9th grade was replaced with the "thing complexity" DOT code of adolescents' career aspirations during the 9th grade (U.S. Department of Labor, 1977). These post hoc analyses were conducted to determine if an aspect of the work associated with adolescents' career aspirations, rather than the timing of the transition to the work force, is the underlying factor driving the relationship identified in the preceding paragraph. Given the nature of very complex "thing" work activities (e.g., setting up, precision working, and controlling/operating), more complex work presumably requires

more post-secondary training and is associated with a delayed transition to the work force. If, on the one hand, complexity reflects an aspect of work rather or more than a delayed transition to the work force, then “thing complexity” should have more of an exclusive impact on mastery values in the same fashion that occupational prestige was exclusively associated with economic security values. If, on the other hand, “thing complexity” is a proxy for a delayed transition to the labor force, then it should have an effect on all three value domains.

The results (see Table 73 and Figure 38) demonstrated that “thing complexity” influences the moderator model of mastery values, but the results (not Tabled) also demonstrated that “thing complexity” had no effect on the moderator models of economic security and interpersonal value domains. Those adolescents who aspired to enter more thing-complex work, tended to exhibit stronger discrepancy reduction and cohesion processes within the mastery domain than those who aspired to less thing complex work. Comparing these results to the immediately preceding results demonstrates an inconsistency. On the one hand more prestigious career aspirations were associated with a weaker discrepancy reduction and cohesion process within the economic security domain, but on the other hand, more thing-complex career aspirations were associated with a stronger discrepancy reduction and cohesion processes within the mastery domain. This difference, coupled with the domain specific findings across both analyses, suggests that the prestige and thing complexity of occupational aspirations influences the cohesion and discrepancy reduction process in a domain specific fashion and ultimately weakens the validity of the presumption that both are proxies for a delayed transition to the labor force.

Research Question 9: Sex as a Moderator of the Relationship between Part-time Work
Values and Experiences

H_{9,1}

The presumed moderating effect of sex on the relationship between PTWV and PTWE linear change (see Figure 16) was examined to determine if males exhibited a stronger cohesion mechanism than females. The results (not Tabled) found no significant sex by PTWV polynomial linear change interaction across all three value domains. Therefore, H_{9,1} is not supported; the strength of the cohesion mechanism was equivalent for adolescent males and females.

H_{9,2}

The hypothesized effect of sex on the moderator model depicted in Figure 17 was examined and the results suggest (see Table 74 and Figure 38) that within the mastery domain the PTWV-PTWE discrepancy has a greater effect on the linear trend in PTWE for males (i.e., the PTWV linear change by sex interaction was statistically significant), but sex did not have an effect on the interaction between the PTWV-PTWE discrepancy and PTWV linear change or on the association between PTWV and PTWE linear change over time. In other words, the only effect of sex on the moderator model suggests that within the mastery domain the PTWV-PTWE discrepancy had more of an influence on the change in PTWE for adolescent males. H_{9,2} was not supported within the economic security and interpersonal domain, and within the mastery domain, only partial support was found.

A Tentative Summary of the Results and a Set of Follow-up Analyses

In general, the presumed effect of sex on the cohesion and discrepancy reduction mechanisms prompting and reinforcing the relationship between part-time work values and experience was not supported. As a follow-up to these null findings, the effect of sex on the cohesion and discrepancy reduction mechanisms promoting and reinforcing the previously tested and supported relationship between values associated with part-time (i.e., standard-oriented) and anticipated full-time (i.e., goal-oriented) work was tested to determine if these two indicators (i.e., cohesion and discrepancy reduction) of value system development differed by sex.³⁹

The results (see Tables 75-77 and Figures 39-41) demonstrate that sex has no effect on the moderator model of the change in interpersonal values across the high school years. Sex has a limited effect on the moderator model of the linear change in mastery values across 9th to 12th grade. Similar to the findings presented in H_{9,2}, the PTWV-FTWV discrepancy was more influential on the FTWV linear change in males (see Table 75, top, and Figure 38).

The most noteworthy results involved the effect of sex on the moderator model of economic security values. Sex had a statistically significant effect on all theoretically relevant pathways. First, sex moderated the relationship between the PTWV-FTWV discrepancy and FTWV linear change (e.g., a statistically significant sex by PTWV-FTWV discrepancy interaction). Second, sex moderated the relationship between the linear changes in PTWV and FTWV (e.g., a statistically significant sex by PTWV linear change interaction). Finally, sex affected the extent to which the PTWV-FTWV discrepancy moderated the relationship between the linear changes in PTWV and FTWV

³⁹ Essentially a test of Figure 17, but PTWE is replaced with FTWV and the PTWV-PTWE discrepancy is replaced with the PTWV-FTWV discrepancy.

(e.g., a statistically significant sex by PTWV-FTWV discrepancy by PTWV linear change triple interaction). An ANOVA model was employed to ensure that males and females did not differ on any of the predictor variables entered into the moderator model, and the results (not Tabled) demonstrated that females exhibited more PTWV linear change than males ($F = 5.44, p < 0.05$). This difference should not have any appreciable effect on the interactive effect of sex on the moderator model of economic security values.

Tables

Table 6.
Correlations among Part-Time Work Value Domains from 9th to 12th Grade.

	M: 9th	M: 10th	M: 11th	M: 12th	E: 9th	E: 10th	E: 11th	E: 12th	I: 9th	I: 10th	I: 11th	I: 12th
Mastery: 9th	1	.523**	.416**	.381**	.405**	.270**	.263**	.223**	.525**	.338**	.298**	.272**
Mastery: 10th	.523**	1	.511**	.485**	.242**	.428**	.319**	.261**	.324**	.568**	.410**	.325**
Mastery: 11th	.416**	.511**	1	.594**	.193**	.270**	.532**	.355**	.293**	.360**	.585**	.354**
Mastery: 12th	.381**	.485**	.594**	1	.185**	.218**	.370**	.472**	.309**	.323**	.415**	.557**
Economic: 9th	.405**	.242**	.193**	.185**	1	.473**	.371**	.372**	.257**	.141**	.092**	.086**
Economic: 10th	.270**	.428**	.270**	.218**	.473**	1	.527**	.452**	.112**	.257**	.136**	.076*
Economic: 11th	.263**	.319**	.532**	.370**	.371**	.527**	1	.579**	.166**	.196**	.294**	.134**
Economic: 12th	.223**	.261**	.355**	.472**	.372**	.452**	.579**	1	.166**	.142**	.177**	.248**
Interpersonal: 9th	.525**	.324**	.293**	.309**	.257**	.112**	.166**	.166**	1	.463**	.456**	.443**
Interpersonal: 10th	.338**	.568**	.360**	.323**	.141**	.257**	.196**	.142**	.463**	1	.575**	.473**
Interpersonal: 11th	.298**	.410**	.585**	.415**	.092**	.136**	.294**	.177**	.456**	.575**	1	.563**
Interpersonal: 12th	.272**	.325**	.354**	.557**	.086**	.076*	.134**	.248**	.443**	.473**	.563**	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 7.
Correlations among Full-Time Work Value Domains from 9th to 12th Grade.

	M: 9th	M: 10th	M: 11th	M: 12th	E: 9th	E: 10th	E: 11th	E: 12th	I: 9th	I: 10th	I: 11th	I: 12th
Mastery: 9th	1	.440**	.375**	.311**	.409**	.239**	.190**	.173**	.489**	.347**	.301**	.244**
Mastery: 10th	.440**	1	.496**	.422**	.185**	.436**	.199**	.217**	.257**	.540**	.342**	.345**
Mastery: 11th	.375**	.496**	1	.568**	.147**	.220**	.408**	.286**	.251**	.333**	.564**	.388**
Mastery: 12th	.311**	.422**	.568**	1	.116**	.153**	.257**	.422**	.235**	.256**	.360**	.566**
Economic: 9th	.409**	.185**	.147**	.116**	1	.410**	.362**	.314**	.187**	.085**	.075*	.050
Economic: 10th	.239**	.436**	.220**	.153**	.410**	1	.442**	.387**	.093**	.263**	.101**	.085*
Economic: 11th	.190**	.199**	.408**	.257**	.362**	.442**	1	.553**	.092**	.088**	.185**	.071*
Economic: 12th	.173**	.217**	.286**	.422**	.314**	.387**	.553**	1	.145**	.119**	.104**	.233**
Interpersonal: 9th	.489**	.257**	.251**	.235**	.187**	.093**	.092**	.145**	1	.457**	.426**	.367**
Interpersonal: 10th	.347**	.540**	.333**	.256**	.085**	.263**	.088**	.119**	.457**	1	.523**	.429**
Interpersonal: 11th	.301**	.342**	.564**	.360**	.075*	.101**	.185**	.104**	.426**	.523**	1	.539**
Interpersonal: 12th	.244**	.345**	.388**	.566**	.050	.085*	.071*	.233**	.367**	.429**	.539**	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 8.
Correlations among Part-Time Work Experience Domains from 9th to 12th Grade.

Correlations

	M: 9th	M: 10th	M: 11th	M: 12th	E: 9th	E: 10th	E: 11th	E: 12th	I: 9th	I: 10th	I: 11th	I: 12th
Mastery: 9th	1	.477**	.344**	.282**	.193**	.072	.000	.066	.473**	.256**	.130*	.145**
Mastery: 10th	.477**	1	.521**	.379**	.179**	.149**	.027	.043	.248**	.400**	.338**	.194**
Mastery: 11th	.344**	.521**	1	.480**	.121*	.107	.171**	.067	.142*	.217**	.468**	.210**
Mastery: 12th	.282**	.379**	.480**	1	.119*	-.013	.063	.233**	.123*	.217**	.299**	.480**
Economic: 9th	.193**	.179**	.121*	.119*	1	.241**	.069	.056	.119**	-.013	-.021	-.068
Economic: 10th	.072	.149**	.107	-.013	.241**	1	.273**	.102	.031	.136**	.047	.058
Economic: 11th	.000	.027	.171**	.063	.069	.273**	1	.296**	-.037	.040	.097*	.060
Economic: 12th	.066	.043	.067	.233**	.056	.102	.296**	1	.093	.115*	.088	.132**
Interpersonal: 9th	.473**	.248**	.142*	.123*	.119**	.031	-.037	.093	1	.219**	.160**	.167**
Interpersonal: 10th	.256**	.400**	.217**	.217**	-.013	.136**	.040	.115*	.219**	1	.393**	.307**
Interpersonal: 11th	.130*	.338**	.468**	.299**	-.021	.047	.097*	.088	.160**	.393**	1	.317**
Interpersonal: 12th	.145**	.194**	.210**	.480**	-.068	.058	.060	.132**	.167**	.307**	.317**	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 9.
 Research Question 1, H_{1,1}: Correlations (i.e., estimates of cohesion) Between PTWV's and FTWV Analogues from 9th to 12th Grade across the Mastery, Economic Security, and Interpersonal Value Domains.

	<u>Correlation*</u>
<u>PT-FT Mastery Values</u>	
9th Grade	0.561
10th Grade	0.557
11th Grade	0.562
12th Grade	0.542
Average	0.556
<u>PT-FT Economic Security Values</u>	
9th Grade	0.496
10th Grade	0.440
11th Grade	0.452
12th Grade	0.470
Average	0.465
<u>PT-FT Interpersonal Values</u>	
9th Grade	0.654
10th Grade	0.699
11th Grade	0.682
12th Grade	0.691
Average	0.682

*Note: All coefficients significant at the p-value < 0.0001 level.

Table 10.
 Research Question 2, H_{2,1}: Cross-Wave Stability (Correlations) Coefficients of the
 PTWV domains.

PT Mastery Values	Stability Correlation*
9 th to 10 th Grade	0.523
10 th to 11 th Grade	0.511
11 th to 12 th Grade	0.594
PT Economic Security Values	
9 th to 10 th Grade	0.473
10 th to 11 th Grade	0.527
11 th to 12 th Grade	0.579
PT-Interpersonal Values	
9 th to 10 th Grade	0.463
10 th to 11 th Grade	0.575
11 th to 12 th Grade	0.563

*Note: All coefficients significant at the p-value < 0.0001 level.

Table 11.
 Research Question 2, H_{2,1}: Cross-Wave Stability (Correlations) Coefficients of the
 FTWV Domains.

FT Mastery Values	Stability Correlation*
9 th to 10 th Grade	0.440
10 th to 11 th Grade	0.496
11 th to 12 th Grade	0.568
FT Economic Security Values	
9 th to 10 th Grade	0.410
10 th to 11 th Grade	0.442
11 th to 12 th Grade	0.553
FT Interpersonal Values	
9 th to 10 th Grade	0.457
10 th to 11 th Grade	0.523
11 th to 12 th Grade	0.539

*Note: All coefficients significant at the p-value < 0.0001 level.

Table 12.

Research Question 2, H_{2,1}: Test for Independent Correlation Coefficients for Cross-Wave Stability (Correlations) Coefficients of the PTWV Domains.

$$z = \frac{Z_1 - Z_2}{\sqrt{\frac{1}{N_1 - 3} + \frac{1}{N_2 - 3}}}$$

PT Mastery Values	Stability Correlation*	Sample Size	Fisher z		P-value
9 th to 10 th Grade	0.523	937	0.579		
11 th to 12 th Grade	0.594	892	0.684	2.241	0.025
PT Economic Security Values					
9 th to 10 th Grade	0.473	920	0.513		
11 th to 12 th Grade	0.579	906	0.660	3.136	0.002
PT-Interpersonal Values					
9 th to 10 th Grade	0.463	946	0.500		
11 th to 12 th Grade	0.563	909	0.633	3.504	< 0.001

Table 13.

Research Question 2, H_{2,1}: Test for Independent Correlation Coefficients for Cross-Wave Stability (Correlations) Coefficients of the FTWV Domains.

$$z = \frac{Z_1 - Z_2}{\sqrt{\frac{1}{N_1 - 3} + \frac{1}{N_2 - 3}}}$$

FT Mastery Values	Stability Correlation*	Sample Size	Fisher z		P-value
9 th to 10 th Grade	0.440	935	0.472		
11 th to 12 th Grade	0.568	892	0.645	3.690	< 0.001
FT Economic Security Values					
9 th to 10 th Grade	0.410	933	0.436		
11 th to 12 th Grade	0.553	902	0.621	3.944	< 0.001
FT Interpersonal Values					
9 th to 10 th Grade	0.457	950	0.492		
11 th to 12 th Grade	0.539	908	0.601	2.34	0.02

Table 14.
 Research Question 2, H_{2,2}: Polynomial Change in the Magnitude (Absolute Value) of
 Intraindividual Stability of PTWV Domains Employing RMANOVA.

PT Mastery Values		Absolute Value of Mean Change		
	9 th to 10 th grade	1.848		
	10 th to 11 th grade	1.895		
	11 th to 12 th grade	1.714		
PT Mastery Values		F-Value	P-Value	Eta²
	Main Effect	3.640	0.027*	0.004
	Linear change	3.361	0.067	0.004
	Quadratic Change	3.983	0.046	0.005
PT Economic Security Values		Absolute Value of Mean Change		
	9 th to 10 th grade	1.470		
	10 th to 11 th grade	1.430		
	11 th to 12 th grade	1.317		
PT Economic Security Values		F-Value	P-Value	Eta²
	Main Effect	4.043	0.018*	0.005
	Linear change	7.115	0.008	0.008
	Quadratic Change	0.613	NS	0
PT Interpersonal Values		Absolute Value of Mean Change		
	9 th to 10 th grade	1.171		
	10 th to 11 th grade	1.067		
	11 th to 12 th grade	1.082		
PT Interpersonal Values		F-Value	P-Value	Eta²
	Main Effect	3.017	0.050*	0.003
	Linear change	3.477	0.067	0.004
	Quadratic Change	2.571	NS	

* Huynh-Feldt adjustment of p-value. This adjustment yields a more conservative test of the main effect.

Note: $df < 2$ (H-F adjustment) for all main effects and $df = 1$ for all polynomial tests.

Table 15.
 Research Question 2, H_{2,2}: Polynomial Change in the Magnitude (Absolute Value) of
 Intraindividual Stability of FTWV Domains Employing RMANOVA.

FT Mastery Values		Absolute Value of Mean Change		
	9 th to 10 th grade	1.776		
	10 th to 11 th grade	1.657		
	11 th to 12 th grade	1.627		
FT Mastery Values		F-Value	P-Value	Eta²
	Main Effect	2.574	0.077*	0.003
	Linear change	4.211	0.040	0.005
	Quadratic Change	0.593	NS	0
FT Economic Security Values		Absolute Value of Mean Change		
	9 th to 10 th grade	1.028		
	10 th to 11 th grade	0.969		
	11 th to 12 th grade	0.875		
FT Economic Security Values		F-Value	P-Value	Eta²
	Main Effect	5.474	0.004*	0.006
	Linear change	9.789	0.002	0.011
	Quadratic Change	0.163	NS	0
FT Interpersonal Values		Absolute Value of Mean Change		
	9 th to 10 th grade	1.186		
	10 th to 11 th grade	1.097		
	11 th to 12 th grade	1.101		
FT Interpersonal Values		F-Value	P-Value	Eta²
	Main Effect	2.337	NS	0
	Linear change	3.181	0.075	0.004
	Quadratic Change	1.419	NS	0

* Huynh-Feldt adjustment of p-value. This adjustment yields a more conservative test of the main effect.

Note: $df < 2$ (H-F adjustment) for all main effects and $df = 1$ for all polynomial tests.

Table 16.
 Research Question 2, H_{2,2}: Profile Change in the Magnitude (Absolute Value) of
 Intraindividual Stability of PTWV Domains Employing RMANOVA.

PT Mastery Values		Absolute Value of Mean Change		
	9 th to 10 th grade	1.848		
	10 th to 11 th grade	1.895		
	11 th to 12 th grade	1.714		
PT Mastery Values		F-Value	P-Value	Eta²
	Main Effect	3.640	0.027*	0.004
	9 th to 10 th vs. 10 th to 11 th grade	0.469	NS	0
	10 th to 11 th vs. 11 th to 12 th grade	6.645	0.010	0.008
PT Economic Security Values		Absolute Value of Mean Change		
	9 th to 10 th grade	1.470		
	10 th to 11 th grade	1.430		
	11 th to 12 th grade	1.317		
PT Economic Security Values		F-Value	P-Value	Eta²
	Main Effect	4.043	0.018*	0.005
	9 th to 10 th vs. 10 th to 11 th grade	0.494	NS	0
	10 th to 11 th vs. 11 th to 12 th grade	7.762	0.005	.009
PT Interpersonal Values		Absolute Value of Mean Change		
	9 th to 10 th grade	1.171		
	10 th to 11 th grade	1.067		
	11 th to 12 th grade	1.082		
PT Interpersonal Values		F-Value	P-Value	Eta²
	Main Effect	3.017	0.050*	0.003
	9 th to 10 th vs. 10 th to 11 th grade	5.501	0.019	0.006
	10 th to 11 th vs. 11 th to 12 th grade	0.826	NS	0

* Huynh-Feldt adjustment of p-value. This adjustment yields a more conservative test of the main effect.

Note: $df < 2$ (H-F adjustment) for all main effects and $df = 1$ for all polynomial tests.

Table 17.
 Research Question 2, H_{2,2}: Profile Change in the Magnitude (Absolute Value) of
 Intraindividual Stability of FTWV Domains Employing RMANOVA.

FT Mastery Values		Absolute Value of Mean Change		
	9 th to 10 th grade	1.776		
	10 th to 11 th grade	1.657		
	11 th to 12 th grade	1.627		

FT Mastery Values	F-Value	P-Value	Eta²
Main Effect	2.574	0.077*	0.003
9 th to 10 th vs. 10 th to 11 th grade	3.124	0.077	0.004
10 th to 11 th vs. 11 th to 12 th grade	2.093	NS	0

FT Economic Security Values		Absolute Value of Mean Change		
	9 th to 10 th grade	1.028		
	10 th to 11 th grade	0.969		
	11 th to 12 th grade	0.875		

FT Economic Security Values	F-Value	P-Value	Eta²
Main Effect	5.474	0.004*	0.006
9 th to 10 th vs. 10 th to 11 th grade	1.721	NS	0
10 th to 11 th vs. 11 th to 12 th grade	8.863	0.003	0.010

FT Interpersonal Values		Absolute Value of Mean Change		
	9 th to 10 th grade	1.186		
	10 th to 11 th grade	1.097		
	11 th to 12 th grade	1.101		

FT Interpersonal Values	F-Value	P-Value	Eta²
Main Effect	2.337	NS	0
9 th to 10 th vs. 10 th to 11 th grade	3.717	0.054	0.004
10 th to 11 th vs. 11 th to 12 th grade	0.981	NS	0

* Huynh-Feldt adjustment of p-value. This adjustment yields a more conservative test of the main effect.

Note: $df < 2$ (H-F adjustment) for all main effects and $df = 1$ for all polynomial tests.

Table 18.
 Research Question 2, H_{2,3}: Test for Independent Correlations Coefficients for Within-Wave Cohesion (Correlations) Coefficients for Mastery, Economic and Interpersonal Value Domains.

					$z = \frac{Z_1 - Z_2}{\sqrt{\frac{1}{N_1 - 3} + \frac{1}{N_2 - 3}}}$	
PT-FT Mastery Values		Correlation	Sample Size	Fisher z		P-value
	9 th Grade	0.561	971	0.633		
	12 th Grade	0.594	912	0.684	1.106	NS
PT-FT Economic Security Values						
	9 th Grade	0.496	970	0.544		
	12 th Grade	0.470	928	0.510	0.740	NS
PT-FT Interpersonal Values						
	9 th Grade	0.654	988	0.782		
	12 th Grade	0.691	930	0.848	1.445	NS

Table 19.
 Research Question 2, H_{2,4}: Tests of Longitudinal Discrepancy Change between PTWV Domains and analogous FTWV Domains Employing RMANOVA.

Mastery Values	Mean Discrepancy*		
9 th grade	-1.554		
10 th grade	-1.782		
11 th grade	-1.800		
12 th grade	-1.544		

Mastery Values	F-Value	P-Value**	Eta²
Main Effect	4.798	0.002	0.006
Linear change	0.001	NS	0
Quadratic Change	14.787	< 0.001	0.018
Cubic Change	0.590	NS	0

Economic Security Values	Mean Discrepancy*		
9 th grade	-1.689		
10 th grade	-1.767		
11 th grade	-1.735		
12 th grade	-1.438		

Economic Security Values	F-Value	P-Value**	Eta²
Main Effect	9.399	< 0.0001	0.011
Linear change	11.352	0.001	0.013
Quadratic Change	15.046	0.001	0.018
Cubic Change	0.013	NS	0

Interpersonal Values	Mean Discrepancy*		
9 th grade	-0.576		
10 th grade	-0.562		
11 th grade	-0.580		
12 th grade	-0.473		

Interpersonal Values	F-Value	P-Value	Eta²
Main Effect	0.235	NS	0
Linear change	0.137	NS	0
Quadratic Change	0.025	NS	0
Cubic Change	0.555	NS	0

* Discrepancy calculated as PTWV minus FTWV

* *Huynh-Feldt adjustment of p-value. This adjustment yields a more conservative test of the main effect.

Note: df < 3 (H-F adjustment) for all main effects and df = 1 for all polynomial tests.

Table 20.
 Mastery Values Discrepancy: Regression Results of the Discrepancy between PTWV and its FTWV Analogue Predicting the Same Discrepancy a Year Later.

9th grade predicting 10th grade			R-Square = 0.109
Predictor	Beta (β)	p-value	
9th grade	0.256	< 0.001	
(9th grade) ²	-0.084	<0.013	
(9th grade) ³	NS		
10th grade predicting 11th grade			R-Square = 0.170
Predictor	Beta (β)	p-value	
10th grade	0.455	< 0.001	
(10th grade) ²	-0.081	0.05	
(10th grade) ³	-0.117	0.029	
11th grade predicting 12th grade			R-Square = 0.201
Predictor	Beta (β)	p-value	
11th grade	0.378	< 0.001	
(11th grade) ²	-0.188	< 0.001	
(11th grade) ³	NS		

Table 21.
 Economic Security Values Discrepancy: Regression Results of the Discrepancy between
 PTWV and its FTWV Analogue Predicting the Same Discrepancy a Year Later.

9th grade predicting 10th grade			R-Square = 0.127
Predictor	Beta (β)	p-value	
9th grade	0.311	< 0.001	
(9th grade) ²	NS		
(9th grade) ³	NS		
10th grade predicting 11th grade			R-Square = 0.177
Predictor	Beta (β)	p-value	
10th grade	0.412	< 0.001	
(10th grade) ²	NS		
(10th grade) ³	NS		
11th grade predicting 12th grade			R-Square = 0.214
Predictor	Beta (β)	p-value	
11th grade	0.521	< 0.001	
(11th grade) ²	-0.080	0.017	
(11th grade) ³	-0.125	0.010	

Table 22.
 Interpersonal Values Discrepancy: Regression Results of the Discrepancy between
 PTWV and its FTWV Analogue Predicting the Same Discrepancy a Year Later.

9th grade predicting 10th grade			R-Square = 0.028
Predictor	Beta (β)	p-value	
9th grade	0.186	< 0.001	
(9th grade) ²	NS		
(9th grade) ³	NS		
10th grade predicting 11th grade			R-Square = 0.041
Predictor	Beta (β)	p-value	
10th grade	0.265	< 0.001	
(10th grade) ²	NS		
(10th grade) ³	-0.129	0.005	
11th grade predicting 12th grade			R-Square = 0.049
Predictor	Beta (β)	p-value	
11th grade	0.255	< 0.001	
(11th grade) ²	NS		
(11th grade) ³	NS		

Table 23.
 Working Research Hypothesis: Correlations between PTWV's and FTWV Analogues from 9th to 12th Grade across the Mastery, Economic Security, and Interpersonal Value Domains by Employment Group.

PT-FT Mastery	Correlation*			
	Entire Sample	Stable Unemployed	Stable Employed	Unstable Employed
9th Grade	0.561	0.650	0.527	0.601
10th Grade	0.557	0.621	0.655	0.512
11th Grade	0.562	0.580	0.636	0.516
12th Grade	0.542	0.623	0.543	0.464
Mean Correlation	0.556	0.618	0.590	0.523
PT-FT Economic Security				
9th Grade	0.496	0.588	0.547	0.341
10th Grade	0.440	0.569	0.460	0.409
11th Grade	0.452	0.546	0.546	0.345
12th Grade	0.470	0.521	0.497	0.370
Mean Correlation	0.465	0.556	0.513	0.366
PT-FT Interpersonal				
9th Grade	0.654	0.661	0.624	0.562
10th Grade	0.699	0.777	0.672	0.667
11th Grade	0.682	0.669	0.721	0.588
12th Grade	0.691	0.710	0.682	0.705
Mean Correlation	0.681	0.704	0.674	0.630

*Note: All coefficients significant at the p-value < 0.0001 level.

Table 24.
Working Research Hypothesis – Mastery Domain: Tests of Longitudinal Change in Discrepancy Reduction between PTWV and FTWV by Employment Group employing RMANOVA.

Mastery Values	Mean Discrepancy*			
	Overall	Stable Unemployed	Stable Employed	Unstable Employed
9 th grade	-1.662	-1.490	-1.927	-1.568
10 th grade	-1.669	-1.394	-1.656	-1.956
11 th grade	-1.802	-1.760	-1.854	-1.792
12 th grade	-1.624	-1.558	-1.616	-1.699
Mean	-1.689	-1.550	-1.763	-1.754
N	438	104	151	183

Effect	F-Value	P-Value**	Eta ²
Main Effect for Discrepancy	0.778	NS	0
Linear change	0.002	NS	0
Quadratic Change	1.151	NS	0
Cubic Change	1.483	NS	0
Main Effect for Employment Group	0.677	NS	0

Planned contrasts	Mean Difference	P-Value
	Stable Unemployed vs. Stable Employed	0.213
Stable Unemployed vs. Unstable Employed	0.204	NS

Interaction: Discrepancy by Employment Group	F-Value	P-Value**	Eta ²
	Linear change	0.795	NS
Quadratic Change	0.957	NS	0
Cubic Change	2.490	NS	0

* Discrepancy calculated as PTWV minus FTWV

**Huynh-Feldt adjustment of p-value. This adjustment yields a more conservative test of the main effect.

Table 25.
Working Research Hypothesis – Economic Security Domain: Tests of Longitudinal Change in Discrepancy Reduction between PTWV and FTWV by Employment Group employing RMANOVA.

Economic Security Values	Mean Discrepancy*			
	Overall	Stable Unemployed	Stable Employed	Unstable Employed
9 th grade	-1.707	-1.491	-1.813	-1.817
10 th grade	-1.744	-1.333	-1.942	-1.956
11 th grade	-1.735	-1.537	-1.852	-1.817
12 th grade	-1.540	-1.389	-1.548	-1.683
Mean	-1.681	-1.438	-1.789	-1.818
N	443	108	155	180

Effect	F-Value	P-Value**	Eta ²
Main Effect for Discrepancy	1.958	NS	0
Linear change	2.410	NS	0
Quadratic Change	2.983	NS	0
Cubic Change	0.243	NS	0
Main Effect for Employment Group	3.662	0.026	0.016

Planned contrasts	Mean Difference	P-Value
Stable Unemployed vs. Stable Employed	0.351	0.023
Stable Unemployed vs. Unstable Employed	0.381	0.011

	F-Value	P-Value**	Eta ²
Interaction: Discrepancy by Employment Group	0.716	NS	0
Linear change	0.430	NS	0
Quadratic Change	0.817	NS	0
Cubic Change	0.979	NS	0

* Discrepancy calculated as PTWV minus FTWV

**Huynh-Feldt adjustment of p-value. This adjustment yields a more conservative test of the main effect.

Table 26.
Working Research Hypothesis – Interpersonal Domain: Tests of Longitudinal Change in Discrepancy Reduction between PTWV and FTWV by Employment Group employing RMANOVA.

Interpersonal Values	Mean Discrepancy*			
	Overall	Stable Unemployed	Stable Employed	Unstable Employed
9 th grade	-0.547	-0.382	-0.615	-0.646
10 th grade	-0.528	-0.491	-0.441	-0.651
11 th grade	-0.541	-0.636	-0.547	-0.439
12 th grade	-0.476	-0.445	-0.497	-0.487
Mean	-0.523	-0.489	-0.525	-0.556
N	460	110	161	189

Effect	F-Value	P-Value**	Eta ²
Main Effect for Discrepancy	1.958	NS	0
Linear change	0.623	NS	0
Quadratic Change	0.182	NS	0
Cubic Change	0.215	NS	0
Main Effect for Employment Group	0.243	0.784	0

Planned contrasts	Mean Difference	P-Value
	Stable Unemployed vs. Stable Employed	0.036
Stable Unemployed vs. Unstable Employed	0.067	NS

Interaction: Discrepancy by Employment Group	F-Value	P-Value**	Eta ²
	Linear change	1.464	NS
Quadratic Change	1.306	NS	0
Cubic Change	1.335	NS	0
Cubic Change	1.765	NS	0

* Discrepancy calculated as PTWV minus FTWV

**Huynh-Feldt adjustment of p-value. This adjustment yields a more conservative test of the main effect.

Table 27.
H_{2,5}: Moderator Model of Mastery Values.

Outcome: FTWV – 9th to 12th grade linear trend				R-Square = 0.274
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade linear trend	0.759	14.814	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	-0.011	-.375	NS	
Interaction	-0.337	-6.529	< 0.0001	
Outcome: FTWV – 9th to 12th grade quadratic trend				R-Square = 0.155
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade quad. trend	.492	9.108	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	-.010	-.306	NS	
Interaction	-.133	-2.441	0.015	

Table 28.
H_{2,5}: Moderator Model of Economic Security Values.

Outcome: FTWV – 9th to 12th grade linear trend				R-Square = 0.201
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade linear trend	0.692	12.471	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	0.031	0.920	NS	
Interaction	-0.358	-6.168	< 0.0001	
Outcome: FTWV – 9th to 12th grade quadratic trend				R-Square = 0.131
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade quad. trend	0.556	9.899	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	-0.068	-2.062	0.039	
Interaction	-0.301	-5.282	< 0.0001	

Table 29.
H_{2,5}: Moderator Model of Interpersonal Values.

Outcome: FTWV – 9th to 12th grade linear trend				R-Square = 0.330
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade linear trend	0.807	17.849	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	-0.081	-2.833	0.005	
Interaction	-0.360	-7.823	< 0.0001	
Outcome: FTWV – 9th to 12th grade quadratic trend				R-Square = 0.293
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade quad. trend	0.737	16.315	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	0.026	0.916	NS	
Interaction	-0.300	-6.603	< 0.0001	

Table 30.
Means of Orthonormalized Polynomial Trend Scores from 9th to 12th Grade by
Discrepancy Score Group contrasted against the Polynomial Trend Scores of the Means
depicted in Figures 28 to 28.

Mastery: PTWV	PT<FT	PT>FT
Average person-level Linear	0.275	-0.251
Linear of Averages	0.279	-0.253
Average person-level Quadratic	-0.130	0.153
Quadratic of Averages	-0.130	0.155
Mastery: FTWV		
Average person-level Linear	-0.242	0.255
Linear of Averages	-0.239	0.300
Average person-level Quadratic	0.175	-0.201
Quadratic of Averages	0.175	-0.200
Economic Security: PTWV		
Average person-level Linear	0.243	-0.159
Linear of Averages	0.246	-0.159
Average person-level Quadratic	-0.138	0.116
Quadratic of Averages	-0.140	0.115
Economic Security: FTWV		
Average person-level Linear	-0.290	0.406
Linear of Averages	-0.291	0.389
Average person-level Quadratic	0.141	-0.232
Quadratic of Averages	0.150	-0.230
Interpersonal: PTWV		
Average person-level Linear	0.385	-0.177
Linear of Averages	0.378	-0.181
Average person-level Quadratic	-0.258	0.165
Quadratic of Averages	-0.255	0.165
Interpersonal: FTWV		
Average person-level Linear	-0.195	0.159
Linear of Averages	-0.197	0.157
Average person-level Quadratic	0.131	-0.107
Quadratic of Averages	0.130	-0.110

Table 31.

Research Question 3, H_{3,1}: Correlations (i.e., estimates of cohesion) between PTWV's and PTWE Analogues from 9th to 12th Grade across the Mastery, Economic Security, and Interpersonal Value and Experience Domains.

Mastery: PTWV-PTWE		Correlation
9th Grade		0.330**
10th Grade		0.404**
11th Grade		0.417**
12th Grade		0.323**
Average		0.3685
Economic Security: PTWV-PTWE		
9th Grade		0.053
10th Grade		0.135*
11th Grade		0.114*
12th Grade		0.089*
Average		0.098
Interpersonal Values: PTWV-PTWE		
9th Grade		0.223**
10th Grade		0.293**
11th Grade		0.323**
12th Grade		0.261**
Average		0.275

* p-value < 0.05

** p-value < 0.005

Table 32.

Research Question 3, H_{3.2}: Test for Independent Correlations Coefficients for Within-Wave Cohesion (Correlations) Coefficients for Mastery, Economic and Interpersonal Experience Value Domains.

					$z = \frac{Z_1 - Z_2}{\sqrt{\frac{1}{N_1 - 3} + \frac{1}{N_2 - 3}}}$	
Mastery: PTWV-PTWE	Correlation	Sample Size	Fisher z			P-value
9 th Grade	0.330	489	.343			
12 th Grade	0.323	568	.334	0.146		NS
Economic: PTWV-PTWE						
9 th Grade	0.053	488	0.052			
12 th Grade	0.089	579	0.090	0.584		NS
Interpersonal: PTWV-PTWE						
9 th Grade	0.223	497	0.226			
12 th Grade	0.259	578	0.265	0.636		NS

Table 33.
 Research Question 3, H_{3,3}: Tests of Longitudinal PTWV-PTWE Discrepancy Change from 9th to 11th Grade across the Mastery, Economic and Interpersonal Domain employing RMANOVA.

Mastery		Mean Discrepancy*		
	9 th grade	-0.390		
	10 th grade	-0.323		
	11 th grade	-0.364		
Mastery		F-Value	P-Value**	Eta²
	Main Effect	0.018	NS	0
	Linear change	0.005	NS	0
	Quadratic Change	0.003	NS	0
Economic Security		Mean Discrepancy*		
	9 th grade	-0.090		
	10 th grade	-0.092		
	11 th grade	-0.152		
Economic Security		F-Value	P-Value**	Eta²
	Main Effect	0.070	NS	0
	Linear change	0.097	NS	0
	Quadratic Change	0.035	NS	0
Interpersonal		Mean Discrepancy*		
	9 th grade	-0.041		
	10 th grade	-0.079		
	11 th grade	-0.630		
Interpersonal		F-Value	P-Value	Eta²
	Main Effect	0.125	NS	0
	Linear change	0.047	NS	0
	Quadratic Change	0.240	NS	0

* Discrepancy calculated as PTWV minus FTWV

**Huynh-Feldt adjustment of p-value. This adjustment yields a more conservative test of the main effect.

Note: $df < 3$ (H-F adjustment) for all main effects and $df = 1$ for all polynomial tests.

Table 34.
 Research Question 3, H_{3,3}: Tests of Longitudinal PTWV-PTWE Discrepancy Change from 10th to 12th Grade across the Mastery, Economic and Interpersonal Domain employing RMANOVA.

Mastery		Mean Discrepancy*		
	10 th grade	0.011		
	11 th grade	0.115		
	12 th grade	0.332		
Mastery		F-Value	P-Value**	Eta²
	Main Effect	0.485	NS	0
	Linear change	0.847	NS	0
	Quadratic Change	0.042	NS	0
Economic Security		Mean Discrepancy*		
	10 th grade	-0.233		
	11 th grade	-0.276		
	12 th grade	-0.073		
Economic Security		F-Value	P-Value**	Eta²
	Main Effect	0.753	NS	0
	Linear change	0.744	NS	0
	Quadratic Change	0.765	NS	0
Interpersonal		Mean Discrepancy*		
	10 th grade	-0.086		
	11 th grade	0.031		
	12 th grade	0.045		
Interpersonal		F-Value	P-Value	Eta²
	Main Effect	0.684	NS	0
	Linear change	0.977	NS	0
	Quadratic Change	0.274	NS	0

* Discrepancy calculated as PTWV minus FTWV

**Huynh-Feldt adjustment of p-value. This adjustment yields a more conservative test of the main effect.

Table 35.

Mastery Values Discrepancy: Regression Results of the Discrepancy between PTWV and its PTWE Analogue predicting the same Discrepancy at a Later Occasion.

9th grade predicting 10th grade			R-Square = 0.120
Predictor	Beta (β)	p-value	
9 th grade	0.368	< 0.0001	
(9 th grade) ²	0.010	NS	
(9 th grade) ³	-0.035	NS	
10th grade predicting 11th grade			R-Square = 0.180
Predictor	Beta (β)	p-value	
10 th grade	0.417	< 0.0001	
(10 th grade) ²	-0.168	0.002	
(10 th grade) ³	-0.028	NS	
11th grade predicting 12th grade			R-Square = 0.114
Predictor	Beta (β)	p-value	
11 th grade	0.313	0.0001	
(11 th grade) ²	0.038	NS	
(11 th grade) ³	0.024	NS	
9th grade predicting 11th grade			R-Square = 0.057
Predictor	Beta (β)	p-value	
9 th grade	0.272	0.005	
(9 th grade) ²	-0.103	0.081	
(9 th grade) ³	-0.088	NS	
10th grade predicting 12th grade			R-Square = 0.058
Predictor	Beta (β)	p-value	
10 th grade	0.228	0.019	
(10 th grade) ²	-0.030	NS	
(10 th grade) ³	0.017	NS	

Table 36.

Economic Security Values Discrepancy: Regression Results of the Discrepancy between PTWV and its PTWE Analogue predicting the Same Discrepancy at a Later Occasion.

9th grade predicting 10th grade			R-Square = 0.150
Predictor	Beta (β)	p-value	
9 th grade	0.218	0.041	
(9 th grade) ²	0.020	NS	
(9 th grade) ³	0.184	0.084	
10th grade predicting 11th grade			R-Square = 0.108
Predictor	Beta (β)	p-value	
10 th grade	0.264	0.004	
(10 th grade) ²	0.067	NS	
(10 th grade) ³	0.071	NS	
11th grade predicting 12th grade			R-Square = 0.179
Predictor	Beta (β)	p-value	
11th grade	0.356	< 0.0001	
(11 th grade) ²	-0.089	0.049	
(11 th grade) ³	0.071	NS	
9th grade predicting 11th grade			R-Square = 0.049
Predictor	Beta (β)	p-value	
9 th grade	-0.163	NS	
(9 th grade) ²	-0.019	NS	
(9 th grade) ³	0.335	0.001	
10th grade predicting 12th grade			R-Square = 0.063
Predictor	Beta (β)	p-value	
10 th grade	0.269	0.008	
(10 th grade) ²	-0.009	NS	
(10 th grade) ³	-0.022	0.826	

Table 37.

Interpersonal Values Discrepancy: Regression Results of the Discrepancy between PTWV and its PTWE Analogue predicting the Same Discrepancy at a Later Occasion.

9th grade predicting 10th grade			R-Square = 0.052
Predictor	Beta (β)	p-value	
9th grade	0.222	0.023	
(9th grade) ²	-0.038	NS	
(9th grade) ³	0.002	NS	
10th grade predicting 11th grade			R-Square = 0.162
Predictor	Beta (β)	p-value	
10th grade	0.404	< 0.0001	
(10th grade) ²	-0.152	0.004	
(10th grade) ³	-0.36	NS	
11th grade predicting 12th grade			R-Square = 0.155
Predictor	Beta (β)	p-value	
11th grade	0.451	< 0.0001	
(11th grade) ²	-0.014	NS	
(11th grade) ³	-0.087	NS	
9th grade predicting 11th grade			R-Square = 0.021
Predictor	Beta (β)	p-value	
9th grade	0.172	0.066	
(9th grade) ²	-0.009	NS	
(9th grade) ³	-0.034	NS	
10th grade predicting 12th grade			R-Square = 0.124
Predictor	Beta (β)	p-value	
10th grade	0.107	NS	
(10th grade) ²	-0.094	0.090	
(10th grade) ³	0.207	0.002	

Table 38.

H_{3,4}: Moderator model of Mastery Values and Experience including a Test of Employment Group Effect.

Outcome: PTWE – 10th to 12th grade linear trend*		N = 532	R-Square = 0.057	
Predictor	Beta (β)	t-value	p-value	
PTWV – linear trend*	0.422	2.768	0.006	
PTWV – PTWE discrepancy*	0.049	0.514	NS	
Employment Group**	0.067	0.965	NS	
Interaction: Employment Group by PTWV – linear trend	-0.082	-0.529	NS	
Interaction: Employment Group by PTWV – PTWE discrepancy	-0.018	-0.165	NS	
Interaction: PTWV – linear trend by PTWV – PTWE discrepancy	-0.184	-1.240	NS	
Triple Interaction	-0.025	-0.167	NS	

* Data varies by employment group, see results section for more details

** 1 = worked 10th and 12th grade, 2 = worked 10th and 11th grade, and 3 = worked 11th and 12th grade, see results section for more details.

Table 39.

H_{3,4}: Moderator model of Economic Security Values and Experience including test of Employment Group Effect.

Outcome: PTWE – 10th to 12th grade linear trend*		N = 529	R-Square = 0.092	
Predictor	Beta (β)	t-value	p-value	
PTWV – linear trend*	0.297	1.928	0.054	
PTWV – PTWE discrepancy*	-0.045	-0.471	NS	
Employment Group**	-0.064	-0.937	NS	
Interaction: Employment Group by PTWV – linear trend	0.106	0.683	NS	
Interaction: Employment Group by PTWV – PTWE discrepancy	0.196	1.797	NS	
Interaction: PTWV – linear trend by PTWV – PTWE discrepancy	-0.395	-2.526	0.012	
Triple Interaction	-0.066	-0.587	NS	

* Data varies by employment group, see results section for more details

** 1 = worked 10th and 12th grade, 2 = worked 10th and 11th grade, and 3 = worked 11th and 12th grade, see results section for more details.

Table 40.

H_{3,4}: Moderator model of Interpersonal Values and Experience including a Test of Employment Group Effect.

Outcome: PTWE – 10th to 12th grade linear trend*		N = 532	R-Square = 0.084	
Predictor	Beta (β)	t-value	p-value	
PTWV – linear trend*	0.576	3.896	0.0001	
PTWV – PTWE discrepancy*	0.117	1.291	NS	
Employment Group**	0.093	1.390	NS	
Interaction: Employment Group by PTWV – linear trend	-0.148	-1.081	NS	
Interaction: Employment Group by PTWV – PTWE discrepancy	-0.080	-1.081	NS	
Interaction: PTWV – linear trend by PTWV – PTWE discrepancy	-0.501	-3.054	0.001	
Triple Interaction	0.141	0.996	NS	

* Data varies by employment group, see results section for more details

** 1 = worked 10th and 12th grade, 2 = worked 10th and 11th grade, and 3 = worked 11th and 12th grade, see results section for more details.

Table 41.

H_{3,4}: A Moderator Model of Mastery Values and Experience.

Outcome: PTWE – 10th to 12th grade linear trend		R-Square = 0.052		
Predictor	Beta (β)	t-value	p-value	
PTWV – linear trend*	0.347	5.069	< 0.0001	
PTWV – PTWE grade discrepancy*	0.031	0.727	NS	
Interaction	-0.205	-2.989	0.003	

* Data varies by employment group, see results section for more details

Table 42.

H_{2,5}: A Moderator model of Economic Security Values and Experience.

Outcome: PTWE – 10th to 12th grade linear trend				R-Square = 0.084
Predictor	Beta (β)	t-value	p-value	
PTWV – linear trend*	0.407	5.734	< 0.0001	
PTWV – PTWE discrepancy*	0.111	2.630	0.009	
Interaction	-0.475	-6.767	< 0.0001	

* Data varies by employment group, see results section for more details

Table 43.

H_{2,5}: A Moderator model of Interpersonal Values and Experience.

Outcome: PTWE – 10th to 12th grade linear trend				R-Square = 0.079
Predictor	Beta (β)	t-value	p-value	
PTWV – linear trend*	0.435	6.583	< 0.0001	
PTWV – FTWV discrepancy*	0.052	1.247	NS	
Interaction	-0.369	-5.578	< 0.0001	

* Data varies by employment group, see results section for more details

Table 44.

Research Question 3, H_{3,5}: Correlations (i.e., estimates of cohesion) between FTWV's and PTWE Analogues from 9th to 12th Grade across the Mastery, Economic Security, and Interpersonal Domains.

Mastery: FTWV-PTWE		Correlation
	9th Grade	0.132**
	10th Grade	0.152**
	11th Grade	0.216**
	12th Grade	0.102*
	Average	0.151
Economic Security: FTWV-PTWE		
	9th Grade	-0.024
	10th Grade	0.054
	11th Grade	-0.023
	12th Grade	0.080
	Average	0.022
Interpersonal Values: FTWV-PTWE		
	9th Grade	0.199**
	10th Grade	0.279**
	11th Grade	0.270**
	12th Grade	0.215**
	Average	0.241

* p-value < 0.05

** p-value < 0.0001.

Table 45.

Research Question 3, H_{3,6}: Test for Independent Correlations Coefficients for Within-Wave Cohesion (Correlations) Coefficients for Mastery, Economic and Interpersonal Experience Value Domains.

					$z = \frac{Z_1 - Z_2}{\sqrt{\frac{1}{N_1 - 3} + \frac{1}{N_2 - 3}}}$	
Mastery: FTWV-PTWE	Correlation	Sample Size	Fisher z			P-value
9 th Grade	0.132	482	0.133			
12 th Grade	0.102	572	0.102	0.500		NS
Interpersonal: FTWV-PTWE						
9 th Grade	0.199	498	0.201			
12 th Grade	0.215	578	0.218	0.261		NS

Table 46.

Research Question 3, H_{3.2}: Test for Independent Correlations Coefficients for Within-Wave Cohesion (Correlations) Coefficients for Mastery, Economic and Interpersonal Domains.

Mastery Domain	Correlation	Sample Size	Fisher z	$z = \frac{Z_1 - Z_2}{\sqrt{\frac{1}{N_1 - 3} + \frac{1}{N_2 - 3}}}$	
					P-value
9 th Grade PTWV-PTWE	0.330	489	0.343		
9 th Grade FTWV-PTWE	0.132	482	0.133	3.262	0.001
10 th Grade PTWV-PTWE	0.404	434	0.428		
10 th Grade FTWV-PTWE	0.152	432	0.153	4.032	< 0.001
11th Grade PTWV-PTWE	0.417	547	0.443		
11th Grade FTWV-PTWE	0.216	541	0.220	3.666	< 0.001
12th Grade PTWV-PTWE	0.323	568	0.334		
12th Grade FTWV-PTWE	0.102	572	0.102	3.906	< 0.001
Economic Security Domain					
9 th Grade PTWV-PTWE	0.053	488	0.053		
9 th Grade FTWV-PTWE	-0.024	492	-0.024	1.202	NS
10 th Grade PTWV-PTWE	0.135	436	0.135		
10 th Grade FTWV-PTWE	0.054	436	0.054	1.192	NS
11th Grade PTWV-PTWE	0.114	550	0.115		
11th Grade FTWV-PTWE	-0.023	552	-0.023	2.284	0.023
12th Grade PTWV-PTWE	0.089	579	0.090		
12th Grade FTWV-PTWE	0.080	578	0.080	0.169	NS
Interpersonal Domain					
9 th Grade PTWV-PTWE	0.223	497	0.226		
9 th Grade FTWV-PTWE	0.199	498	0.203	0.362	NS
10 th Grade PTWV-PTWE	0.293	441	0.301		
10 th Grade FTWV-PTWE	0.279	443	0.286	0.222	NS
11th Grade PTWV-PTWE	0.323	550	0.334		
11th Grade FTWV-PTWE	0.270	552	0.277	0.944	NS
12th Grade PTWV-PTWE	0.261	579	0.266		
12th Grade FTWV-PTWE	0.215	578	0.217	0.832	NS

Table 47.

H_{3,8}: Mediator Model of Mastery Values and Experience: PTWV and FTWV predicting PTWE.

Outcome: PTWE 9th grade				R-Square = 0.115
Predictor	Beta (β)	t-value	p-value	
PTWV 9 th grade	0.371	7.244	< 0.0001	
FTWV 9 th grade	-0.070	-1.362	NS	
Outcome: PTWE 10th grade				R-Square = 0.169
Predictor	Beta (β)	t-value	p-value	
PTWV 10 th grade	0.448	8.644	< 0.0001	
FTWV 10 th grade	-0.083	-1.604	NS	
Outcome: PTWE 11th grade				R-Square = 0.178
Predictor	Beta (β)	t-value	p-value	
PTWV 11 th grade	0.438	9.243	< 0.0001	
FTWV 11 th grade	-0.030	-0.640	NS	
Outcome: PTWE 12th grade				R-Square = 0.107
Predictor	Beta (β)	t-value	p-value	
PTWV 12 th grade	0.364	7.905	< 0.0001	
FTWV 12 th grade	-0.091	-1.977	0.050	
Outcome: PTWE 12th grade				R-Square = 0.010
Predictor	Beta (β)	t-value	p-value	
FTWV 12 th grade	0.102	2.452	0.015	

Table 48.

H_{3,8}: Mediator Model of Interpersonal Values and Experience: PTWV and FTWV predicting PTWE.

Outcome: PTWE 9th grade				R-Square = 0.054
Predictor		Beta (β)	t-value	p-value
	PTWV 9 th grade	0.161	2.843	0.005
	FTWV 9 th grade	0.095	1.676	NS
Outcome: PTWE 10th grade				R-Square = 0.098
Predictor		Beta (β)	t-value	p-value
	PTWV 10 th grade	0.190	3.040	0.003
	FTWV 10 th grade	0.150	2.392	0.017
Outcome: PTWE 10th grade				R-Square = 0.078
Predictor		Beta (β)	t-value	p-value
	FTWV 10 th grade	0.279	6.100	< 0.0001
Outcome: PTWE 11th grade				R-Square = 0.109
Predictor		Beta (β)	t-value	p-value
	PTWV 11 th grade	0.264	4.746	< 0.0001
	FTWV 11 th grade	0.087	1.568	NS
Outcome: PTWE 12th grade				R-Square = 0.070
Predictor		Beta (β)	t-value	p-value
	PTWV 12 th grade	0.212	3.799	0.0002
	FTWV 12 th grade	0.068	1.224	NS

Table 49.

Mastery Values: Regression Results of the Discrepancy between PTWV and its FTWV Analogue and the Discrepancy between PTWV and PTWE predicting the Residualized Gain in PTWV across Time.

Outcome: 10th grade PTWV				R-Square = 0.268
Predictors	Beta (β)	t-value	p-value	
9th grade PTWV	0.618	11.407	< 0.0001	
9 th grade PTWV-FTWV DIS	-0.074	-1.594	NS	
9 th grade PTWV-PTWE DIS	-0.140	-2.916	0.004	

Outcome: 11th grade PTWV				R-Square = 0.253
Predictors	Beta (β)	t-value	p-value	
10th grade PTWV	0.568	9.904	< 0.0001	
10 th grade PTWV-FTWV DIS	-0.033	-0.658	NS	
10 th grade PTWV-PTWE DIS	-0.105	-2.073	0.039	

Outcome: 12th grade PTWV				R-Square = 0.365
Predictors	Beta (β)	t-value	p-value	
11th grade PTWV	0.739	15.687	< 0.0001	
11 th grade PTWV-FTWV DIS	-0.176	-4.340	< 0.0001	
11 th grade PTWV-PTWE DIS	-0.139	-3.290	0.001	

Table 50.

Economic Security Values: Regression Results of the Discrepancy between PTWV and its FTWV Analogue and the Discrepancy between PTWV and PTWE predicting the Residualized Gain in PTWV across Time.

Outcome: 10th grade PTWV				R-Square = 0.214
Predictors	Beta (β)	t-value	p-value	
9th grade PTWV	0.461	7.311	< 0.0001	
9 th grade PTWV-FTWV DIS	0.032	0.661	NS	
9 th grade PTWV-PTWE DIS	-0.025	-0.411	NS	

Outcome: 11th grade PTWV				R-Square = 0.247
Predictors	Beta (β)	t-value	p-value	
10th grade PTWV	0.587	9.218	< 0.0001	
10 th grade PTWV-FTWV DIS	-0.034	-0.671	NS	
10 th grade PTWV-PTWE DIS	-0.120	-2.081	0.038	

Outcome: 12th grade PTWV				R-Square = 0.328
Predictors	Beta (β)	t-value	p-value	
11th grade PTWV	0.661	12.223	< 0.0001	
11 th grade PTWV-FTWV DIS	-0.130	-3.085	<0.002	
11 th grade PTWV-PTWE DIS	-0.046	-0.960	NS	

Table 51.

Interpersonal Values: Regression Results of the Discrepancy between PTWV and its FTWV Analogue and the Discrepancy between PTWV and PTWE predicting the Residualized Gain in PTWV across Time.

Outcome: 10th grade PTWV				R-Square = 0.231
Predictors	Beta (β)	t-value	p-value	
9th grade PTWV	0.582	10.932	< 0.0001	
9 th grade PTWV-FTWV DIS	-0.221	-4.941	< 0.0001	
9 th grade PTWV-PTWE DIS	-0.094	-1.862	0.063	
Outcome: 11th grade PTWV				R-Square = 0.363
Predictors	Beta (β)	t-value	p-value	
10th grade PTWV	0.681	13.698	< 0.0001	
10 th grade PTWV-FTWV DIS	-0.147	-3.452	0.001	
10 th grade PTWV-PTWE DIS	-0.069	-1.436	NS	
Outcome: 12th grade PTWV				R-Square = 0.359
Predictors	Beta (β)	t-value	p-value	
11th grade PTWV	0.676	15.152	< 0.0001	
11 th grade PTWV-FTWV DIS	-0.186	-4.946	< 0.0001	
11 th grade PTWV-PTWE DIS	-0.057	-1.338	NS	

Table 52.

Mastery Values: Regression Results of the Discrepancy between PTWV and its FTWV Analogue predicting the Residualized Gain in FTWV across Time.

Outcome: 10th grade FTWV				R-Square = 0.191
Predictors	Beta (β)	t-value	p-value	
9th grade FTWV	0.545	9.925	< 0.0001	
9 th grade PTWV-FTWV DIS	0.122	2.475	0.014	
9 th grade PTWV-PTWE DIS	-0.144	-2.549	0.011	

Outcome: 11th grade FTWV				R-Square = 0.205
Predictors	Beta (β)	t-value	p-value	
10th grade FTWV	0.516	8.857	.000	
10 th grade PTWV-FTWV DIS	0.082	1.521	NS	
10 th grade PTWV-PTWE DIS	-0.055	-0.887	NS	

Outcome: 12th grade FTWV				R-Square = 0.326
Predictors	Beta (β)	t-value	p-value	
11th grade FTWV	0.591	12.747	0.0001	
11 th grade PTWV-FTWV DIS	0.060	1.407	NS	
11 th grade PTWV-PTWE DIS	0.006	0.116	NS	

Table 53.

Economic Security Values: Regression Results of the Discrepancy between PTWV and its FTWV Analogue predicting the Residualized Gain in FTWV across Time.

Outcome: 10th grade FTWV				R-Square = 0.177
Predictors	Beta (β)	t-value	p-value	
9th grade FTWV	0.453	7.404	< 0.0001	
9 th grade PTWV-FTWV DIS	0.118	2.471	0.014	
9 th grade PTWV-PTWE DIS	0.013	0.215	NS	
Outcome: 11th grade FTWV				R-Square = 0.228
Predictors	Beta (β)	t-value	p-value	
10th grade FTWV	0.587	9.179	< 0.0001	
10 th grade PTWV-FTWV DIS	0.165	3.189	0.002	
10 th grade PTWV-PTWE DIS	-0.068	-1.118	NS	
Outcome: 12th grade FTWV				R-Square = 0.287
Predictors	Beta (β)	t-value	p-value	
11th grade FTWV	0.603	10.985	< 0.0001	
11 th grade PTWV-FTWV DIS	0.067	1.569	NS	
11 th grade PTWV-PTWE DIS	-0.054	-1.019	NS	

Table 54.

Interpersonal Values: Regression Results of the Discrepancy between PTWV and its FTWV Analogue predicting the Residualized Gain in FTWV across Time.

Outcome: 10th grade FTWV				R-Square = 0.195
Predictors	Beta (β)	t-value	p-value	
9th grade FTWV	0.521	9.656	< 0.0001	
9 th grade PTWV-FTWV DIS	0.088	1.923	0.055	
9 th grade PTWV-PTWE DIS	-0.082	-1.563	NS	
Outcome: 11th grade FTWV				R-Square = 0.347
Predictors	Beta (β)	t-value	p-value	
10th grade FTWV	0.665	13.134	< 0.0001	
10 th grade PTWV-FTWV DIS	0.230	5.274	< 0.0001	
10 th grade PTWV-PTWE DIS	-0.042	-0.856	NS	
Outcome: 12th grade FTWV				R-Square = 0.301
Predictors	Beta (β)	t-value	p-value	
11th grade FTWV	0.624	13.299	0.000	
11 th grade PTWV-FTWV DIS	0.126	3.124	0.002	
11 th grade PTWV-PTWE DIS	-0.070	-1.495	NS	

Table 55.

Mastery Values: Regression Results of the Discrepancy between PTWV and its FTWV Analogue predicting the Residualized Gain in FTWV across Time.

Outcome: 10th grade FTWV				R-Square = 0.216
Predictors	Beta (β)	t-value	p-value	
9th grade FTWV	0.507	15.845	< 0.001	
9 th grade PTWV-FTWV DIS	0.160	5.012	< 0.001	

Outcome: 11th grade FTWV				R-Square = 0.252
Predictors	Beta (β)	t-value	p-value	
10th grade FTWV	0.526	16.747	< 0.001	
10 th grade PTWV-FTWV DIS	0.073	2.324	0.020	

Outcome: 12th grade FTWV				R-Square = 0.325
Predictors	Beta (β)	t-value	p-value	
11th grade FTWV	0.588	19.605	< 0.001	
11 th grade PTWV-FTWV DIS	0.050	1.670	NS	

Table 56.

Economic Security Values: Regression Results of the Discrepancy between PTWV and its FTWV Analogue predicting the Residualized Gain in FTWV across Time.

Outcome: 10th grade FTWV				R-Square = 0.176
Predictors	Beta (β)	t-value	p-value	
9th grade FTWV	0.445	14.047	< 0.001	
9 th grade PTWV-FTWV DIS	0.127	4.013	< 0.001	
Outcome: 11th grade FTWV				R-Square = 0.201
Predictors	Beta (β)	t-value	p-value	
10th grade FTWV	0.473	15.019	< 0.001	
10 th grade PTWV-FTWV DIS	0.117	3.722	< 0.001	
Outcome: 12th grade FTWV				R-Square = 0.311
Predictors	Beta (β)	t-value	p-value	
11th grade FTWV	0.575	19.879	< 0.001	
11 th grade PTWV-FTWV DIS	0.079	2.725	0.007	

Table 57.

Interpersonal Values: Regression Results of the Discrepancy between PTWV and its FTWV Analogue predicting the Residualized Gain in FTWV across Time.

Outcome: 10th grade FTWV				R-Square = 0.226
Predictors	Beta (β)	t-value	p-value	
9th grade FTWV	0.516	16.293	< 0.001	
9 th grade PTWV-FTWV DIS	0.130	4.108	< 0.001	
Outcome: 11th grade FTWV				R-Square = 0.301
Predictors	Beta (β)	t-value	p-value	
10th grade FTWV	0.592	19.706	< 0.001	
10 th grade PTWV-FTWV DIS	0.168	5.599	< 0.001	
Outcome: 12th grade FTWV				R-Square = 0.306
Predictors	Beta (β)	t-value	p-value	
11th grade FTWV	0.591	19.764	< 0.001	
11 th grade PTWV-FTWV DIS	0.141	4.723	< 0.001	

Table 58.

Economic Security Values: ANOVA Results of Educational Expectations predicting the Salience of PTWV across the High-School Years.

10th Grade Educational Expectations	Overall F-Value	P-value	
	2.224	0.039	
	Mean Salience of PTWV		
	Contrast*	P-Value	
Less than High School	9.00	-0.13	NS
High School	9.29	0.16	NS
Junior College Degree	9.57	0.44	0.02
4-Year College Degree	8.87	-0.26	0.07
Master's Degree	8.95	-0.18	NS
Ph.D., Professional Degree	9.06	-0.07	0.01
Do not know	9.17	Omitted	
Total	9.13		
11th Grade Educational Expectations	Overall F-Value	P-value	
	4.12	0.0004	
	Mean Salience of PTWV		
	Contrast*	P-Value	
Less than High School	7.20	-1.80	0.017
High School	9.98	0.99	0.0001
Junior College Degree	9.58	0.58	0.003
4-Year College Degree	9.20	0.21	NS
Master's Degree	9.02	0.02	NS
Ph.D., Professional Degree	9.05	Omitted	
Total	9.00		

* Contrasts computed by subtracting the mean associated with the educational expectation from the grand mean.

Table 58 (continued).

Economic Security Values: ANOVA Results of Educational Expectations predicting the Salience of PTWV across the High-School Years.

12th Grade Educational Expectations	Overall F-Value	P-value		
	3.107	0.005		
	Mean Salience of PTWV	Contrast*	P-Value	
Less than High School	8.00	-1.20	NS	
High School	9.58	0.39	NS	
Junior College Degree	9.76	0.57	0.005	
4-Year College Degree	9.18	-0.02	NS	
Master's Degree	9.07	-0.12	NS	
Ph.D., Professional Degree	9.23	0.04	NS	
Do not know	9.54	Omitted		
Total	9.17			

* Contrasts computed by subtracting the target mean from the mean associated with the high school degree expectation.

Table 59.
 Interpersonal Values: ANOVA Results of Educational Expectations predicting the
 Salience of PTWV across the High-School Years.

12th Grade Educational Expectations	Overall F-Value	P-value	
	2.10	0.05	
	Mean Salience of PTWV		
	Contrast*	P-Value	
Less than High School	4.67	-0.46	NS
High School	4.86	-0.27	NS
Junior College Degree	5.26	0.13	NS
4-Year College Degree	5.07	-0.06	NS
Master's Degree	5.33	0.20	NS
Ph.D., Professional Degree	5.54	0.41	0.019
Do not know		Omitted	
Total	5.13		

* Contrasts computed by subtracting the target mean from the mean associated with the high school degree expectation.

Table 60.

H_{6,1} and H_{6,2} Mastery Values: ANOVA Results of Educational Expectations predicting the Absolute Value of PTWV-FTWV Discrepancy across the High-School Years.

9th Grade Educational Expectations	Overall F-Value	P-value		
	5.554	0.004		
		Mean Salience of PTWV	Contrast*	P-Value
Less than High School	1.667	Omitted		
High School and Junior College Degree	1.664	-0.002		NS
4-Year College Degree and beyond	2.086	-0.422		0.001
Total	1.806			
10th Grade Educational Expectations	Overall F-Value	P-value		
	6.595	0.0002		
		Mean Salience of PTWV	Contrast*	P-Value
Less than High School	1.211	Omitted		
High School and Junior College Degree	1.814	-0.603		NS
4-Year College Degree and beyond	2.323	-0.510		0.0003
Do not know	1.772	0.551		0.019
Total				

* Contrasts computed by subtracting the mean of an expectation group from the mean of the next lowest expectation group (i.e., profile contrasts).

Table 60 (continued).

H_{6,1} and H_{6,2} Mastery Values: ANOVA Results of Educational Expectations predicting the Absolute Value of PTWV-FTWV Discrepancy across the High-School Years.

11th Grade Educational Expectations	Overall F-Value	P-value	
	11.045	< 0.0001	
	Mean Salience of PTWV		
	Mean Salience of PTWV	Contrast*	P-Value
Less than High School	0.909	Omitted	
High School and Junior College Degree	1.708	-0.799	NS
4-Year College Degree and beyond	2.395	-0.687	< 0.0001
Do not know	1.587	0.808	0.001
Total	1.650		
12th Grade Educational Expectations	Overall F-Value	P-value	
	20.105	< 0.0001	
	Mean Salience of PTWV		
	Mean Salience of PTWV	Contrast*	P-Value
Less than High School	1.231	Omitted	
High School and Junior College Degree	1.436	-0.205	NS
4-Year College Degree and beyond	2.359	-0.923	< 0.0001
Do not know	1.015	1.344	< 0.0001
Total	1.510		

* Contrasts computed by subtracting the mean of an expectation group from the mean of the next lowest expectation group (i.e., profile contrasts).

Table 61.
H6,1 and H6,2 Economic Security Values: ANOVA Results of Educational Expectations predicting the Absolute Value of PTWV-FTWV Discrepancy across the High-School Years.

9th Grade Educational Expectations	Overall F-Value	P-value	
	5.463	0.013	
	Mean Salience of PTWV	Contrast*	P-Value
Less than High School	0.909	Omitted	
High School and Junior College Degree	1.552	-0.643	NS
4-Year College Degree and beyond	1.849	-0.297	0.006
Total	1.437		
10th Grade Educational Expectations	Overall F-Value	P-value	
	12.484	0.039	
	Mean Salience of PTWV	Contrast*	P-Value
Less than High School	1.368	Omitted	
High School and Junior College Degree	1.445	-0.076	NS
4-Year College Degree and beyond	2.136	-0.692	< 0.0001
Do not know	1.827	0.309	NS
Total	1.694		

* Contrasts computed by subtracting the mean of an expectation group from the mean of the next lowest expectation group (i.e., profile contrasts).

Table 61 (continued).

H_{6,1} and H_{6,2} Economic Security Values: ANOVA Results of Educational Expectations predicting the Absolute Value of PTWV-FTWV Discrepancy across the High-School Years.

11th Grade Educational Expectations	Overall F-Value	P-value	
	15.367	< 0.0001	
	Mean Salience of PTWV	Contrast*	P-Value
Less than High School	1.182	Omitted	
High School and Junior College Degree	1.424	-0.243	NS
4-Year College Degree and beyond	2.159	-0.735	< 0.0001
Do not know	1.592	0.567	0.005
Total	1.589		
12th Grade Educational Expectations	Overall F-Value	P-value	
	20.085	< 0.0001	
	Mean Salience of PTWV	Contrast*	P-Value
Less than High School	0.846	Omitted	
High School and Junior College Degree	1.193	-0.347	NS
4-Year College Degree and beyond	1.950	-0.756	< 0.0001
Do not know	1.379	0.571	0.003
Total	1.342		

* Contrasts computed by subtracting the mean of an expectation group from the mean of the next lowest expectation group (i.e., profile contrasts).

Table 62.

H_{6,1} and H_{6,2} Interpersonal Values: ANOVA Results of Educational Expectations Predicting the Absolute Value of PTWV-FTWV Discrepancy across the High-School Years.

9th Grade Educational Expectations	Overall F-Value	P-value	
	4.109	0.017	
	Mean Salience of PTWV	Contrast*	P-Value
Less than High School	1.583	Omitted	
High School and Junior College Degree	0.816	0.767	0.010
4-Year College Degree and beyond	0.937	-0.121	NS
Total	1.112		
10th Grade Educational Expectations	Overall F-Value	P-value	
	3.474	0.016	
	Mean Salience of PTWV	Contrast*	P-Value
Less than High School	0.526	Omitted	
High School and Junior College Degree	0.821	-0.295	NS
4-Year College Degree and beyond	0.991	-0.170	0.014
Do not know	0.802	0.188	NS
Total	0.785		

* Contrasts computed by subtracting the mean of an expectation group from the mean of the next lowest expectation group (i.e., profile contrasts).

Table 62 (continued).

H_{6,1} and H_{6,2} Interpersonal Values: ANOVA Results of Educational Expectations Predicting the Absolute Value of PTWV-FTWV Discrepancy across the High-School Years.

11th Grade Educational Expectations	Overall F-Value	P-value	
	1.368	NS	
	Mean Salience of PTWV	Contrast*	P-Value
Less than High School	0.400	Omitted	
High School and Junior College Degree	0.909	-0.509	NS
4-Year College Degree and beyond	0.958	-0.049	NS
Do not know	0.816	0.142	NS
Total	0.771		
12th Grade Educational Expectations	Overall F-Value	P-value	
	4.686	0.003	
	Mean Salience of PTWV	Contrast*	P-Value
Less than High School	0.846	Omitted	
High School and Junior College Degree	0.728	0.118	NS
4-Year College Degree and beyond	0.975	-0.247	0.001
Do not know	0.697	0.278	0.035
Total	0.812		

* Contrasts computed by subtracting the mean of an expectation group from the mean of the next lowest expectation group (i.e., profile contrasts).

Table 63.

H_{7,1} and H_{7,2} Mastery Domain: Test of the Association between Career Aspirations and the Absolute Value of the PTWV-FTWV Discrepancies across the High School Years employing OLS Regression.

Outcome: PTWV-FTWV Discrepancy 9th grade				R-Square = 0.006
Predictor	Beta (β)	t-value	p-value	
Occupational prestige	0.077	2.229	0.026	
Outcome: PTWV-FTWV Discrepancy 10th grade				R-Square = 0.002
Predictor	Beta (β)	t-value	p-value	
Occupational prestige	0.048	1.386	NS	
Outcome: PTWV-FTWV Discrepancy 11th grade				R-Square = 0.011
Predictor	Beta (β)	t-value	p-value	
Occupational prestige	0.107	3.078	0.002	
Outcome: PTWV-FTWV Discrepancy 12th grade				R-Square = 0.026
Predictor	Beta (β)	t-value	p-value	
Occupational prestige	0.160	4.575	< 0.0001	

Table 64.

H_{7,1} and H_{7,2} Economic Security Domain: Test of the Association between Career Aspirations and the Absolute Value of the PTWV-FTWV Discrepancies across the High School Years employing OLS Regression.

Outcome: PTWV-FTWV Discrepancy 9th grade				R-Square = 0.005
Predictor	Beta (β)	t-value	p-value	
Occupational prestige	0.071	2.053	0.040	
Outcome: PTWV-FTWV Discrepancy 10th grade				R-Square = 0.020
Predictor	Beta (β)	t-value	p-value	
Occupational prestige	0.141	4.067	< 0.0001	
Outcome: PTWV-FTWV Discrepancy 11th grade				R-Square = 0.014
Predictor	Beta (β)	t-value	p-value	
Occupational prestige	0.118	3.414	0.001	
Outcome: PTWV-FTWV Discrepancy 12th grade				R-Square = 0.021
Predictor	Beta (β)	t-value	p-value	
Occupational prestige	0.146	4.214	< 0.0001	

Table 65.

H_{7,1} and H_{7,2} Interpersonal Domain: Test of the Association between Career Aspirations and the Absolute Value of the PTWV-FTWV Discrepancies across the High School Years employing OLS Regression.

Outcome: PTWV-FTWV Discrepancy 9th grade				R-Square = 0.005
Predictor	Beta (β)	t-value	p-value	
Occupational prestige	0.069	1.999	0.046	
Outcome: PTWV-FTWV Discrepancy 10th grade				R-Square = 0.013
Predictor	Beta (β)	t-value	p-value	
Occupational prestige	0.114	3.303	0.001	
Outcome: PTWV-FTWV Discrepancy 11th grade				R-Square = 0.005
Predictor	Beta (β)	t-value	p-value	
Occupational prestige	0.074	2.128	0.034	
Outcome: PTWV-FTWV Discrepancy 12th grade				R-Square = 0.010
Predictor	Beta (β)	t-value	p-value	
Occupational prestige	0.099	2.832	0.005	

Table 66.

H_{8,1}: Moderator Model of Mastery Values and Experience including a Test of the Effect of Educational Expectations.

Outcome: PTWE – 10th to 12th grade linear trend*		N = 485	R-Square = 0.072	
Predictors:		Beta (β)	t-value	p-value
	PTWV – linear trend*	0.494	4.360	< 0.0001
	PTWV – PTWE discrepancy*	-0.096	-1.329	NS
	Educational Expectations**	-0.149	-2.039	0.042
	Interaction: Educational Expectations by PTWV – linear trend	-0.149	-1.287	NS
	Interaction: Educational Expectations by PTWV – PTWE discrepancy	0.185	1.989	0.047
	Interaction: PTWV – linear trend by PTWV – PTWE discrepancy	-0.284	-2.770	0.006
	Triple Interaction	0.095	0.910	NS

* Data varies by employment group, see results section for more details

** 0 = high school or 2-year degree, 1 = 4-year to a Ph.D. or Professional degree, see results section for more details.

Table 67.

H_{8,2}: Moderator Model of Mastery Values including a Test of the Effect of Educational Expectations.

Outcome: FTWV – 9th to 12th grade linear trend				R-Square = 0.304
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade linear trend	1.852	5.975	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	0.509	2.857	0.004	
9 th Grade Educational Expectations*	0.191	3.615	0.003	
Interaction: Educational Expectations by PTWV – linear trend	-1.112	-3.667	0.0003	
Interaction: Educational Expectations by PTWV – PTWE discrepancy	-0.543	-2.951	0.003	
Interaction: PTWV – linear trend by PTWV – PTWE discrepancy	-0.897	-2.636	0.009	
Triple Interaction	0.590	1.7959	0.079	
Outcome: FTWV – 9th to 12th grade quadratic trend				R-Square = 0.165
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade quad. trend	0.724	2.229	0.026	
PTWV – FTWV 9 th grade discrepancy	-0.482	-2.498	0.013	
9 th Grade Educational Expectations*	-0.045	-0.772	NS	
Interaction: Educational Expectations by PTWV – quad. trend	-0.102	-0.271	NS	
Interaction: Educational Expectations by PTWV – PTWE discrepancy	0.512	2.572	0.010	
Interaction: PTWV – quad. trend by PTWV – PTWE discrepancy	-0.316	-0.922	NS	
Triple Interaction	0.235	0.695	NS	

* 0 = less than a high school degree, 1 = high school or 2-year degree, and 2 = 4-year to a Ph.D. or Professional degree

Table 68.

H_{8,2}: Moderator Model of Economic Security Values including a Test of the Effect of Educational Expectations.

Outcome: FTWV – 9th to 12th grade linear trend				R-Square = 0.209
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade linear trend	1.476	4.033	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	0.585	2.911	0.004	
9 th Grade Educational Expectations*	0.149	2.422	0.016	
Interaction: Educational Expectations by PTWV – linear trend	-0.782	-2.192	0.029	
Interaction: Educational Expectations by PTWV – PTWE discrepancy	-0.561	-2.736	0.006	
Interaction: PTWV – linear trend by PTWV – PTWE discrepancy	-0.883	-2.434	0.015	
Triple Interaction	0.508	1.443	NS	
Outcome: FTWV – 9th to 12th grade quadratic trend				R-Square = 0.153
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade quad. trend	1.872	5.615	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	-0.176	-0.918	NS	
9 th Grade Educational Expectations*	-0.036	-0.589	NS	
Interaction: Educational Expectations by PTWV – quad. trend	-1.331	-4.035	< 0.0001	
Interaction: Educational Expectations by PTWV – PTWE discrepancy	0.137	0.696	NS	
Interaction: PTWV – quad. trend by PTWV – PTWE discrepancy	-1.415	-4.095	< 0.0001	
Triple Interaction	1.153	3.359	0.001	

* 0 = less than a high school degree, 1 = high school or 2-year degree, and 2 = 4-year to a Ph.D. or Professional degree

Table 69.

H_{8,2}: Moderator Model of Interpersonal Values including a Test of the Effect of Educational Expectations.

Outcome: FTWV – 9th to 12th grade linear trend				R-Square = 0.337
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade linear trend	0.995	3.696	0.0002	
PTWV – FTWV 9 th grade discrepancy	-0.046	-0.270	NS	
9 th Grade Educational Expectations*	0.068	1.366	NS	
Interaction: Educational Expectations by PTWV – linear trend	-0.171	-0.639	NS	
Interaction: Educational Expectations by PTWV – PTWE discrepancy	-0.023	-0.129	NS	
Interaction: PTWV – linear trend by PTWV – PTWE discrepancy	-0.467	-1.459	NS	
Triple Interaction	0.082	0.256	NS	
Outcome: FTWV – 9th to 12th grade quadratic trend				R-Square = 0.300
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade quad. trend	1.514	5.410	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	0.015	0.087	NS	
9 th Grade Educational Expectations*	-0.020	-0.403	NS	
Interaction: Educational Expectations by PTWV – quad. trend	-0.775	-2.817	0.005	
Interaction: Educational Expectations by PTWV – PTWE discrepancy	0.022	0.122	NS	
Interaction: PTWV – quad. trend by PTWV – PTWE discrepancy	-0.934	-3.422	0.001	
Triple Interaction	0.637	2.374	0.018	

* 0 = less than a high school degree, 1 = high school or 2-year degree, and 2 = 4-year to a Ph.D. or Professional degree

Table 70.

H_{8,4}: Moderator Model of Mastery Values including a Test of the Effect of the Occupational Prestige of Career Aspirations.

Outcome: FTWV – 9th to 12th grade linear trend				R-Square = 0.253
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade linear trend	0.778	3.379	0.001	
PTWV – FTWV 9 th grade discrepancy	-0.030	-0.228	NS	
9 th Grade Occupational Prestige	0.003	0.056	NS	
Interaction: Occupational Prestige by PTWV – linear trend	-0.060	-0.270	NS	
Interaction: Occupational Prestige by PTWV – PTWE discrepancy	0.006	0.040	NS	
Interaction: PTWV – linear trend by PTWV – PTWE discrepancy	-0.325	-1.263	NS	
Triple Interaction	0.015	0.058	NS	
Outcome: FTWV – 9th to 12th grade quadratic trend				R-Square = 0.168
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade quad. trend	-0.058	-0.250	NS	
PTWV – FTWV 9 th grade discrepancy	-0.100	-0.722	NS	
9 th Grade Occupational Prestige	0.033	0.571	NS	
Interaction: Occupational Prestige by PTWV – quad. trend	0.545	2.426	0.016	
Interaction: Occupational Prestige by PTWV – PTWE discrepancy	0.099	0.672	NS	
Interaction: PTWV – quad. trend by PTWV – PTWE discrepancy	0.277	1.211	NS	
Triple Interaction	-0.405	-1.821	0.069	

Table 71.

H_{8,4}: Moderator Model of Economic Security Values including a Test of the Effect of the Occupational Prestige of Career Aspirations.

Outcome: FTWV – 9th to 12th grade linear trend				R-Square = 0.204
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade linear trend	0.975	4.050	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	0.274	1.758	0.079	
9 th Grade Occupational Prestige	0.049	.812	NS	
Interaction: Occupational Prestige by PTWV – linear trend	-0.292	-1.227	NS	
Interaction: Occupational Prestige by PTWV – PTWE discrepancy	-0.277	-1.713	0.087	
Interaction: PTWV – linear trend by PTWV – PTWE discrepancy	-0.760	-2.835	0.005	
Triple Interaction	0.403	1.526	NS	
Outcome: FTWV – 9th to 12th grade quadratic trend				R-Square = 0.137
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade quad. trend	0.992	4.160	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	-0.432	-2.849	0.005	
9 th Grade Occupational Prestige	-0.044	-0.719	NS	
Interaction: Occupational Prestige by PTWV – quad. trend	-0.491	-2.060	0.040	
Interaction: Occupational Prestige by PTWV – PTWE discrepancy	0.399	2.499	0.013	
Interaction: PTWV – quad. trend by PTWV – PTWE discrepancy	-0.923	-3.654	0.0003	
Triple Interaction	0.659	2.613	0.009	

Table 72.

H_{8,4}: Moderator Model of Interpersonal Values including a Test of the Effect of the Occupational Prestige of Career Aspirations.

Outcome: FTWV – 9th to 12th grade linear trend				R-Square = 0.315
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade linear trend	0.991	5.132	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	-0.175	-1.396	NS	
9 th Grade Occupational Prestige	0.023	0.469	NS	
Interaction: Occupational Prestige by PTWV – linear trend	-0.205	-1.069	NS	
Interaction: Occupational Prestige by PTWV – PTWE discrepancy	0.110	0.812	NS	
Interaction: PTWV – linear trend by PTWV – PTWE discrepancy	-0.528	-2.536	.011	
Triple Interaction	0.161	0.771	NS	
Outcome: FTWV – 9th to 12th grade quadratic trend				R-Square = 0.289
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade quad. trend	.670	3.629	0.0003	
PTWV – FTWV 9 th grade discrepancy	.135	1.018	NS	
9 th Grade Occupational Prestige	.064	1.254	NS	
Interaction: Occupational Prestige by PTWV – quad. trend	.066	0.358	NS	
Interaction: Occupational Prestige by PTWV – PTWE discrepancy	-.139	-0.992	NS	
Interaction: PTWV – quad. trend by PTWV – PTWE discrepancy	-.175	-1.027	NS	
Triple Interaction	-.137	-0.817	NS	

Table 73.

H_{8,4}: Moderator Model of Mastery Values including a Test of the Effect of the Occupational “Thing Complexity” of Career Aspirations.

Outcome: FTWV – 9th to 12th grade linear trend				R-Square = 0.264
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade linear trend	0.893	10.225	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	0.059	1.095	NS	
9 th Grade Occupational Thing Complexity*	0.117	2.109	0.035	
Interaction: Occupational Thing Complexity by PTWV – linear trend	-0.260	-2.777	0.006	
Interaction: Occupational Thing Complexity by PTWV – PTWE discrepancy	-0.167	-2.287	0.022	
Interaction: PTWV – linear trend by PTWV – PTWE discrepancy	-0.484	-5.410	< 0.0001	
Triple Interaction	0.271	2.780	0.006	
Outcome: FTWV – 9th to 12th grade quadratic trend				R-Square = 0.166
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade quad. trend	0.611	6.186	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	-0.062	-1.092	NS	
9 th Grade Occupational Thing Complexity	0.020	0.338	NS	
Interaction: Occupational Thing Complexity by PTWV – quad. trend	-0.164	-1.658	NS	
Interaction: Occupational Thing Complexity by PTWV – PTWE discrepancy	0.078	1.023	NS	
Interaction: PTWV – quad. trend by PTWV – PTWE discrepancy	-0.174	-1.583	NS	
Triple Interaction	0.072	0.652	NS	

*Derived from DOT codes of adolescents’ career aspirations

Table 74.

H9.2: Moderator Model of Mastery Values and Experience including a Test of the Effect of Sex.

Outcome: PTWE – 10th to 12th grade linear trend*	N =	R-Square =	
Predictors:	Beta (β)	t-value	p-value
PTWV – linear trend*	0.379	3.960	< 0.0001
PTWV – PTWE discrepancy*	-0.033	-0.625	NS
Sex**	-0.049	-0.700	NS
Interaction: Sex by PTWV – linear trend	-0.033	-0.358	NS
Interaction: Sex by PTWV – PTWE discrepancy	0.159	2.108	.035
Interaction: PTWV – linear trend by PTWV – PTWE discrepancy	-0.175	-1.969	.050
Triple Interaction	-0.055	-0.639	NS

* Data varies by employment group, see results section for more details

** 0 = Female and 1 = Male

Table 75.

H_{9,2}: Moderator Model of Mastery Values including a Test of the Effect of Sex.

Outcome: FTWV – 9th to 12th grade linear trend				R-Square = 0.280
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade linear trend	0.783	11.073	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	-0.074	-1.758	0.079	
Sex	-0.074	-1.502	NS	
Interaction: Sex by PTWV – linear trend	-0.048	-0.687	NS	
Interaction: Sex by PTWV-FTWV discrepancy	0.119	2.086	0.037	
Interaction: PTWV – linear trend by PTWV-FTWV discrepancy	-0.304	-4.250	< 0.0001	
Triple Interaction	-0.032	-0.465	NS	
Outcome: FTWV – 9th to 12th grade quadratic trend				R-Square = 0.164
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade quad. trend	0.382	5.306	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	0.031	0.674	NS	
Sex	0.040	0.758	NS	
Interaction: Sex by PTWV – quad. trend	0.136	1.791	0.074	
Interaction: Sex by PTWV-FTWV discrepancy	-0.084	-1.365	NS	
Interaction: PTWV – quad. trend by PTWV-FTWV discrepancy	-0.081	-1.227	NS	
Triple Interaction	-0.035	-0.499	NS	

Table 76.

H_{9,2}: Moderator Model of Economic Security Values including a Test of the Effect of Sex.

Outcome: FTWV – 9th to 12th grade linear trend				R-Square = 0.220
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade linear trend	0.538	7.475	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	-0.084	-1.796	0.073	
Sex	-0.187	-3.396	0.001	
Interaction: Sex by PTWV – linear trend	0.233	3.112	0.002	
Interaction: Sex by PTWV-FTWV discrepancy	0.230	3.564	0.0003	
Interaction: PTWV – linear trend by PTWV-FTWV discrepancy	-0.202	-2.627	0.009	
Triple Interaction	-0.211	-2.764	0.006	
Outcome: FTWV – 9th to 12th grade quadratic trend				R-Square = 0.142
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade quad. trend	0.387	5.014	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	-0.051	-1.140	NS	
Sex	0.015	0.257	NS	
Interaction: Sex by PTWV – quad. trend	0.245	3.246	0.001	
Interaction: Sex by PTWV-FTWV discrepancy	-0.029	-0.452	NS	
Interaction: PTWV – quad. trend by PTWV-FTWV discrepancy	-0.157	-2.058	0.040	
Triple Interaction	-0.201	-2.748	0.006	

Table 77.

H_{9,2}: Moderator Model of Interpersonal Values including a Test of the Effect of Sex.

Outcome: FTWV – 9th to 12th grade linear trend				R-Square = 0.323
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade linear trend	0.795	12.325	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	-0.095	-2.127	0.034	
Sex	0.025	0.528	NS	
Interaction: Sex by PTWV – linear trend	0.017	0.265	NS	
Interaction: Sex by PTWV-FTWV discrepancy	0.005	0.090	NS	
Interaction: PTWV – linear trend by PTWV-FTWV discrepancy	-0.317	-4.629	< 0.0001	
Triple Interaction	-0.053	-0.841	NS	
Outcome: FTWV – 9th to 12th grade quadratic trend				R-Square = 0.296
Predictor	Beta (β)	t-value	p-value	
PTWV – 9 th to 12 th grade quad. trend	0.762	12.261	< 0.0001	
PTWV – FTWV 9 th grade discrepancy	-0.058	-1.230	NS	
Sex	0.017	0.406	NS	
Interaction: Sex by PTWV – quad. trend	-0.032	-0.525	NS	
Interaction: Sex by PTWV-FTWV discrepancy	0.026	0.463	NS	
Interaction: PTWV – quad. trend by PTWV-FTWV discrepancy	-0.301	-4.996	< 0.0001	
Triple Interaction	-0.002	-0.040	NS	

Figures

Figure 19.

Scatter Plots of Mastery Values Discrepancy: The Discrepancy between a PTWV and its FTWV Analogue Predicting the Same Discrepancy at a Later Occasion.

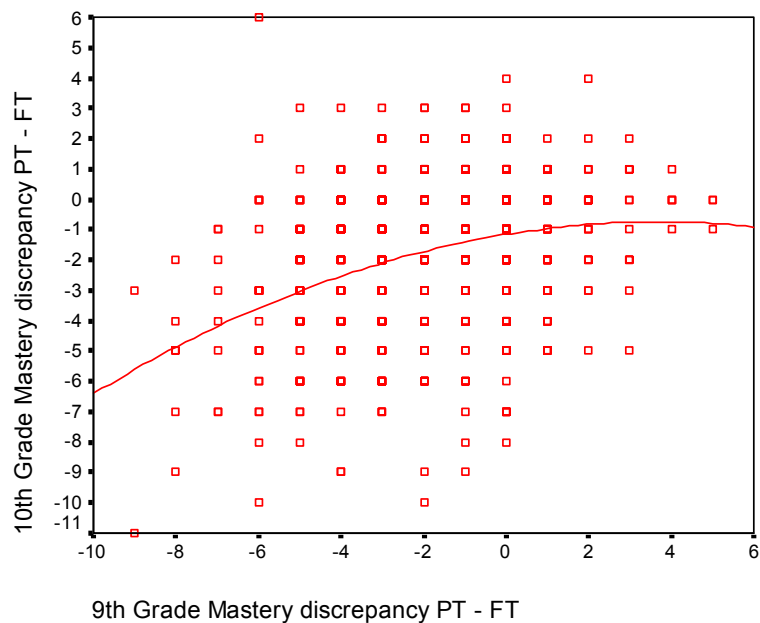
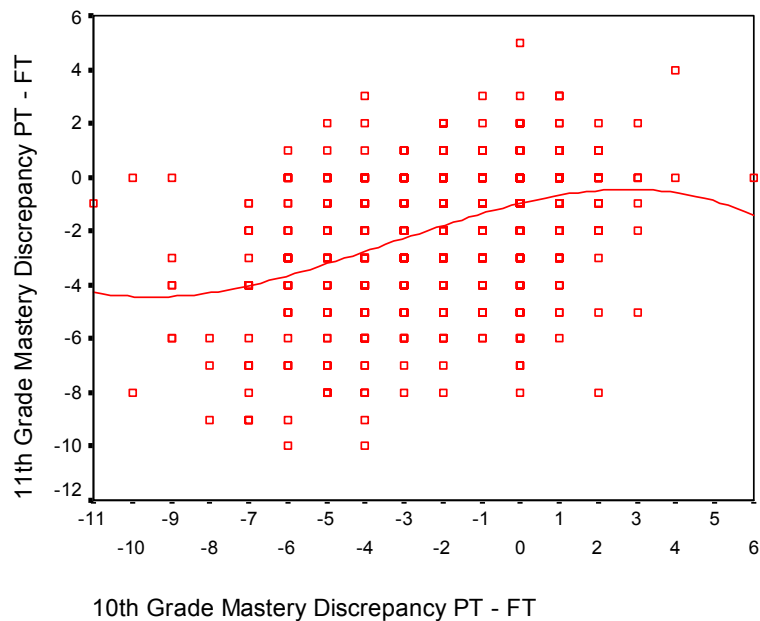
9th Grade Predicting 10th grade**10th Grade Predicting 11th grade**

Figure 19 (cont.).
Scatter Plots of Mastery Values Discrepancy: The Discrepancy between a PTWV and its FTWV Analogue Predicting the Same Discrepancy at a Later Occasion.

11th Grade Predicting 12th grade

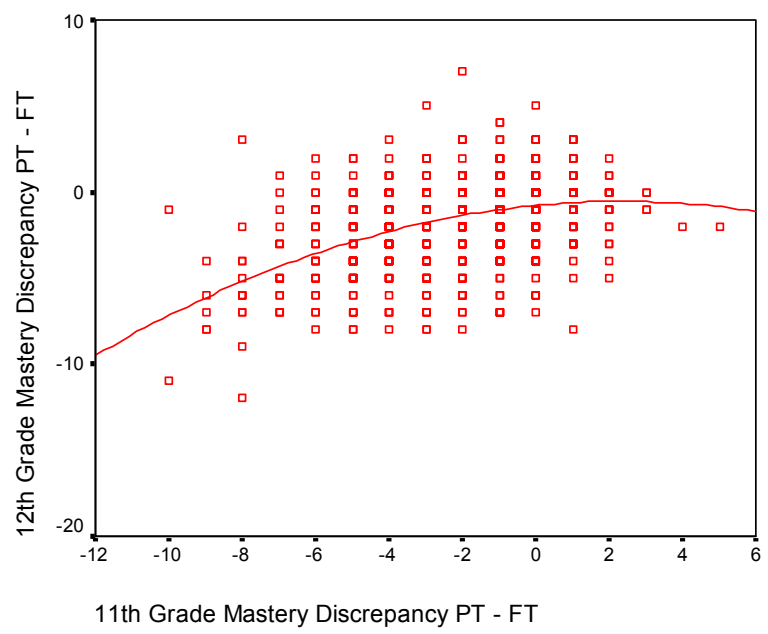
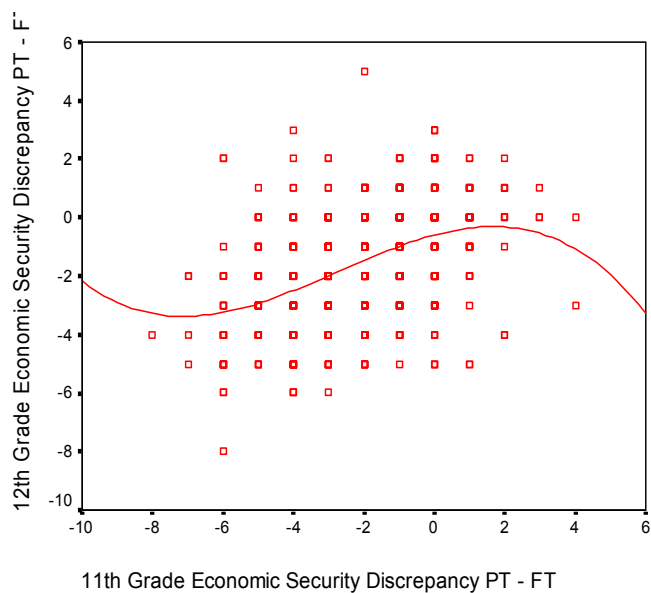


Figure 20.

Scatter Plots of Cubic Functions: The Discrepancy between a PTWV and its FTWV Analogue Predicting the Same Discrepancy at a Later Occasion.

Economic Security Values Discrepancy: 11th Grade Predicting 12th grade



Economic Security Values Discrepancy: 11th Grade Predicting 12th grade

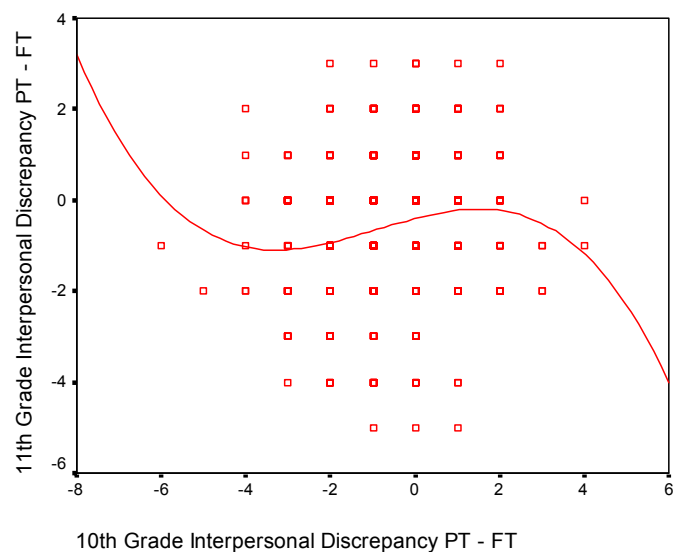


Figure 21.
H_{2,5}: Moderator model of Mastery Values.

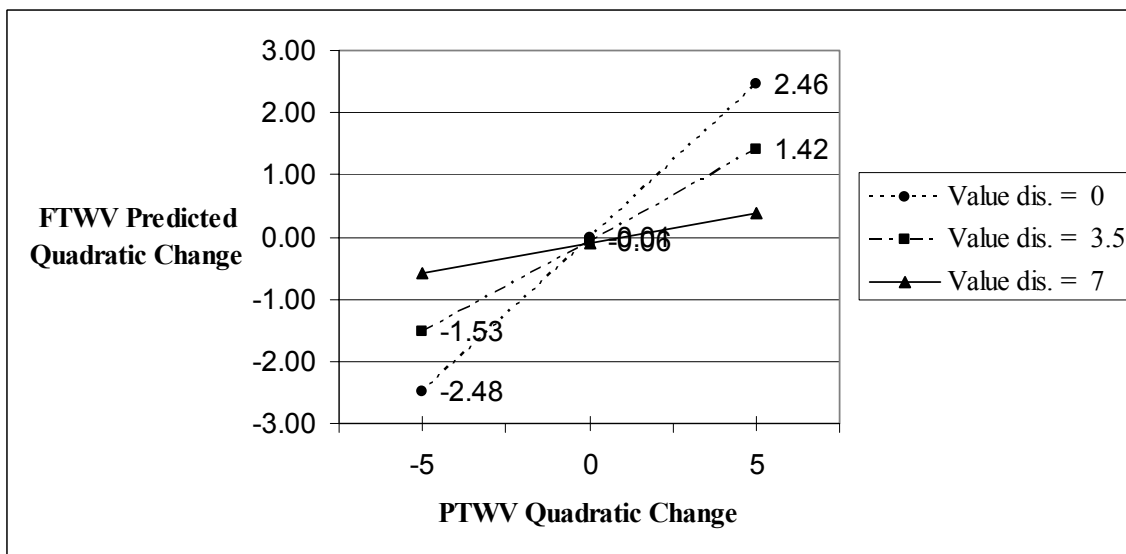
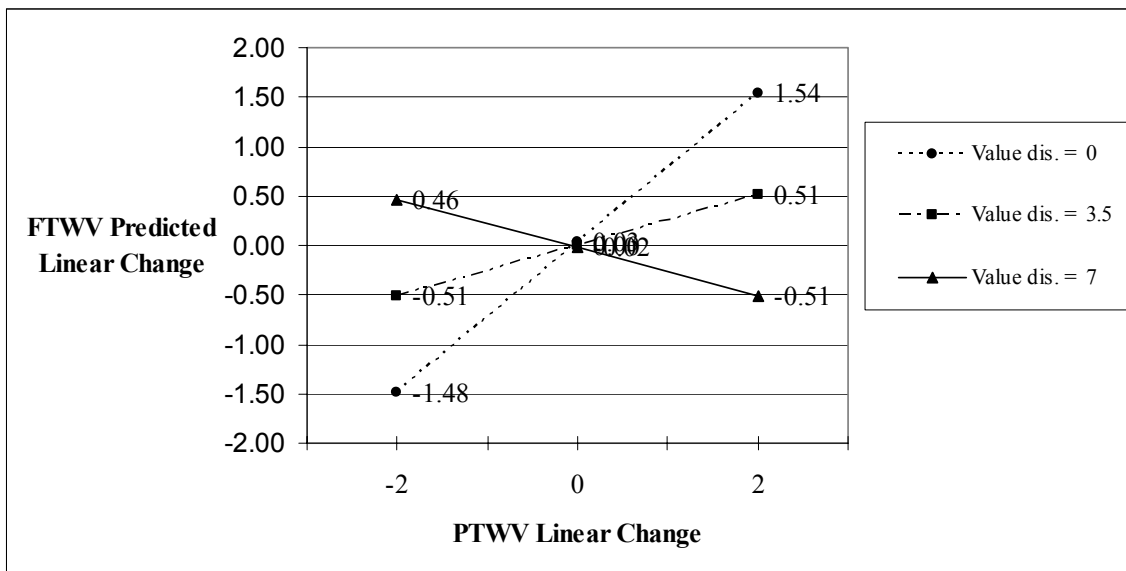
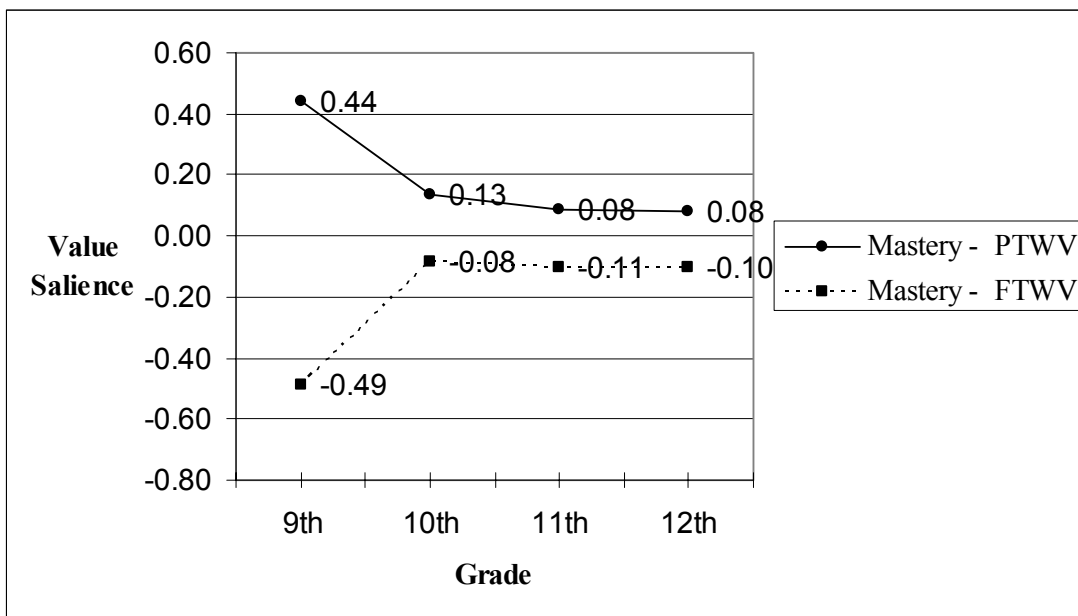


Figure 22.

Mastery Domain: Mean Trend in PTWV and FTWV across the High School Years under a Large Negative ($< 33^{\text{rd}}$ percentile) and Positive ($> 66^{\text{th}}$ percentile) PTWV-FTWV Discrepancy using Standardized Data.

Mastery Values: PTWV > FTWV



Mastery Values: PTWV < FTWV

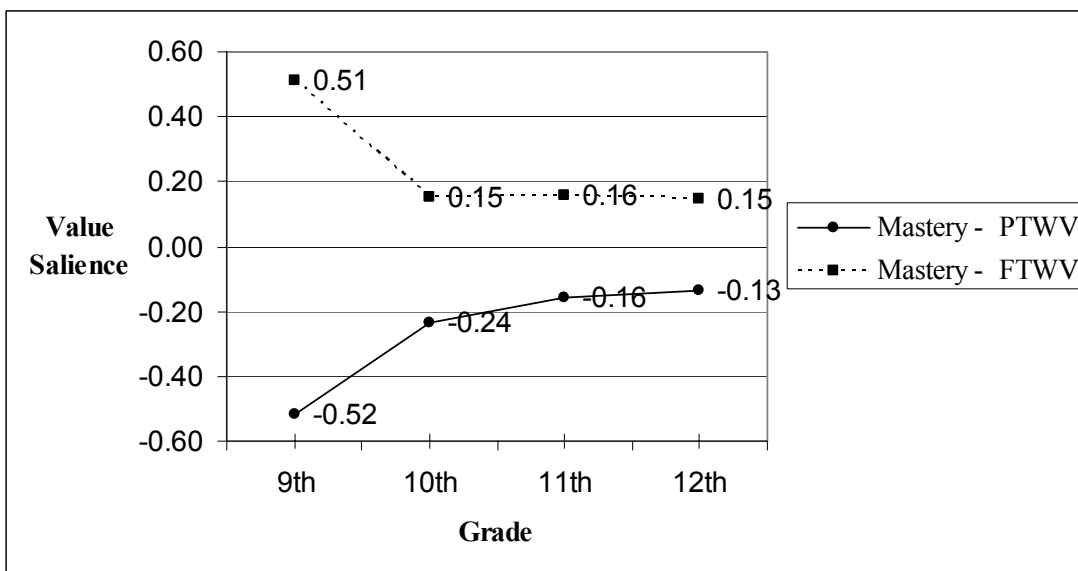
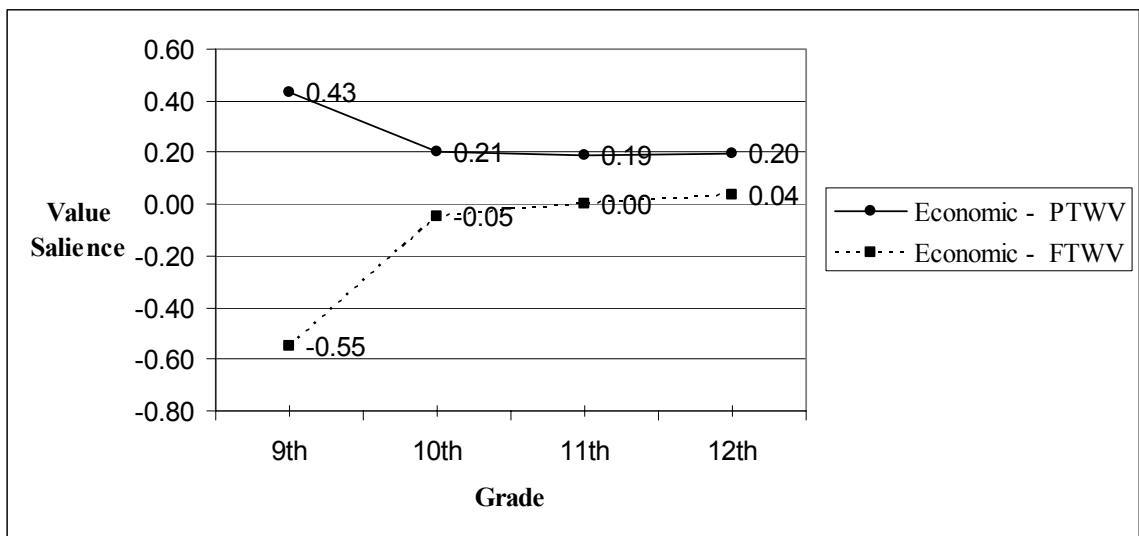


Figure 23.
Economic Security Domain: Mean Trend in PTWV and FTWV across the High School Years under a Large Negative (< 33rd percentile) and Positive (> 66th percentile) PTWV-FTWV Discrepancy using Standardized Data.

Economic Security Values: PTWV > FTWV



Economic Security Values: PTWV < FTWV

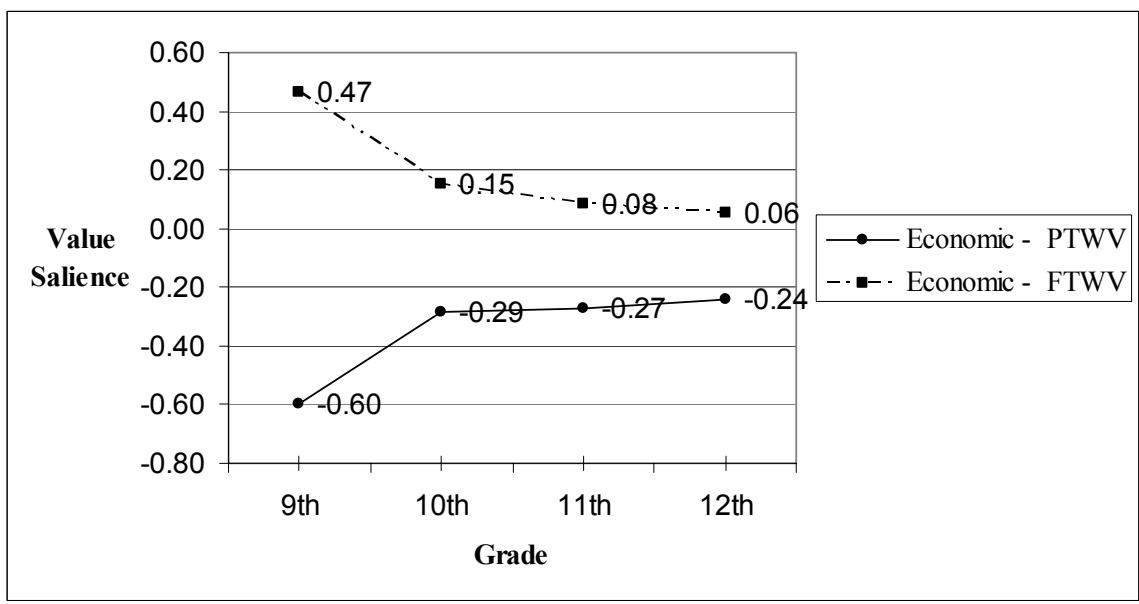
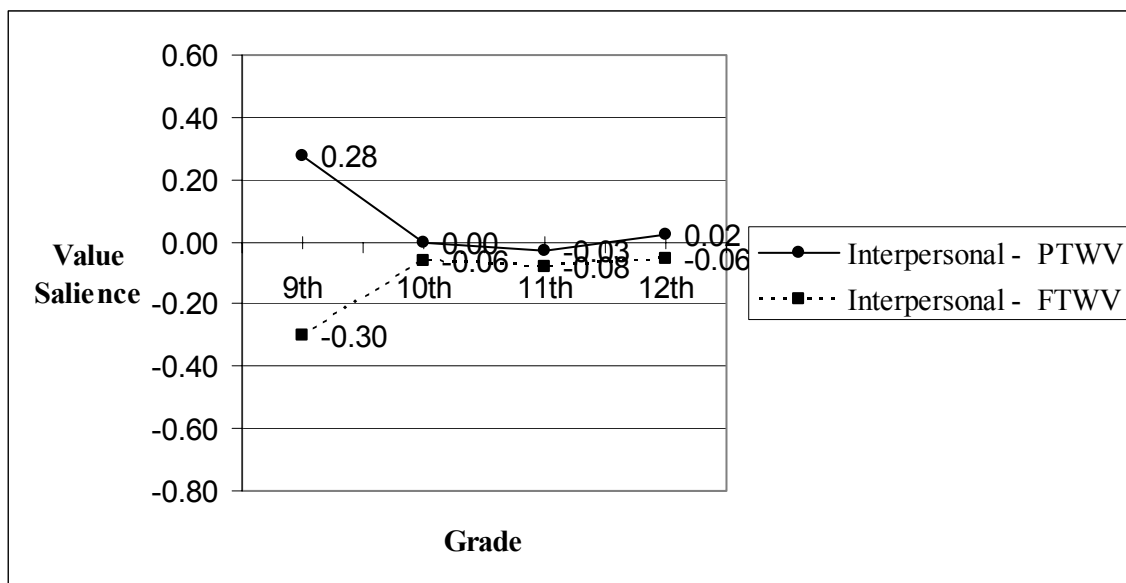


Figure 24.

Interpersonal Domain: Mean Trend in PTWV and FTWV across the High School Years under a Large Negative (< 33rd percentile) and Positive (> 66th percentile) PTWV-FTWV Discrepancy using Standardized Data.

Interpersonal Values: PTWV > FTWV



Interpersonal Values: PTWV < FTWV

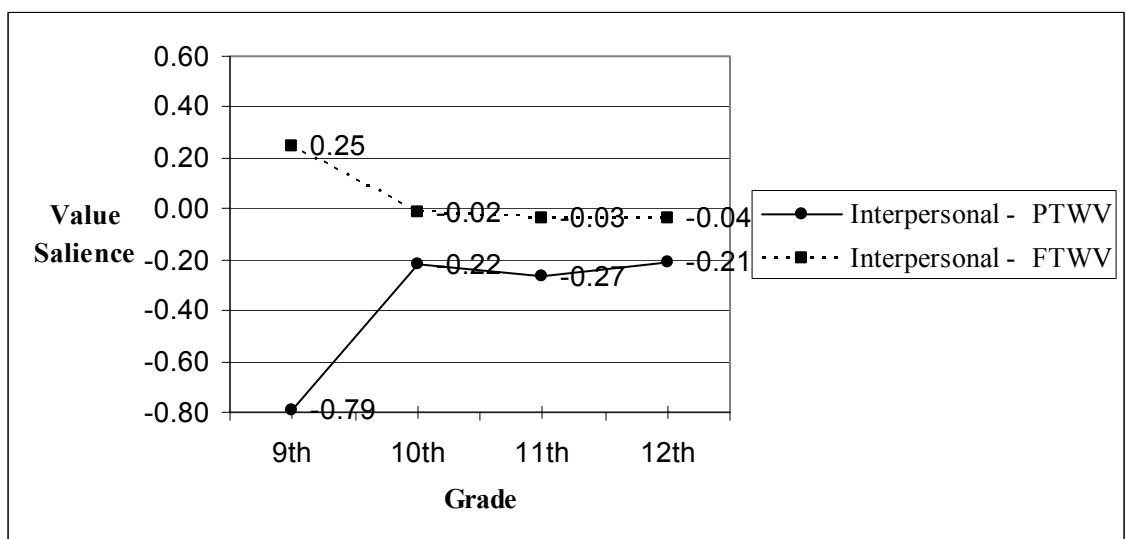
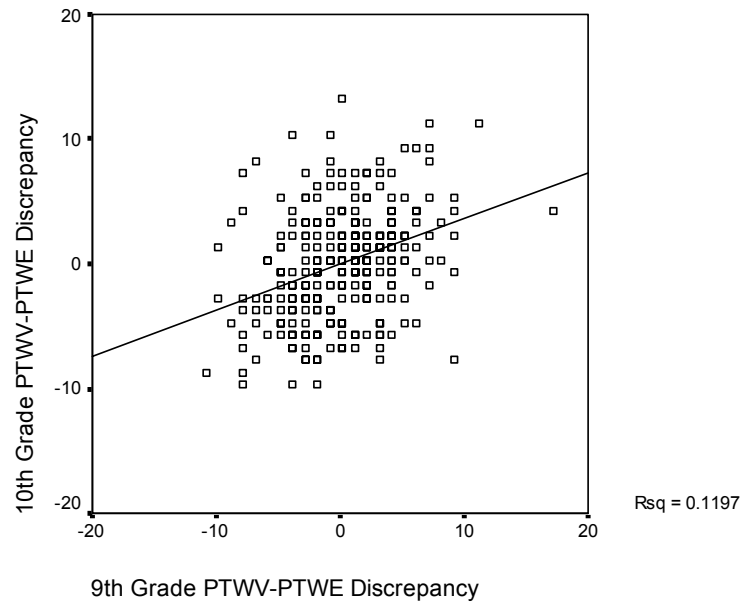


Figure 25.
Scatter Plots of the Mastery Values Discrepancy: The Discrepancy Between PTWV and its FTWV Analogue Predicting the Same Discrepancy at a Later Occasion.

9th Grade Predicting 10th grade



10th Grade Predicting 11th grade

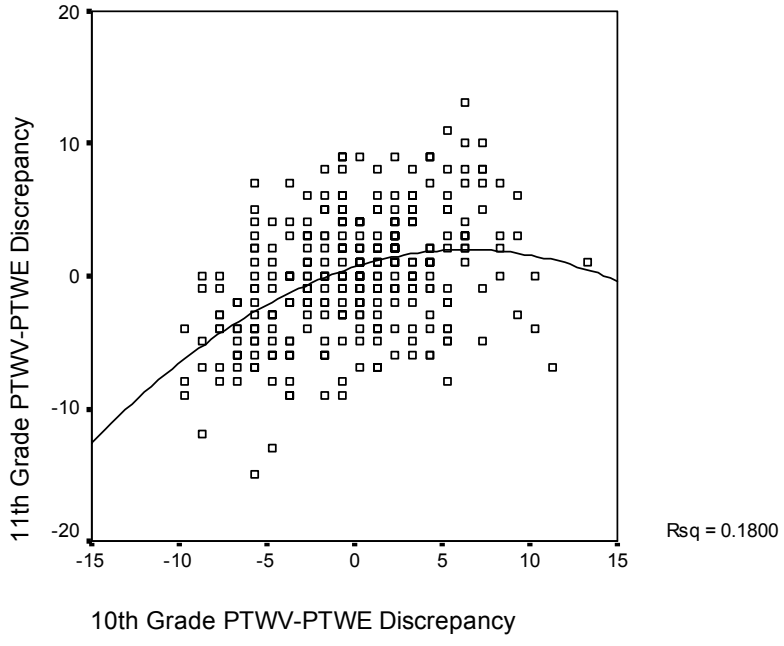
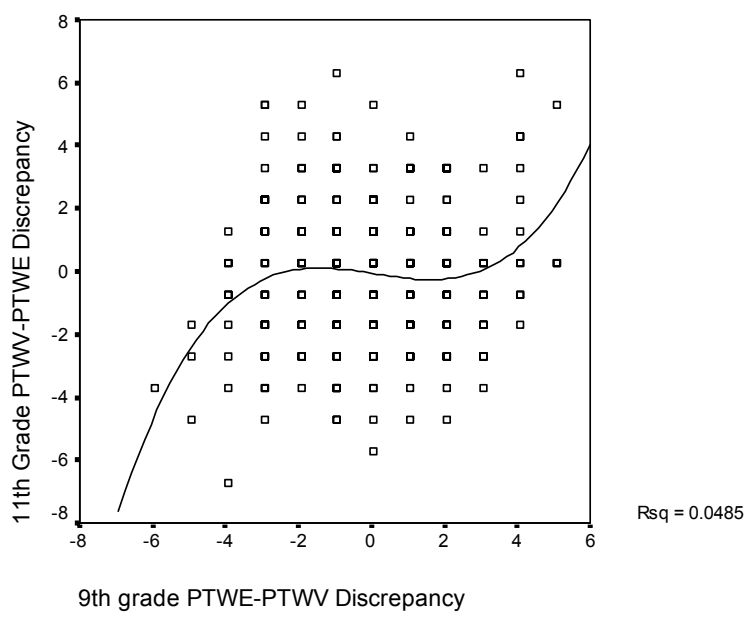


Figure 26.
Scatter Plots of Discrepancy Reduction at Two-Year Intervals.

Economic Security: 9th Grade Predicting 11th grade



Interpersonal Security: 10th Grade Predicting 12th grade

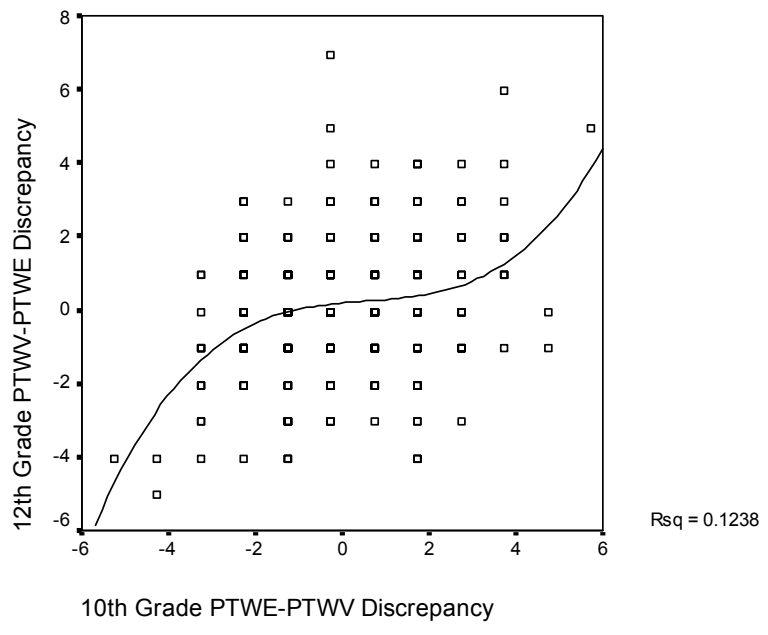
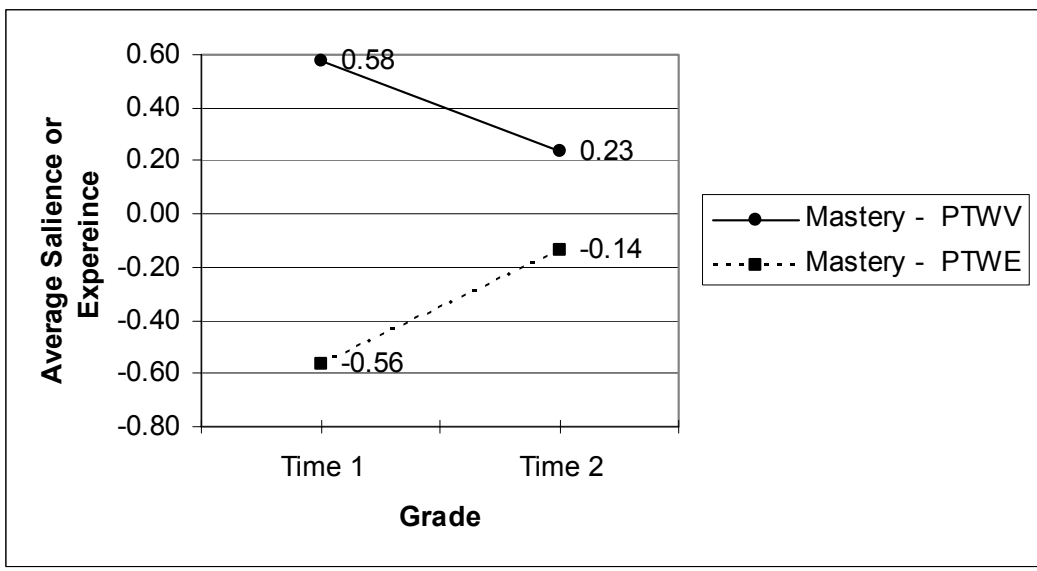


Figure 27.
Mastery Domain: Mean Trend in PTWV and PTWE across the High School Years under a Large Negative and Positive PTWV-PTWE Discrepancy using Standardized Data.

Mastery Domain: PTWV > PTWE



Mastery Domain: PTWV < PTWE

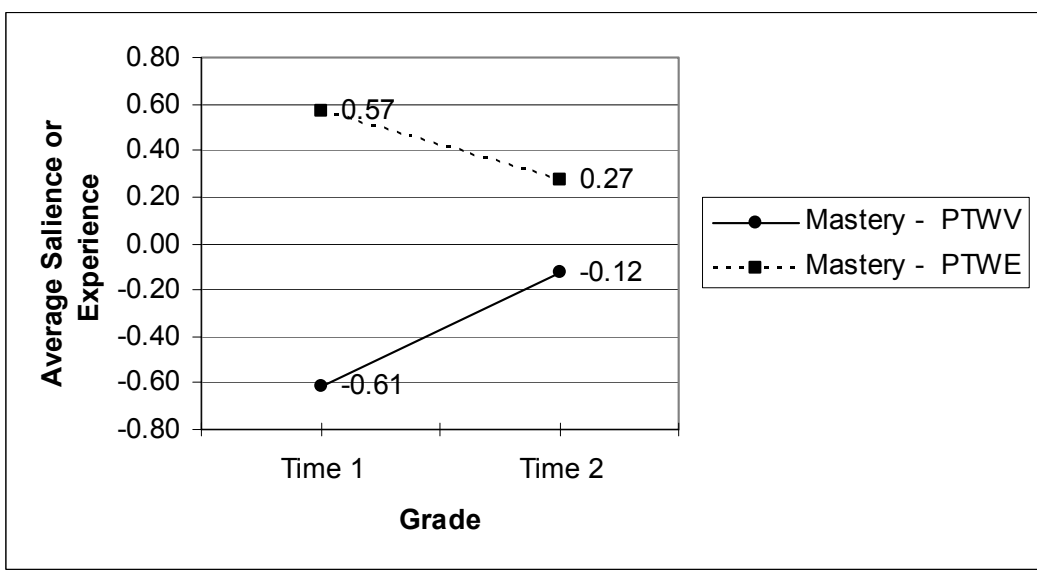
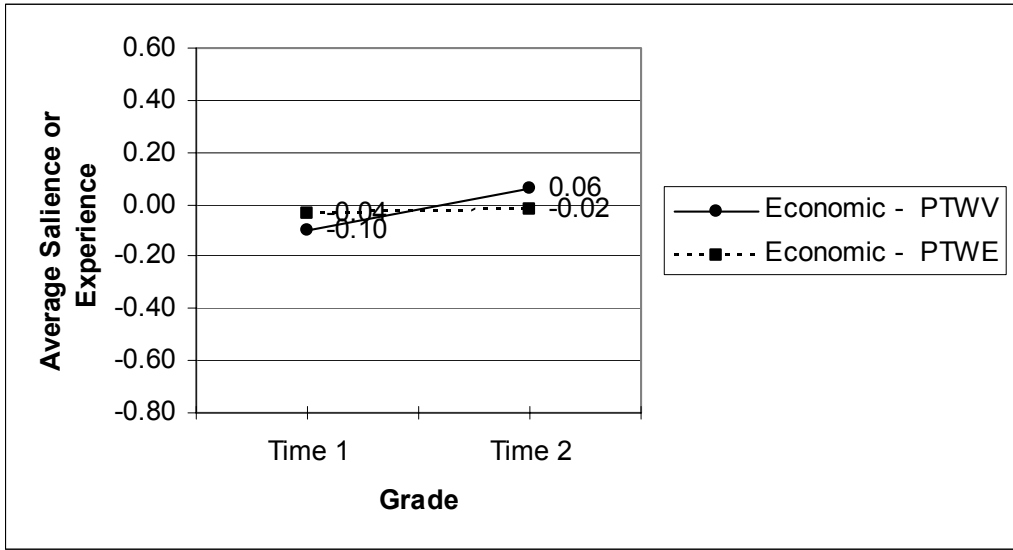


Figure 28.
Economic Security Domain: Mean Trend in PTWV and PTWE across the High School Years under a Large Negative and Positive PTWV-PTWE Discrepancy using Standardized Data.

Economic Security Domain: PTWV > PTWE



Economic Security Domain: PTWV < PTWE

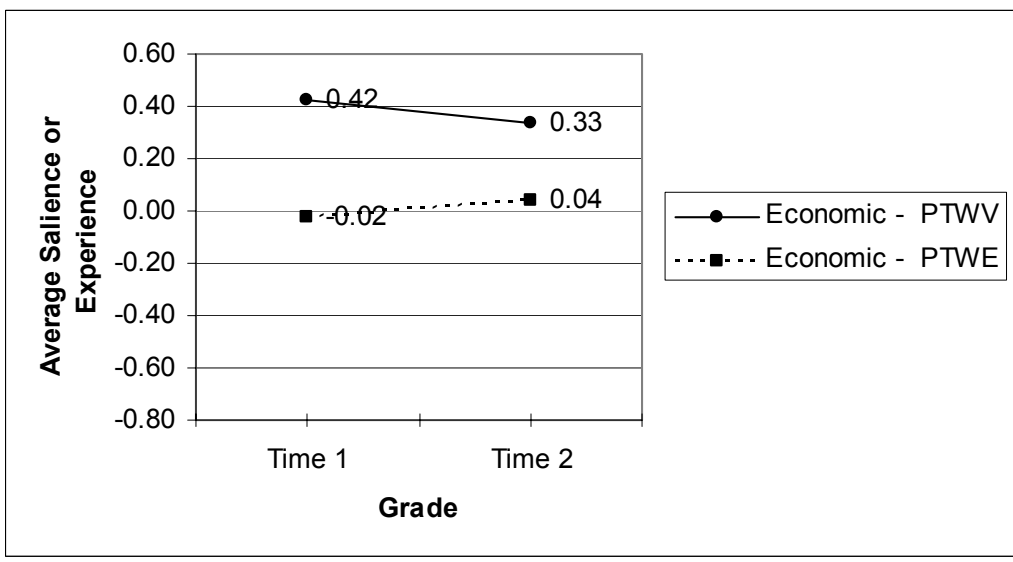
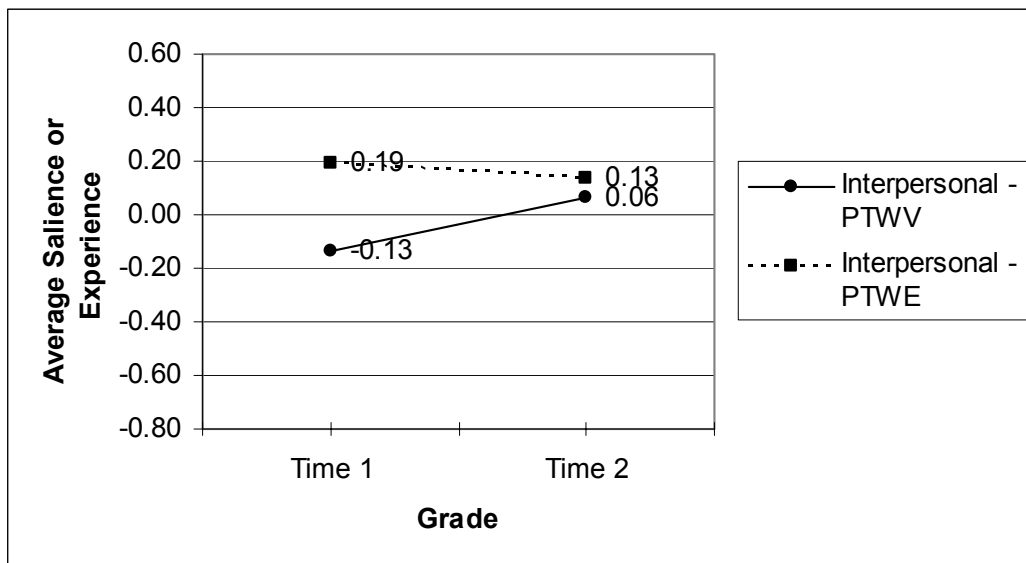


Figure 29.

Interpersonal Domain: Mean Trend in PTWV and PTWE across the High School Years under a Large Negative and Positive PTWV-PTWE Discrepancy using Standardized Data.

Interpersonal Domain: PTWV > PTWE



Interpersonal Domain: PTWV < PTWE

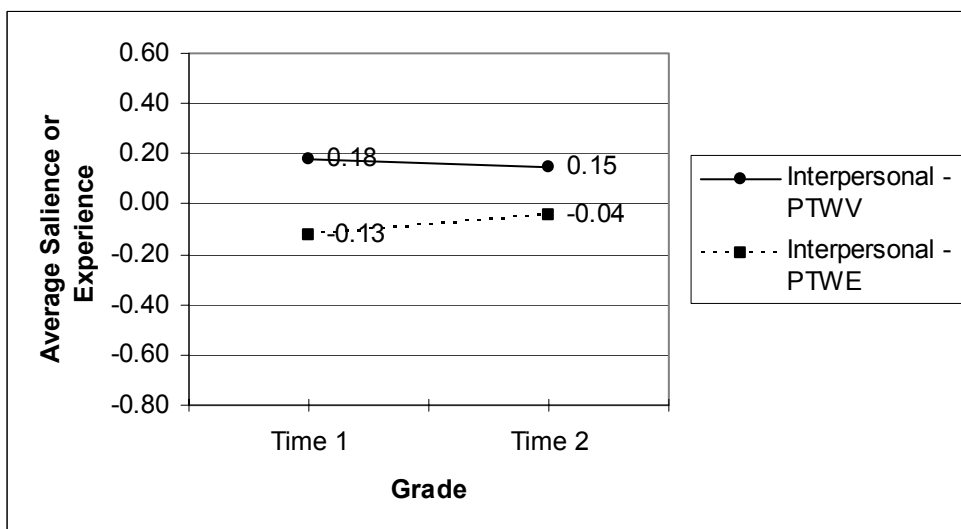
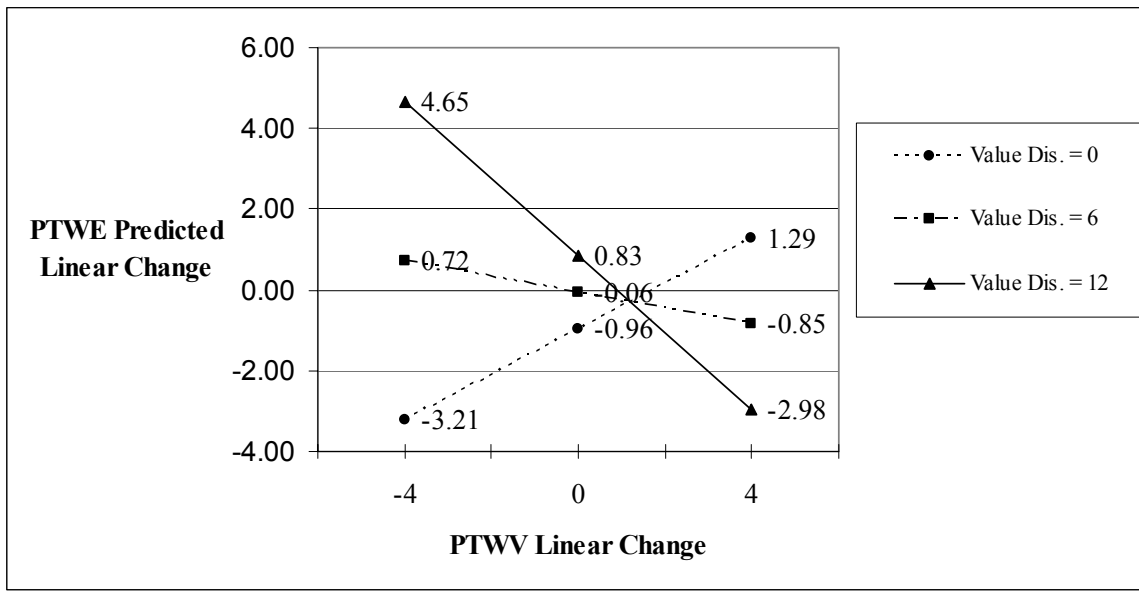


Figure 30.
H8,1: Moderator model of Mastery Values and Experience including the Effect of Educational Expectations – Linear Trend.

High School or 2-Year Degree Expected



4-Year Degree or Beyond Expected

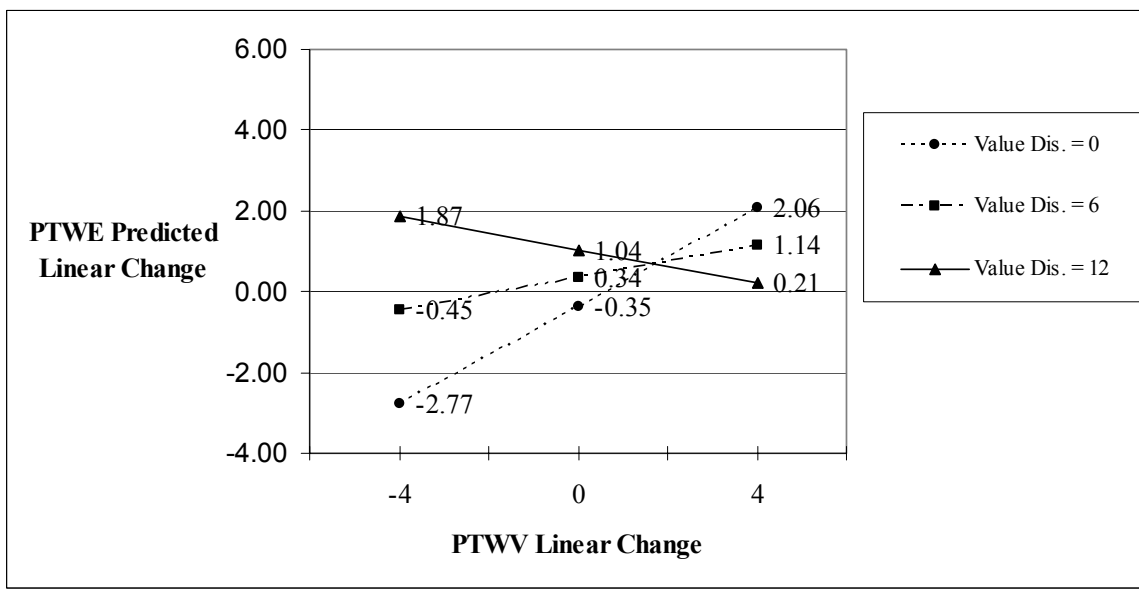
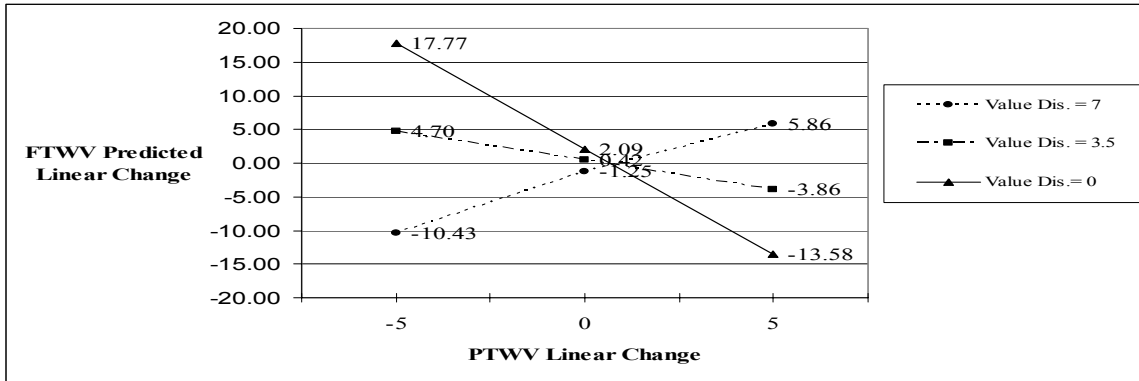
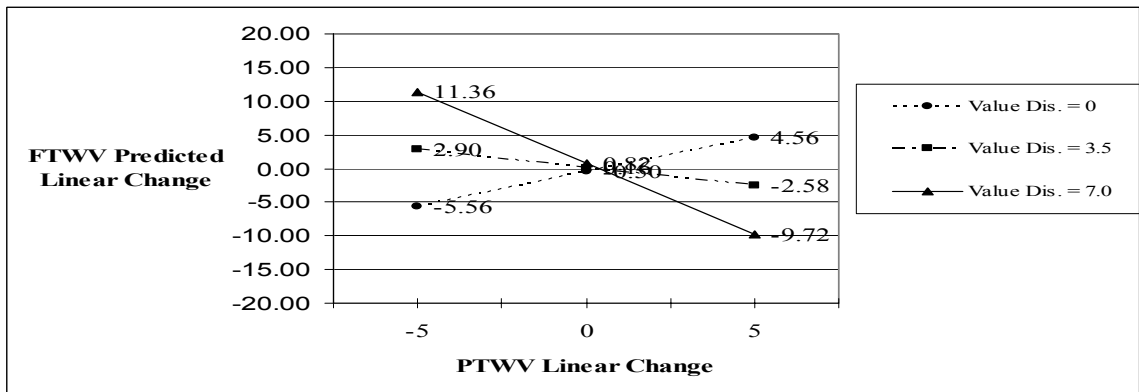


Figure 31.
H_{8,2}: Moderator model of Mastery Values including the Effect of Educational Expectations – Linear Trend.

Less than High School Degree Expected



High School or 2-Year Degree Expected



4-Year Degree or Beyond Expected

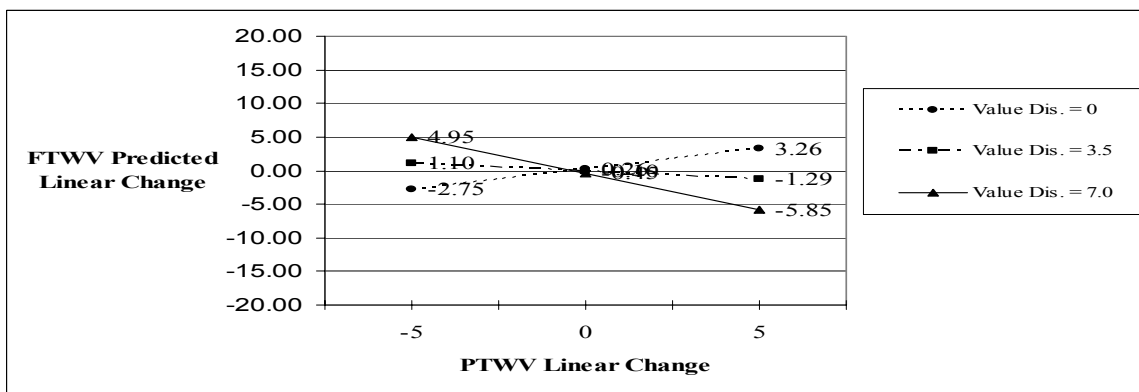
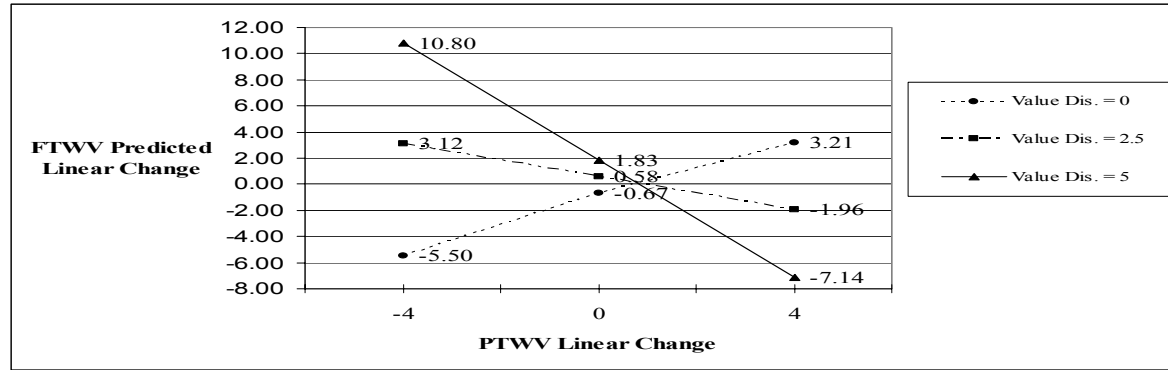
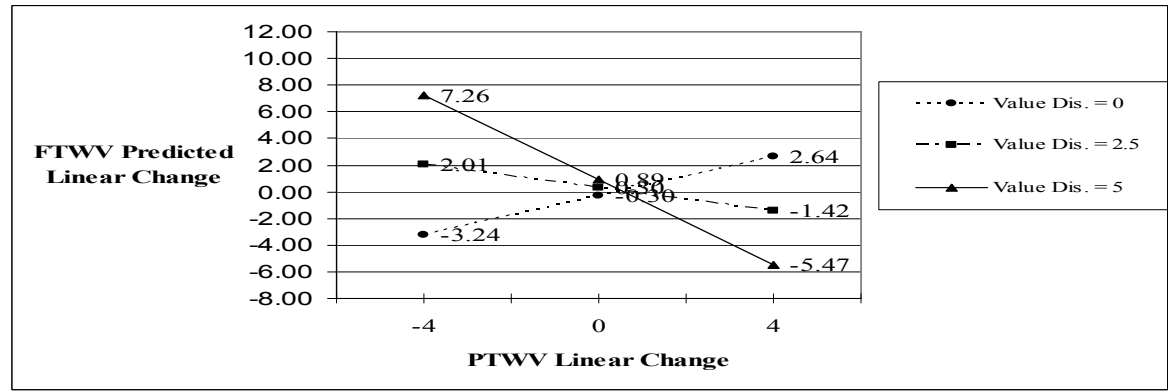


Figure 32.
H_{8,2}: Moderator model of Economic Security Values including the Effect of Educational Expectations – Linear Trend.

Less than High School Degree Expected



High School or 2-Year Degree Expected



4-Year Degree or Beyond Expected

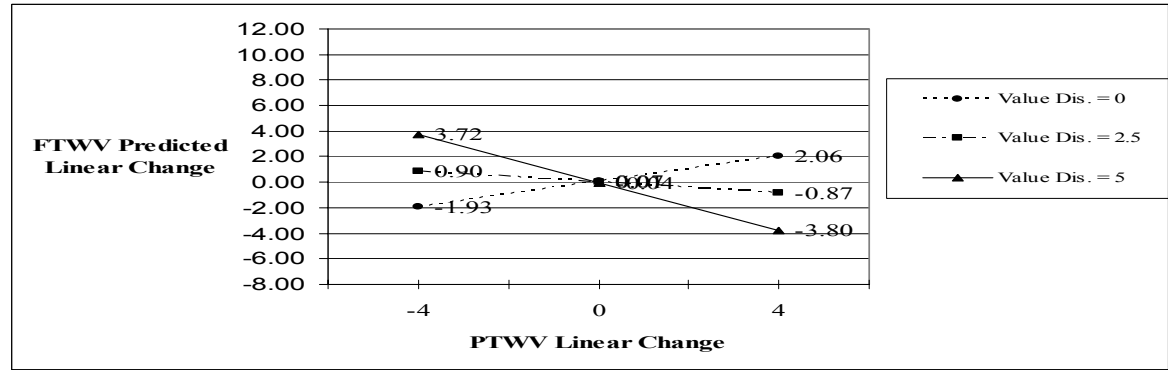
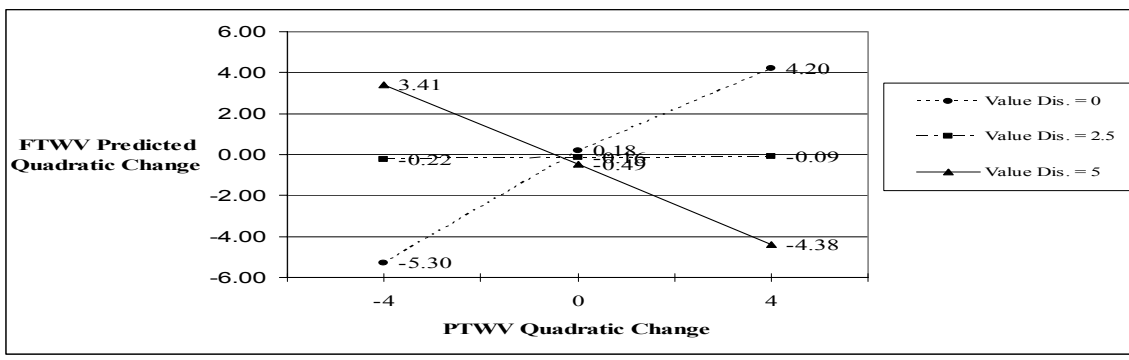


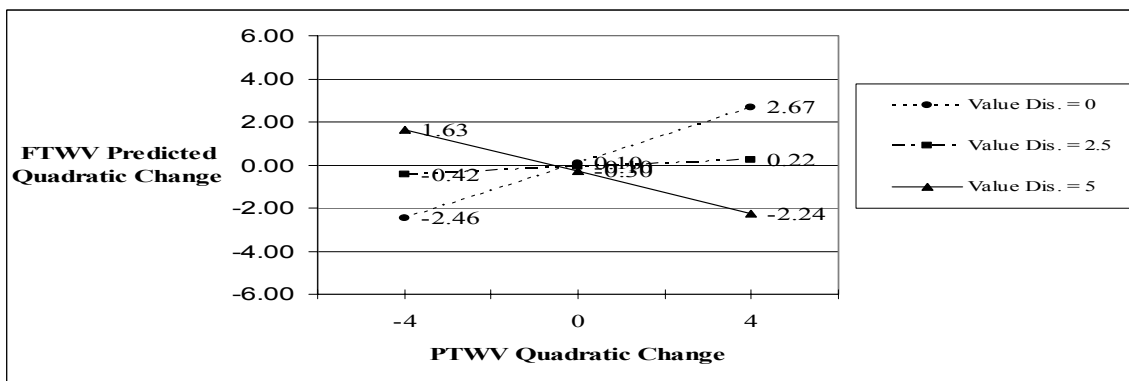
Figure 33.

H8,2: Moderator model of Economic Security Values including the Effect of Educational Expectations – Quadratic Trend.

Less than High School Degree Expected



High School or 2-Year Degree Expected



4-Year Degree or Beyond Expected

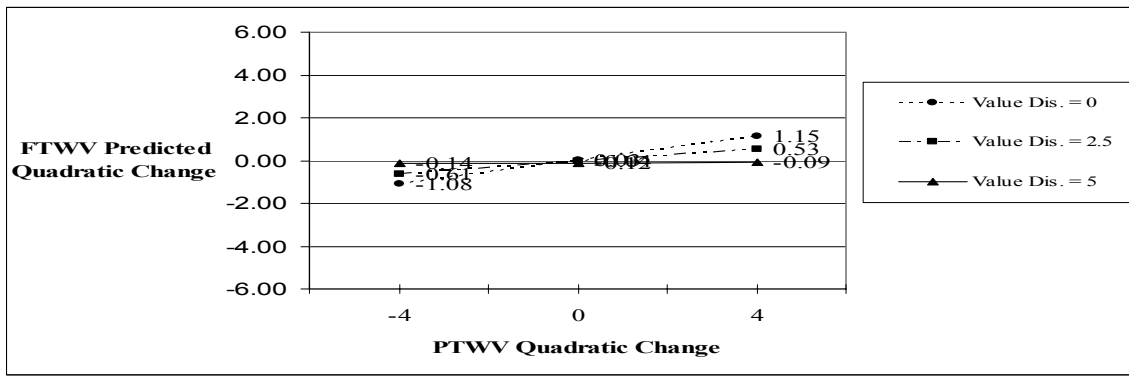
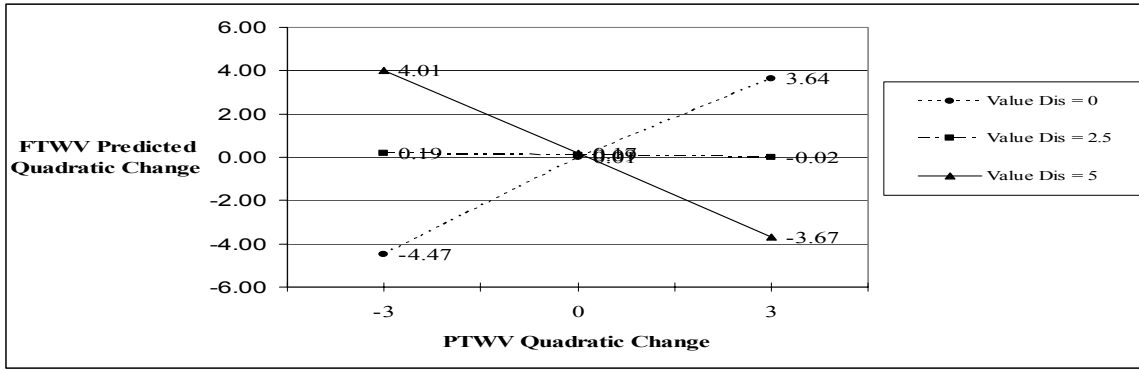
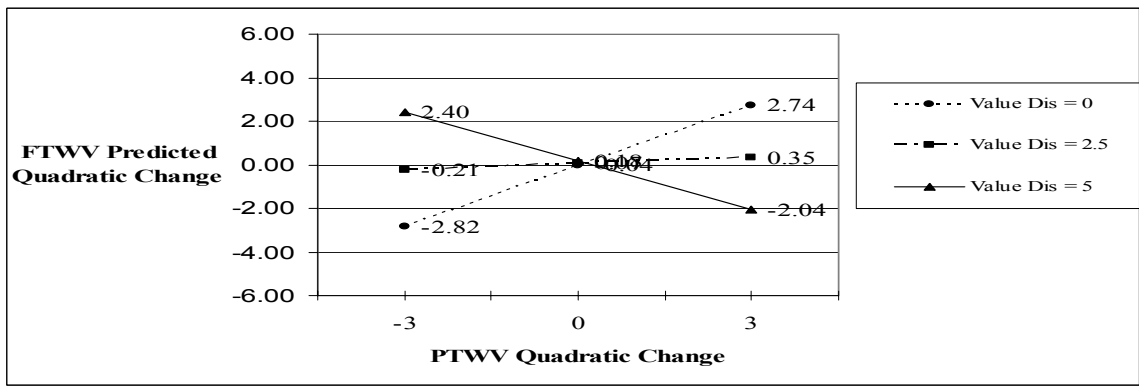


Figure 34.
H_{8,2}: Moderator model of Interpersonal Values including the Effect of Educational Expectations – Quadratic Trend.

Less than High School Degree Expected



High School or 2-Year Degree Expected



4-Year Degree or Beyond Expected

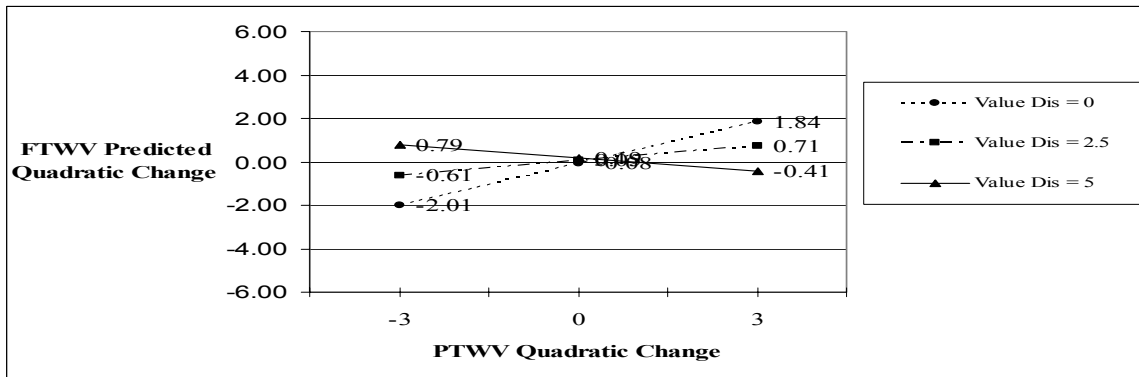
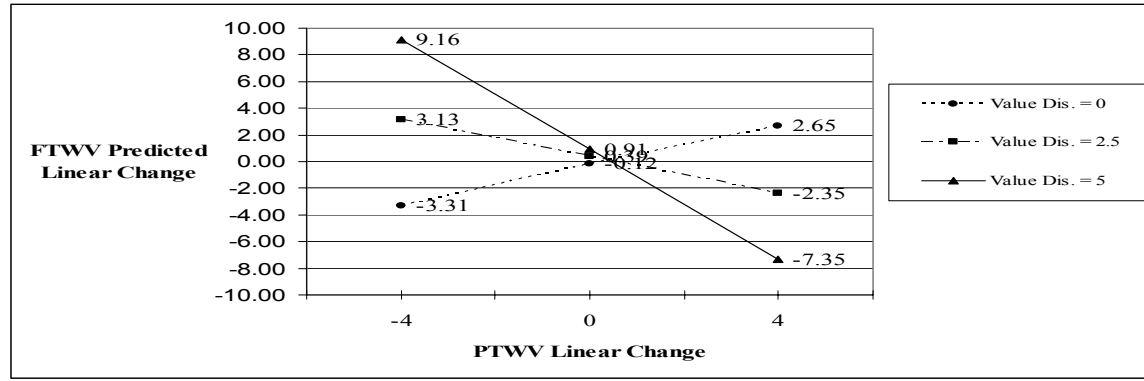
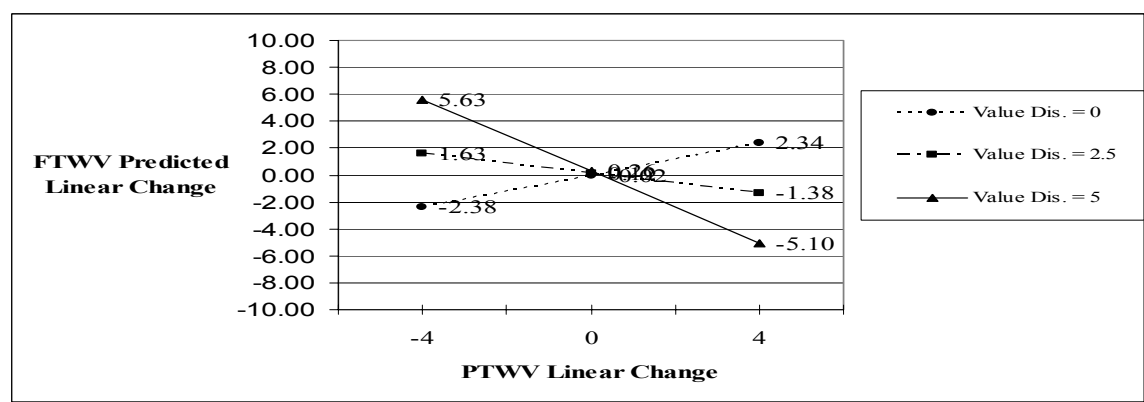


Figure 35.
H_{8,2}: Moderator model of Economic Security Values including the Effect of the Prestige of Occupational Aspirations – Linear Trend.

Low Prestige



Moderate Prestige



High Prestige

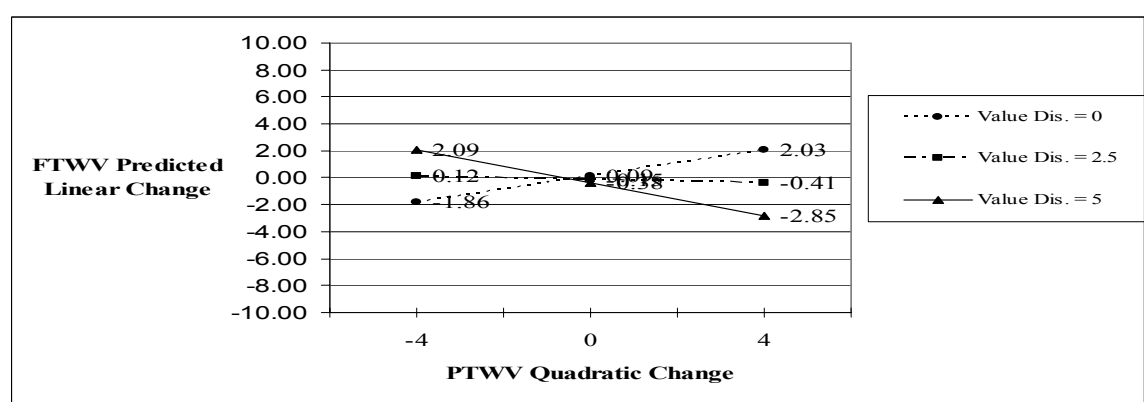
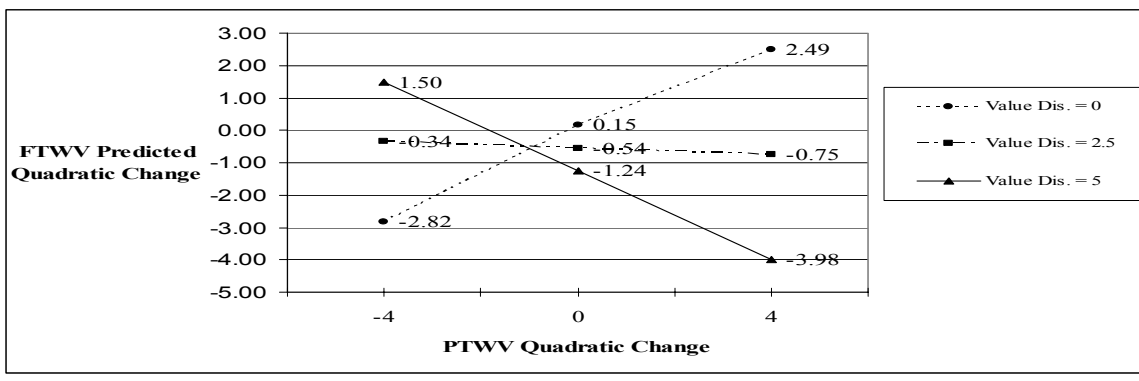
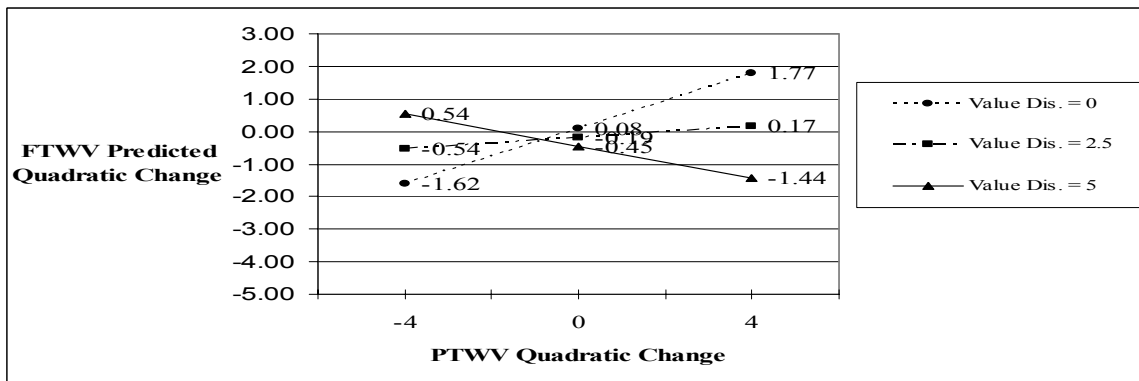


Figure 36.
H8,2: Moderator model of Economic Security Values including the Effect of the Prestige of Occupational Aspirations – Quadratic Trend.

Low Prestige



Moderate Prestige



High Prestige

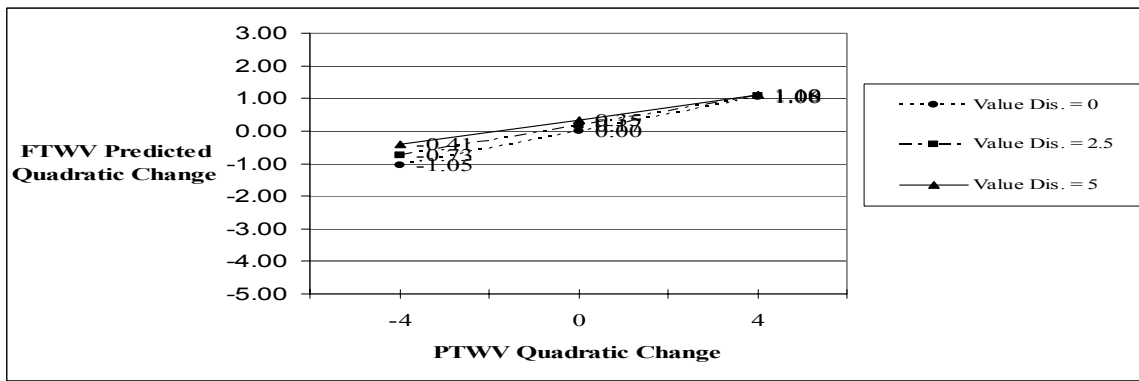
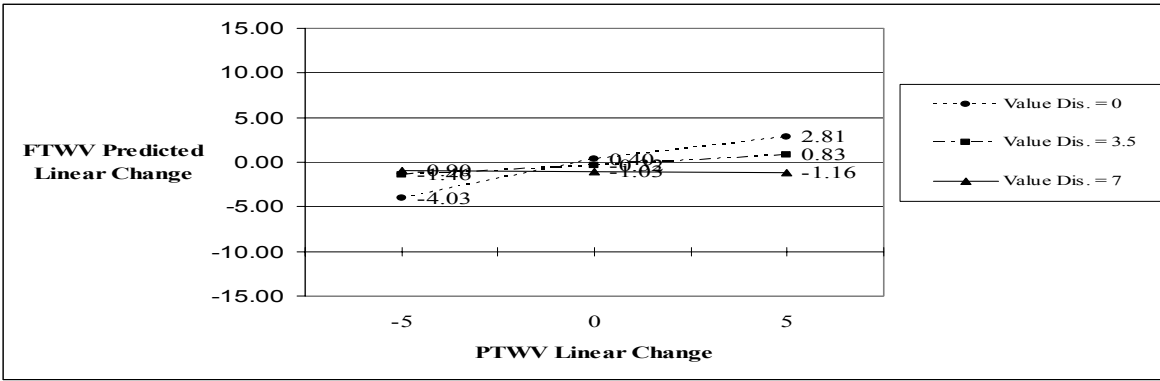
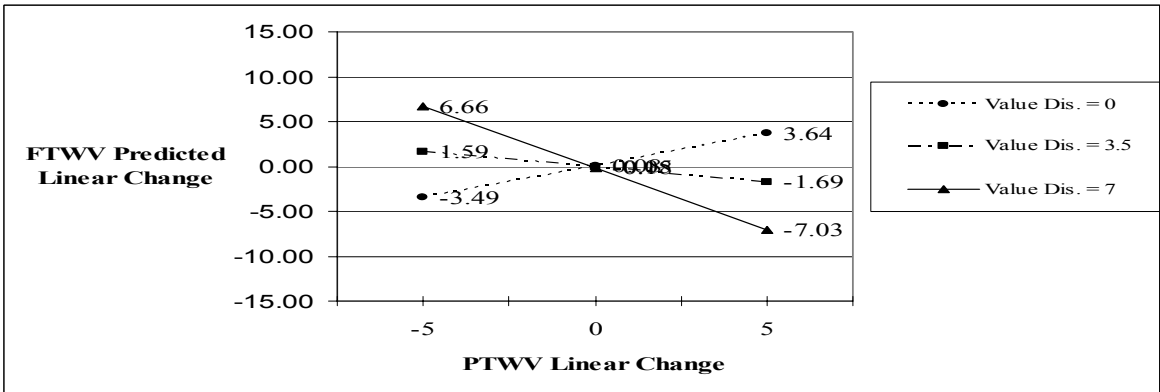


Figure 37.
H8.2: Moderator model of Mastery Values including the Effect of the Thing Complexity of Occupational Aspirations – Linear Trend.

Low Complexity



Moderate Complexity



High Complexity

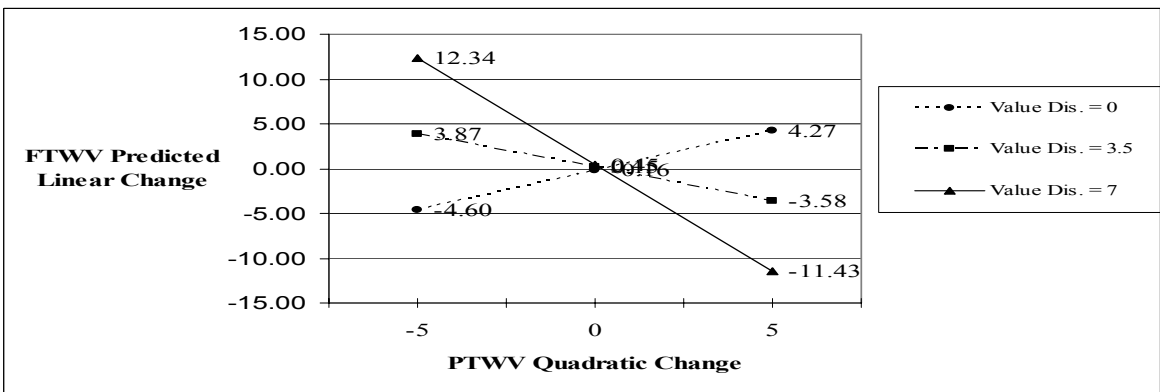
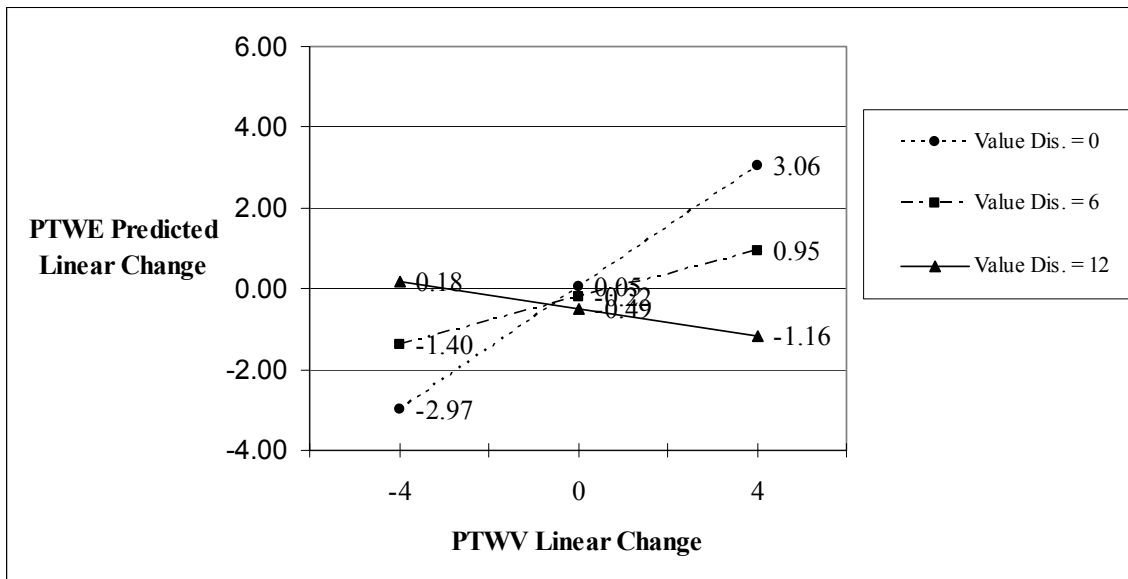


Figure 38.

H_{9,2}: Moderator model of Mastery Values and Experience including the Effect of Sex – Linear Trend.

Females



Males

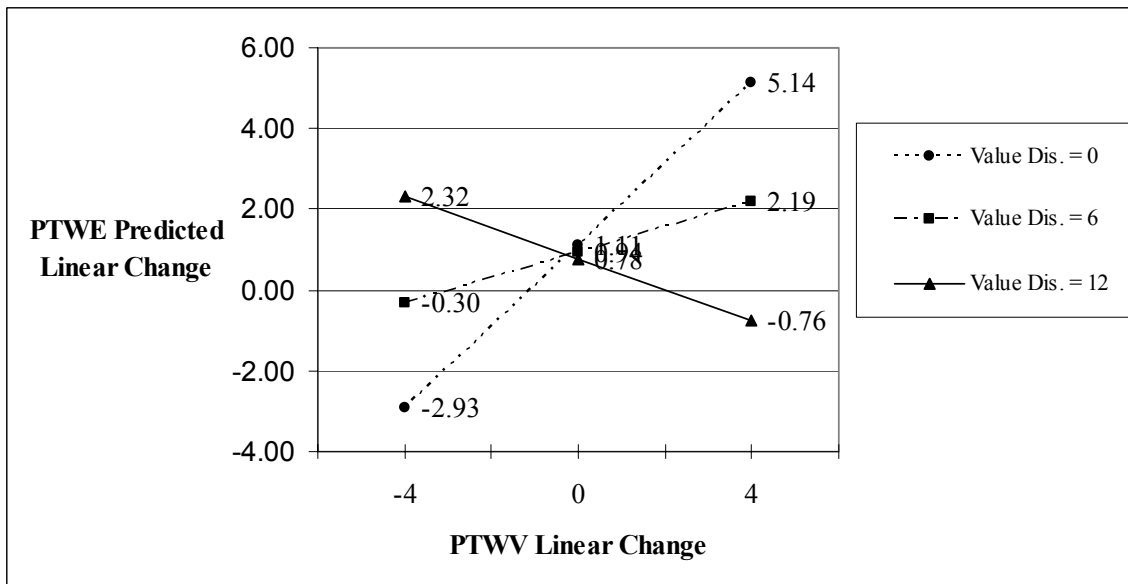
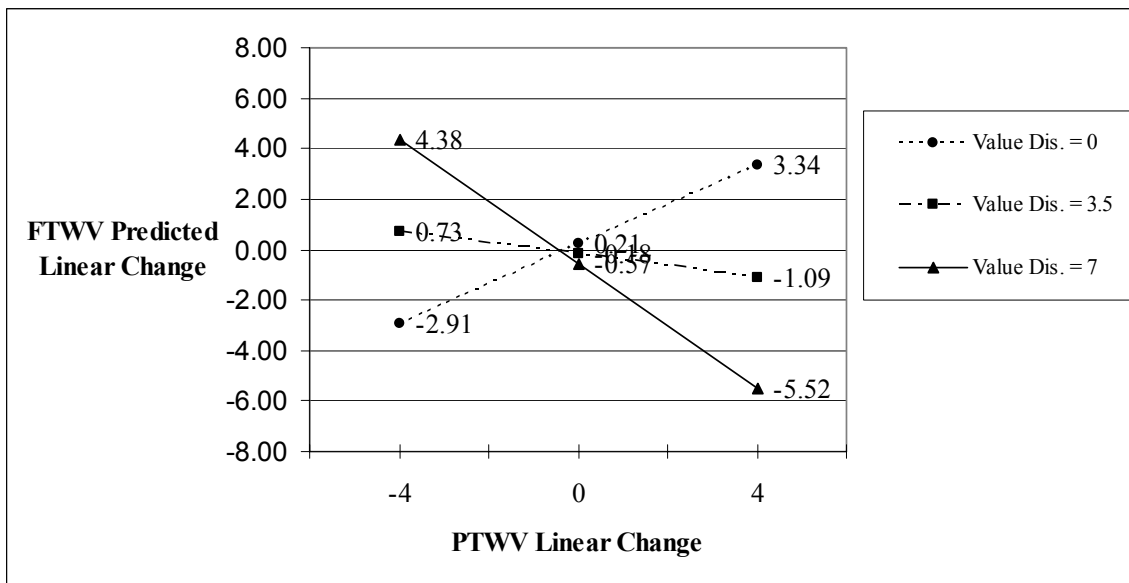


Figure 39.
H9,2: Moderator model of Mastery Values including the Effect of Sex – Linear Trend.

Females



Males

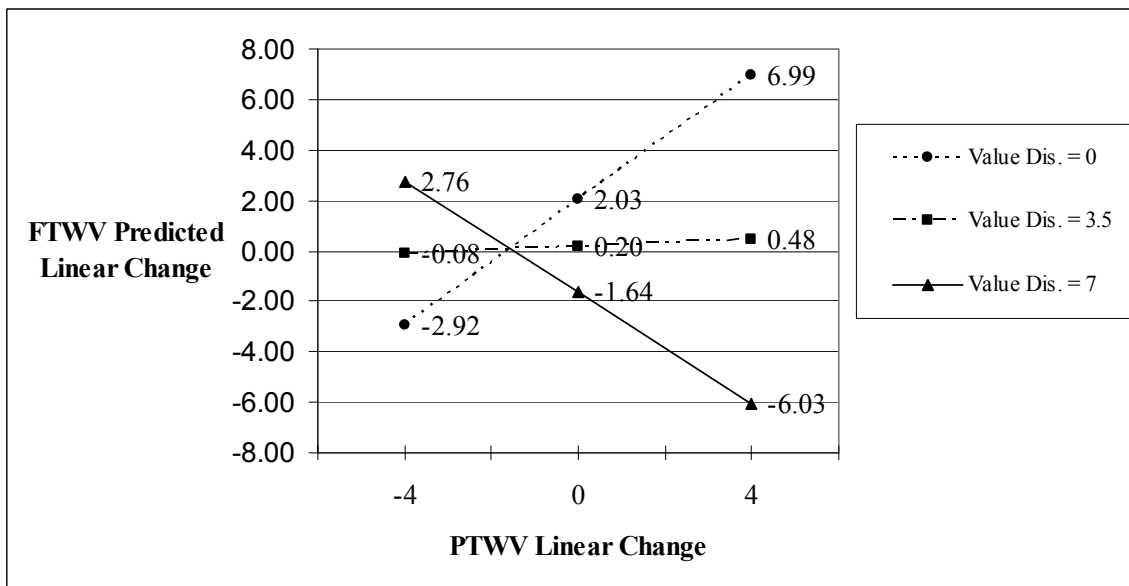
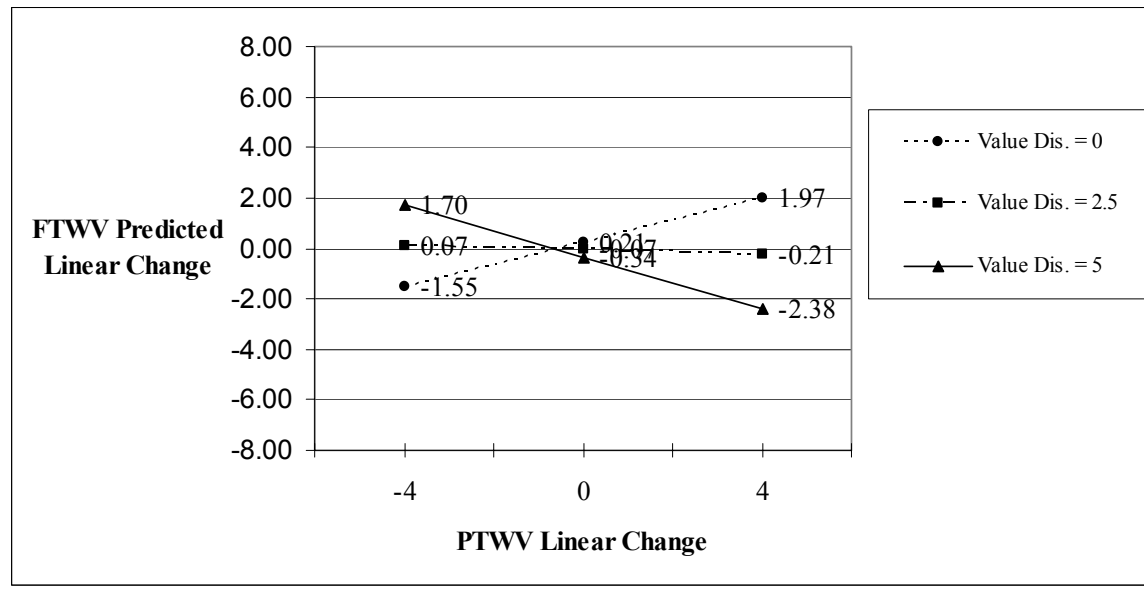


Figure 40.
H9,2: Moderator model of Economic Security Values including the Effect of Sex – Linear Trend.

Females



Males

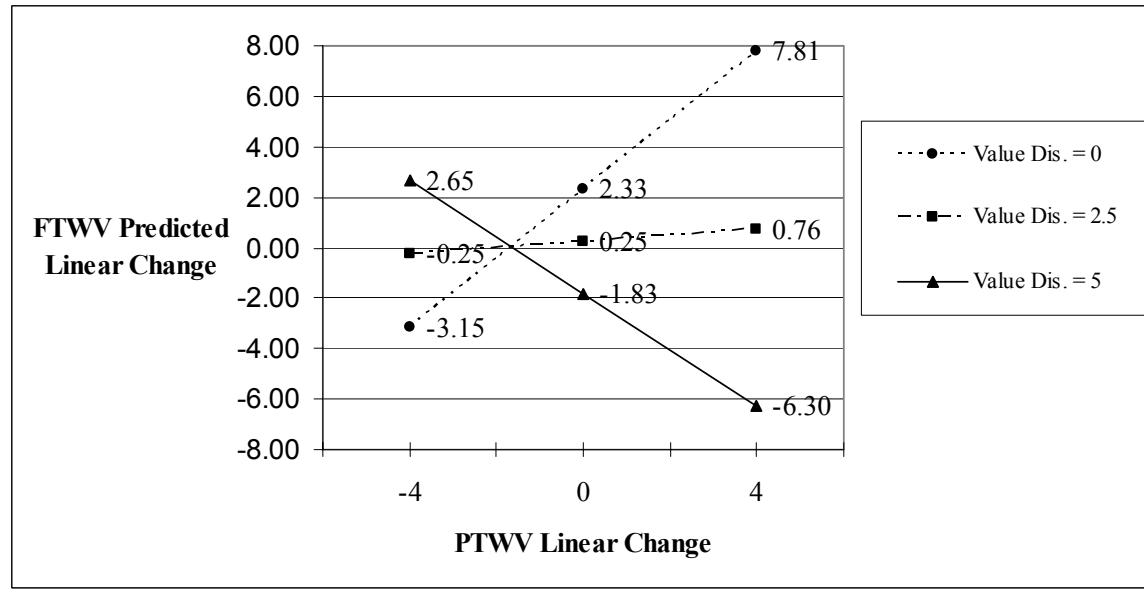
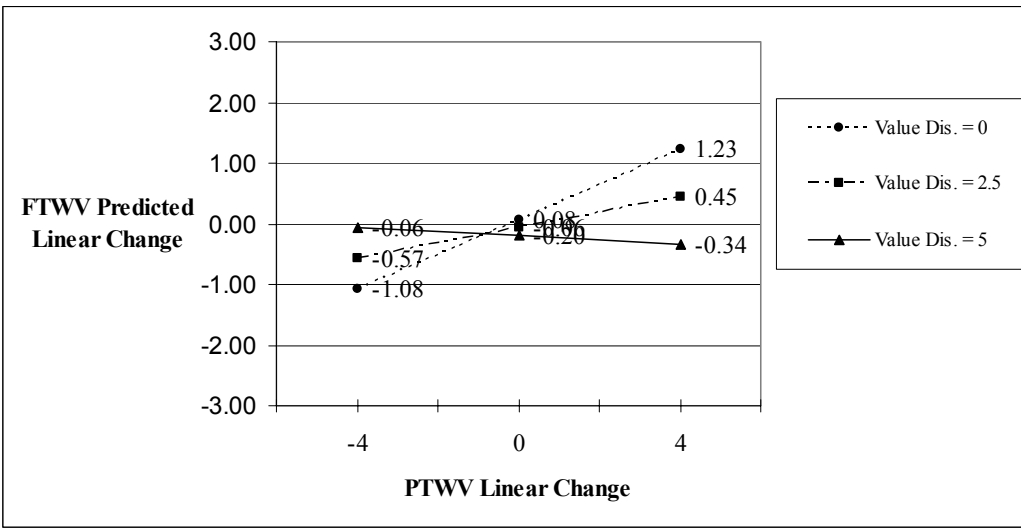
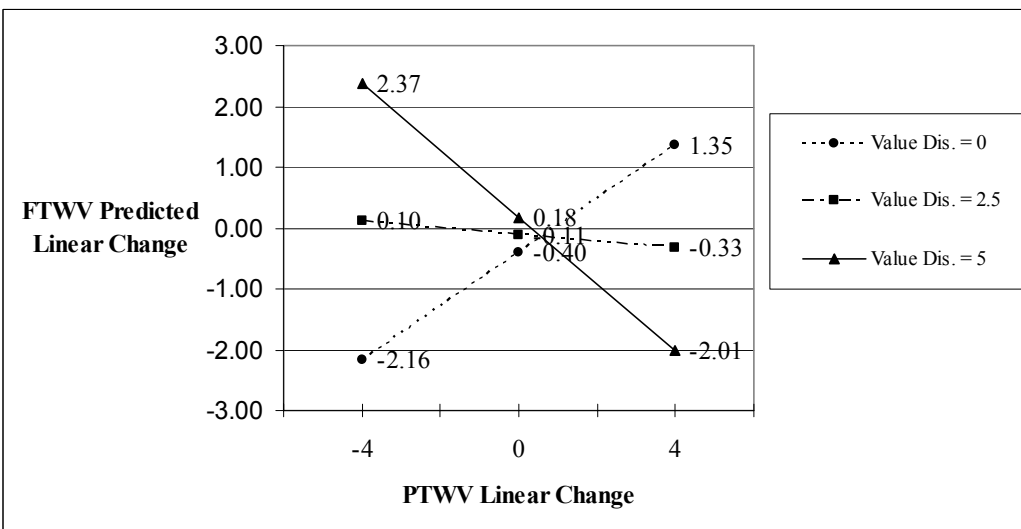


Figure 41.
H9.2: Moderator model of Economic Security Values including the Effect of Sex – Quadratic.

Females



Males



Chapter 5

Discussion and Conclusions

This study addressed 9 research questions, 28 hypotheses, and several post-hoc research questions and hypotheses. The array of questions and hypotheses within this research agenda is tied together by seven broad research goals. The first goal was to empirically test the predominant conceptual model of human values and the value system (Brown, 1996; Brown & Crace, 1996; Kilby, 1993; Rokeach, 1973; Schwartz & Bilsky, 1987). The most extensively developed model defines values as durable criteria for the selection and evaluation of behaviors and behavioral sequences and presumes that these criteria are organized into a dynamic system. The second goal was to explore and test the presumption that cohesion and discrepancy reduction mechanisms interact to maintain the integrity and promote further development of the value system. The third goal was to assess whether adolescents' educational expectations and career aspirations influenced the salience of their values. The fourth goal was to examine whether the cohesion and discrepancy reduction mechanisms promoting harmony within the value system varied as a function of aspects of the person and context. The fifth goal was to assess whether and to what extent part-time work serves as a context for vocational development, specifically for work value system development, by assessing the relationship between work values and part-time work experience. The sixth goal was to test the presumption that cohesion and discrepancy reduction mechanisms interact to increase the congruence between the value system and part-time work experiences, or in other words, increase consistency within the person-in-context unit of analysis forwarded within the developmental-contextual meta model of human development. Finally, the seventh goal was to examine

whether the cohesion and discrepancy reduction mechanisms promoting harmony between work values and experience varied as a function of person- and context-level variability.

Goal 1: Assessing the Human Values Construct and Value System Propositions

The Human Value Construct

The predominant conceptual definition of human values suggests that a value is a relatively durable criterion employed to evaluate and guide decision-making and behavior. Value development is presumably indicated by increasing durability (i.e., stability) across time (Hechter et al., 1993) and an increasing dynamic link to decision-making and behavior (Rokeach, 1973; Schulenberg et al., 1993) and adolescents and early adulthood are presumed to be the critical periods when durability dramatically increases. Durability can be assessed in two ways. First, the intraindividual change in the salience of a value may be employed to determine how the salience of a value changes for a person relative to their previous rating (e.g., time 2 salience – time 1 salience). Second, the interindividual change in the salience of a value can be employed to assess how people change in terms of rank order relative to the group (e.g., the correlation coefficient). Increasing durability can, therefore, be indicated by decreasing intraindividual change as indicated by smaller cross-wave differences across time and by increasing cross-wave correlation coefficients across time.

The analyses from research question 2 support the assertion that work values exhibit increasing interindividual durability from year to year across the high school years. In statistical terms, the cross-wave correlations from 11th to 12th grade were consistently larger than the cross-wave correlations from 9th to 10th grade for both PTWVs and

FTWVs across all three value domains (i.e., mastery, economic security, and interpersonal values). The FTWVs across all three value domains exhibited consistently increasing interindividual durability across the high school years. Contrary to expectations, the cross-wave correlations for the PTWVs from 10th to 11th grade were in one case smaller than the 9th to 10th grade correlations (e.g., the mastery domain) and in another case larger than the 11th to 12th grade correlations (e.g., the interpersonal domain). This contradictory finding suggests that values associated with part-time work generally exhibit increasing interindividual durability, but the shape of the increase does not necessarily conform to a monotonic linear function.

The findings from research question 2 also suggest that work values generally exhibit fairly consistent increasing intraindividual durability across the high school years. Statistically, the RMANOVA models demonstrated that, across all three value domains, the PTWVs exhibited decreasing intraindividual cross-wave differences. In terms of the FTWVs, intraindividual durability either increased or remained constant during the high school years. Specifically, FTWV - mastery tended toward increasing intraindividual durability ($p > 0.10$), FTWV - economic security demonstrated statistically significant increasing durability, and the intraindividual durability of interpersonal values remained statistically constant.

These intraindividual durability findings suggest that values become more durable across the high school years but they do not reveal the shape of the durability increases across time. Follow-up analyses employing RMANOVA and profile contrasts demonstrated that intraindividual durability does not increase in a monotonic linear fashion. Moreover, the timing of the increase varied by the class of the value (e.g.,

PTWV or FTWV) and the domain (e.g., mastery, economic security, or interpersonal values).

The timing differences suggest that, for the PTWVs, the increase in intraindividual durability (i.e., a decrease in the cross-wave difference) in the mastery and economic security domains occurs between 11th and 12th grade. The mean intraindividual durability score from 9th and 10th is essentially equal to the mean value from 10th to 11th grade. For the interpersonal domain, the increase in intraindividual durability (i.e., a decrease in the cross-wave difference) occurs from 9th to 10th grade and then remains stable thereafter. For the FTWV domains, the change toward increasing durability of mastery and interpersonal values occurs from 10th to 11th grades relative to the other grades but these changes can only be considered trends given that the p-value associated with both tests exceeds the traditional p-value cutoff (i.e., 0.05). For economic security values, the greatest change toward increasing stability occurs between 11th to 12th grades.

Extrapolating these results to compare the three value domains suggests that the statistically significant increase in intraindividual durability in this sample of adolescents appears to occur in a sequential but overlapping fashion, such that interpersonal values generally exhibit the increase in stability (PTWV: 9th to 10th grade; FTWV 10th to 11th grade) before mastery values (FTWV: 10th to 11th grade; PTWV 11th to 12th grade), which in turn generally exhibit the increase prior to economic security values (PTWV and FTWV: 11th to 12th grade). Within a value domain, the PTWV generally exhibits the increase in intraindividual durability prior to the FTWV analog. In brief, the data suggest two developmental sequences. First, PTWVs exhibit a jump in intraindividual durability before analogous FTWVs in all but one value domain. Second, the value domains exhibit

a developmental sequence in which interpersonal work values exhibit a jump up in stability prior to mastery work values which, in turn, exhibit increasing stability prior to economic security work values.

Summing the durability findings thus far, values associated with part-time and anticipated full-time work generally exhibited increasing interindividual and intraindividual durability across the high school years. The PTWV and FTWV classes did differ. PTWVs did not exhibit a linear increase in interindividual durability across all three value domains and FTWVs did not exhibit increases in intraindividual durability across all three value domains. It should be noted, however, that no class of values (e.g., PTWV or FTWV) exhibited decreasing inter- or intraindividual durability when 11th to 12th grade durability indices were compared against 11th to 12th grade indices.

Implications

The stability findings support the developmental presumption that adolescence represents a critical period of value system development as indicated by increasing durability during this period. The fact that values associated with part-time and full-time work exhibited increasing durability across the high school years in this sample of adolescents bolsters the validity of this conclusion.

If, as theory presumes, work values influence the process of considering and selecting an educational and career pathway, this process of crystallization may constrain the variability in educational and career choices as the transition to work approaches. Adolescents who realistically face a blinding array of potential educational and career options may find it useful to establish and employ a stable set of core work values to reduce their options to a smaller set that conforms with their values. For those

adolescents who have very few options, however, a crystallized value system may represent another obstacle to identifying and considering viable options that are excluded by virtue of a less mutable value system. Furthermore, increasing durability may be useful to adolescents who face a more imminent transition to the labor force because a durable value system can represent a more stable footing from which to make the leap from student to worker. A stable set of core values can be an aid to identifying a career that best suits an adolescent's durable preferences. In contrast, a malleable set of values could be useful to an adolescent who has an extended period before having to choose a career. The value system can change to accommodate new opportunities, shifts in the local labor market, and changes in vocational interests and abilities during the period before a circumstances necessitate a career choice.

The stability results also suggest that the domains within the system develop sequentially rather than concurrently and exhibit a non-linear rather than a linear developmental function. Adolescents appear to establish the salience of their interpersonal work values prior to their mastery values and to establish the salience of their mastery values prior to their economic security values. Furthermore, adolescents generally exhibit stability in the salience of their part-time work values prior to their full-time work values. The sequential and non-linear nature of value development deserves further attention. The present study did not predict and does not explore or reveal why such a sequence exists and what factors may alter it. The sequence, however, suggests that it may be a function of experience.

Given that adolescents generally have direct experience within a part-time work setting prior to a full-time work setting, this work experience may be prompting increased

part-time work value durability. During the high-school years, adolescents directly taste the fruits and hardtack of part-time work and may, therefore, be better able to distinguish those experiences that they prefer from those they do not. In contrast, the rewards of full-time work remain an abstraction; therefore, the salience of full-time work values may be more susceptible to change. Although an adolescent may have a good understanding of the rewards associated with full-time work, direct work experiences may be an essential aspect of establishing a stable set of work values.

This link to experience can be extended to the finding demonstrating that the value domains exhibited sequential increases in stability. Given that adolescents acquire a great deal of interpersonal experience in the school setting prior to the transition to formal part-time work, school-house interpersonal experiences may prompt more advanced development within this value domain relative to the mastery and economic security domains. As adolescents begin to face mastery opportunities in the workplace and gain a greater appreciation of how an income and stable employment translates into economic security, the salience of these domains may begin to become more stable. Hence, the domain sequence may be a reflection of a developmental sequence in vocationally-related experiences.

Value System Propositions

The predominant dynamic systems model of values involves the assumption that values are organized along two primary dimensions. The two dimensions have been termed discrepancy and cohesion within this study. Value system development is presumably indicated by its integrity, which can be defined by decreased discrepancies and increased cohesion between conceptually similar values within the system. Within

well-developed value systems the salience of conceptually similar values is predicted to be roughly equivalent (i.e., no discrepancy) and change in one value is predicted to yield a proportional change in another, conceptually similar, value (i.e., high cohesion) (Oppenheimer, 1991a, 1991b). In other words, two conceptually similar values are presumed to exhibit smaller salience discrepancies and greater cohesion than two conceptually dissimilar values. Decreased discrepancies and increased cohesion are indicators of increased value system integrity.

To test these critical mechanisms, different classes of values must first be conceptually linked, because the strength of the mechanisms hinge on the conceptual similarity of two or more values. For the purposes of this study, values associated with part-time work were classified as standard-oriented values, influencing and being influenced by present functioning, and values associated with full-time work were presumed to be akin to goal oriented-values engaged in a dynamic relationship with career and educational aspirations and plans (Boldero & Francis, 2002). This conceptual framework suggested that within a particular domain, like mastery, the PTWV and the FTWV analogue were conceptually related to one another in that both centered on mastery, but differed to the extent that PTWV focused primarily on present experience and FTWV centered on anticipated experience situated sometime in the future.

The results associated with research question 1 suggest that the mastery, economic security and interpersonal value domains exhibited cohesion in the form of statistically significant and moderate to strong correlation coefficients between values associated with part-time work (PTWV) and analogous values associated with full-time work (FTWV). Research hypotheses and statistical analyses associated with research question 2 failed,

however, to support the developmental predictions that the value system should exhibit increasing cohesion and decreasing discrepancies between conceptually similar values across the high school years. The value domains did not exhibit statistically significant changes in cohesion (i.e., correlations) between the PTWV and its analogous FTWV across the three value domains.

The analyses associated with discrepancy reduction were examined in two ways. First, the mean change across the high school years in the magnitude of the discrepancies between a PTWV and its FTWV analogue was assessed with RMANOVA. The results for all three value domains suggest that the discrepancies either exhibited slight increases during the 10th and 11th grade years but no appreciable differences from 9th to 12th grade, or in the case of interpersonal values, the discrepancies slightly decreased. Given the magnitude of the discrepancy changes, the conservative conclusion is that the three value domains exhibit little discrepancy change during the high school years.

Second, the magnitude of a PTWV-FTWV discrepancy within a particular value domain was employed to predict the same discrepancy a year later to determine if adolescents who exhibited larger discrepancies at an earlier time exhibited discrepancy reduction a year later. Given the homeostatic nature of the discrepancy model, larger PTWV-FTWV discrepancies (in either the positive or negative direction) were expected to yield larger changes toward decreased discrepancies and smaller discrepancies were expected to yield little or no change toward decreased discrepancies. Such a model can be depicted as a cubic function akin to the plots shown in Figure 26. The results tended to be much more complicated than originally expected, but in brief, larger PTWV-FTWV discrepancies generally predicted smaller discrepancies in a linear fashion. Moreover,

when the FTWV was greater than the PTWV and the discrepancy became large, some results suggested a curvilinear increase in discrepancy reduction such that extremely large discrepancies at an earlier occasion predicted exponentially larger change toward discrepancy reduction a year later. On the one hand, these results support the conclusion that discrepancy reduction is not a sample-level developmental phenomenon such that adolescents are generally more discrepant during 9th grade and generally less discrepant during the 12th grade. On the other hand, the results suggest that, for those adolescents who are discrepant, discrepancy reduction occurs.

The longitudinal discrepancy reduction and cohesion mechanisms between PTWVs and their analogous FTWVs were further examined in a series of post-hoc analyses. Given that most adolescents have the benefit of part-time work experience to promote the development of their PTWVs while few if any adolescents have experienced the work they anticipate doing upon the completion of their education, the observed intra- and interindividual durability differences between PTWVs and analogous FTWVs may be an indicator of adolescents' relationship to the world of work. This presumes that work experience and values associated with part-time work are involved in a dynamic relationship across time. As adolescents move into formal part-time work, their experiences may affect their part-time work values and ultimately disrupt the predicted trend toward decreasing discrepancies and increasing cohesion within the value system.

To test this model, extreme work groups were identified, namely adolescents who reported no employment during the high school years, those who reported inconsistent employment (two years of employment spaced by at least one year of non-employment), and those adolescents who reported consistent employment (employed from 9th through

12th grade). The working presumption was that repeated movement into and out of the labor force would be more disruptive to part-time work values and the value system than stable employment or stable non-employment.

The sum of this post-hoc exploratory evaluation suggests that an unstable pattern of employment is disruptive to elements of the value system relative to a stable non-employed pattern. This disruption is evidenced by decreased cohesion (smaller correlations between PTWVs and analogous FTWVs) across all value domains and increased discrepancies in the economic security domain. Although a general disruption is apparent, this disruption does not extend to the presumed developmental trend toward increasing cohesion and decreasing discrepancies across the high school years. None of the employment groups exhibited the predicted trend toward increasing cohesion or decreasing discrepancies. It should be noted that the term *disruption* may have a negative connotation, but this term is not intended to suggest that a disruption is necessarily maladaptive. As argued in the introduction, a non-developmental change may lead to developmental changes that ultimately enhance the value system both in terms of within-system cohesion and discrepancy reduction but also in person-within-context cohesion and discrepancy reduction. Part-time work experience may serve as a catalyst toward value system development, but this process may involve a period of system instability before developmental gains are realized.

Implications

These findings associated with the value system lead to two conclusions. First, the results support the proposition that values are organized into a system that is characterized by value salience cohesion and discrepancies between conceptually related

values. Moreover, this system exists during the high school years. Second, the value system does not generally exhibit the sample-level predicted increase in cohesion and decrease in discrepancies across the high school period. On the contrary, adolescents consistently exhibited stable and fairly strong value system cohesion. Moreover, discrepancy reduction was apparent in those adolescents who exhibited relatively sizable discrepancies but at the sample level discrepancies were fairly stable and small across the high school period.

These two conclusions suggest that value system development may and probably does occur prior to the high school years, thus supporting further research examining when these developmental features of the system undergo meaningful changes. Although the stability of various components of the value system varies across the high school period, the initial architecture of the value system, as reflected by decreasing salience differences and increasing correlations at the sample level, may occur prior to this period.

Goal 2: Assessing the Interaction of the Discrepancy Reduction and Cohesion

Mechanisms within the Human Value System

The discrepancy reduction and cohesion mechanisms are presumed to operate independently to yield decreased discrepancies and increased associations between conceptually similar values, but the combination of these two mechanisms leads to a potential interactive relationship. If the discrepancy between conceptually similar values is small, then as the salience of a value changes, the salience of conceptually similar values is predicted to change in a similar fashion to maintain cohesion and small discrepancies. In other words, as the salience of one value increases, the salience of a conceptually similar value should increase proportionately under the condition of a small

discrepancy. If, however, the discrepancy between conceptually similar values is large, then in order to decrease the discrepancy, the salience of one or more of the values must change toward reducing the discrepancy thereby inducing an inverse relationship between the two values while discrepancy reduction is occurring. Thus, as the salience of one value changes, the salience of a conceptually similar value is predicted to change in the direction of discrepancy reduction, thereby inducing an inverse relationship between the two values under the condition of an initially large discrepancy. Combining the predicted action of longitudinal salience change under the condition of initially small or large discrepancies suggests that the longitudinal relationship between two conceptually similar values is predicted to be positive under the small discrepancy condition and negative under the large discrepancy condition. Therefore, the discrepancy reduction mechanism is predicted to moderate the cohesion mechanism.

The results from the 5th hypothesis within research question 2 support the proposition that the discrepancy reduction mechanism moderates the cohesion mechanism (see Figure 4). Consistent across all three value domains, the magnitude of the discrepancy between a PTWV and its FTWV analogue moderates the association between the longitudinal change in the PTWV and its FTWV analogue. Figure 21 depicts the nature of the relationships within the moderator model for the mastery value domain. The top plot demonstrates that under the condition of no discrepancy, there is a positive association between the linear change in the PTWV and FTWV, but under the large discrepancy condition the association is negative. The bottom plot demonstrates a similar pattern of association for the quadratic trend, but the difference between the zero and large discrepancy conditions is not as dramatic. The predicted interactive nature of the

discrepancy reduction and cohesion mechanism was realized within the economic security and interpersonal value domains as well.

RMANOVA was employed to depict the nature of the change in PTWVs and FTWVs across the three domains under the two possible large discrepancy conditions (see Figures 22-24). Under the condition that a PTWV is greater than its FTWV analogue and under the reverse condition, the mean change in the salience of a PTWV and its FTWV analogue across the high-school years suggests that the discrepancy mechanism is most active/influential during the first year following the discrepancy, but generally continues to be active across the high school years. The cohesion mechanism appears to operate to maintain a smaller discrepancy once the bulk of the discrepancy reduction is achieved. The validity of this presumed interactive process is bolstered by the fact that it was consistently replicated across all three value domains.

A second pattern emerged from the RMANOVA models. Under the condition that the discrepancy was large and the salience of the value associated with anticipated full-time work was greater than the salience of part-time work, the discrepancy between the two appeared (not statistically tested) to remain larger than under the reverse condition. Adolescents who rate the FTWV as substantially larger than the PTWV analogue across the value domains may tend to maintain educational and career aspirations that are very different from the part-time work available to typical high school students. This difference could serve to maintain a larger discrepancy between the PTWV and FTWV value classes across the three domains.

Implications

These findings suggest that the integrity of the value system is maintained by the interactive influence of the cohesion and discrepancy reduction mechanisms. Larger salience discrepancies between conceptually similar values prompt a shift toward smaller discrepancies, which in turn, prompts a change in the cohesion mechanism toward an inverse relationship between conceptually related values.

Although the value system does not generally exhibit the predicted sample-level increase in cohesion and decrease in discrepancies across the high school period, these findings suggest that disruptions to the value system prompt the discrepancy reduction and cohesion mechanisms to operate in tandem to restore harmony within the value system. The results therefore support the conclusion that mechanisms maintaining the integrity of the value system are functioning during the high school period, particularly under conditions of large discrepancies, and the strength of the mechanism may be reflective of a more developed value system. In the face of a large discrepancy, adolescents exhibiting greater discrepancy reduction and larger increases in cohesion across time may be demonstrating more advanced value system development than those who exhibit lesser discrepancy reduction and smaller increases in cohesion. The results also support the proposition that a fair amount of value system development occurs prior to the high school period, given that an established system of values is needed to identify and respond to large discrepancies and weak cohesion. Simply stated, without some sort of relational network, value discrepancies cannot exist.

Clearly, the results also support the conclusion that the relative salience of the PTWV and analogous FTWV has an impact on salience discrepancy reduction. Perhaps adolescents who place greater importance on the FTWV analogue make a greater

distinction between their part-time work experiences and their anticipated career because they are also the adolescents who expect to earn more advanced degrees. Future research could examine if adolescents who exhibit this pattern actually earn more advanced degrees and enter more prestigious occupations upon the completion of their education than those adolescents who exhibit the reverse pattern in which the PTWV is rated as more salient than the PTWV.

Goal 3: Variability in the Salience of Values as a Function of Educational Expectations
and Career Aspirations.

High school students who expect to earn a high school or 2-year postsecondary degree may ultimately anticipate a more rapid transition to the labor force than their peers who expect to earn more advanced degrees and they expect to enter careers that are more similar, both in terms of demands and pay, to those jobs available to high school students (Schneider & Stevenson, 2000). Therefore, students who expect to earn less advanced educational degrees were predicted to place a greater importance on part-time work values.

High school students who aspire to enter less prestigious careers are more likely to experience a more accelerated transition into the labor force, and once in the labor force, their job demands and rewards are likely to be more similar to those demands and rewards associated with work available to high school students. Following from this logic, students who expect to enter less prestigious careers were predicted to place a greater importance on part-time work values.

In terms of educational expectations, the results demonstrated that students who expect to earn a high school or 2-year postsecondary degree placed a greater level of

importance on economic security values associated with part-time work, but this effect was reduced to zero when SES was added as a covariate. The results associated with career aspirations suggest that the prestige of career aspirations has no influence over the salience of work values when controlling for SES. Therefore, adolescents who anticipate a more rapid transition to the work force generally do not value part-time work experiences any more than those who are expecting a more delayed transition.

Implications

The subtext to these findings is that part-time work experience can serve as training and proving grounds for non-college bound youth, but the values of non-college bound youth do not support the position that they recognize part-time work as such. Those adolescents who anticipate moving directly into the work force after high school could benefit most from, for example, mastering part-time work tasks and becoming socially engaged in the work setting because mastering part-time work tasks and building a strong rapport with clients and coworkers could lead to improved work skills and more favorable references from their employers. Improved professional rapport and favorable employer references could ultimately improve non-college-bound youths' chances of securing more lucrative jobs and secure full-time employment. Non-college bound youth, however, do not value these tasks any more than those adolescents for whom their part-time work experience and performance will have little, if any, impact on their transition from school to work.

Goal 4: Assessing Person and Context Variability in Discrepancy Reduction and Cohesion Mechanisms and their Interaction within the Value System

Given the argument that high school students, who expect to earn less advanced educational degrees, may ultimately expect a more rapid transition to the labor force, it stands to reason that their part-time work experiences and anticipated full-time work experiences are temporally closer in their minds than they are for those students who expect to pursue more advanced and generally time-consuming educational pathways. The same argument can be made for students who aspire to enter less prestigious careers. Less prestigious careers generally require less advanced educational degrees and have fewer training requirements; hence part-time work experiences may be temporally and conceptually closer to anticipated full-time work experiences in the minds of adolescents who aspire to less prestigious careers.

In the model of standard- and goal-oriented values forwarded by Boldero and Francis (2002), values are classified by their orientation toward time, suggesting that a goal-oriented value today may become a standard-oriented value tomorrow. Combining the educational expectation and career aspiration argument above with this model of the value system suggests that standard- and goal-oriented values may exhibit smaller discrepancies, greater cohesion, and a stronger interaction between the two for adolescents who expect to earn less advanced degrees and/or aspire to enter less prestigious careers, because the work experiences associated with present part-time work experience and anticipated full-time work experiences are cognitively closer in time than they are for those students who expect to pursue more prolonged education (see Figures 13 and 15).

In general, the results support the assertion that students who expect to earn less advanced degrees tend to exhibit smaller discrepancies than their peers who expect to

earn more advanced educational degrees. In terms of the exceptions to this trend, the interpersonal domain did not exhibit the expected educational group differences during the 9th and 11th grades (see Tables 60-62). The occupational prestige associated with the adolescents' career aspirations did not, however, predict the PTWV-FTWV discrepancy during the 9th grade. The results also generally support the prediction that high school students who expect to enter less prestigious careers exhibit smaller value discrepancies than their peers who expect to enter more prestigious careers (see Tables 63-65).

Results presented earlier supported the conclusion that non-college bound youth do not value part-time work experiences more than four year college-bound youth, when in fact such an emphasis could aid in their more imminent transition to the labor force. The present results suggest that the value systems of adolescents who expect to transition directly into the labor force after high school or upon the completion of a 2-year degree appear to be less discrepant and, by theoretical extension, further developed than those of their peers who expect a more delayed transition to the labor force. Although non-college bound youth may not understand the potential importance of their part-time work experiences, the results suggest that they do appear to make a stronger cognitive conceptual link between values associated with part-time and full-time work than their 4-year college-bound peers.

A series of statistical tests was performed to assess the impact of the prestige associated with adolescents' career aspirations and their educational attainment expectations on the discrepancy reduction and cohesion moderator model of the value system (see Figures 13 and 15). Given that these tests involved three different value domains, two different types of polynomial trends (i.e., linear and quadratic) and the

examination of 7 different relationships within each trend, 42 different relationships were generated and assessed. This number of tests opens the door for a fair amount of complexity in the results and it is reasonable to conclude that this complexity was realized. This complexity is spelled out in the results section and the present discussion will therefore be a summary of the general trends revealed within the data.

In general, educational expectations had an effect on the proposed moderator model of value system development (see Figure 13). Specifically, the cohesion and discrepancy reduction mechanisms appear to have a greater influence on value system development for students who expect to earn a high school or 2-year college degree than for those adolescents who expect to attain a four-year degree and beyond. Moreover, the discrepancy reduction mechanism may have a stronger effect on the cohesion mechanisms in adolescents who expect to earn less advanced degrees but the p-value associated with this triple interaction failed to reach the traditional level of significance ($p = 0.098$).

Comparing the findings for the mastery domain across the linear and quadratic trends with respect to the mean tendency toward discrepancy reduction presented in Figure 22, educational expectations tend to have more of an effect on the moderator model of the linear trend toward discrepancy reduction in part-time and full-time work values relative to the model of the quadratic trend. This suggests that less advanced educational expectations appear to have more of a sustained influence across the high school years on the discrepancy reduction process within the mastery domain as reflected in the linear trend across the high school years and less of an immediate influence as reflected in the quadratic trend. Figure 22 suggests that in the face of an initially large value salience

discrepancy, most discrepancy reduction is achieved from 9th to 10th grade; therefore, educational expectations may serve to sustain/reinforce the reduction from 10th to 12th grade rather than act as a causal factor prompting initial discrepancy reduction.

Summing the findings for the economic security domain, educational expectations have an influence over the cohesion process such that adolescents who expect to earn a high school or 2 year degree exhibit stronger cohesion than those who expect to earn a 4-year degree and beyond. The results from the quadratic trend suggest that the cohesion and discrepancy reduction processes are stronger for those adolescents who expect to earn less than a high school degree relative to those who expect to earn a 4-year degree or beyond. The same pattern was not exhibited in the linear trend data. Combining the findings from the linear and quadratic trends with respect to the tendency toward discrepancy reduction within the economic security domain presented in Figure 23 suggests that an adolescent's educational expectation has an effect on the bulk of the discrepancy reduction effort that occurs from 9th to 10th grade (as reflected in the association with the quadratic trend model) and an effect on the maintenance/reinforcement of that reduction from 10th to 12th grade (as reflected in the association with the quadratic trend model). Adolescents who expected to earn less advanced educational degrees tended to exhibit stronger initial discrepancy reduction, maintenance of the reduction, and stronger cohesion than those who expected to earn more advanced educational degrees.

The findings related to the quadratic trend in the interpersonal value domain suggest that the cohesion and discrepancy reduction processes are stronger for those adolescents who expect to earn less than a high school degree relative to those who expect to earn a

4-year degree or beyond. This same pattern of findings was not replicated in the linear trend data. As in the case of mastery values, educational expectations tend to have more of an effect on the linear trend toward discrepancy reduction in PTWV and FTWV within the interpersonal domain relative to the quadratic trend. This suggests that students who have less advanced educational expectations exhibit more of a consistent discrepancy reduction process within the interpersonal domain as reflected in the linear trend across the high school years and less of an immediate influence as reflected in the quadratic trend. As in the pattern of discrepancy reduction within the mastery domain (see Figure 22), Figure 24 demonstrates that most discrepancy reduction in the interpersonal domain is achieved from 9th to 10th grade. Educational expectations may serve, therefore, to sustain/reinforce the reduction from 10th to 12th grade rather than as a causal factor prompting the initial discrepancy reduction.

The net of these analyses supports the proposition that value system development is involved in a dynamic interaction with other career development processes. Across the three value domains, adolescents who expected a more imminent transition to the labor force were generally more likely to exhibit more advanced value system development (as indicated by stronger cohesion and/or discrepancy reduction) than those who expected a more delayed transition. In other words, the presumed timing of the transition to the labor force interacts with the moderator model of the discrepancy reduction and cohesion mechanisms to promote more advanced value system development in those adolescents who expect a more imminent transition.

All of the aforementioned analyses were replicated, but educational expectations were replaced by the occupational prestige associated with adolescents' career

aspirations. The occupational prestige associated with adolescents' career aspirations had an influence over the proposed moderator model (see Figure 15) within the economic security domain but did not influence the mastery or interpersonal domains. Regarding the economic security domain, adolescents who aspired to more prestigious occupations tended to exhibit weaker discrepancy reduction and cohesion processes than their peers who aspired to enter less prestigious occupations. This pattern was more evident in the quadratic trend data, suggesting that the discrepancy between economic security values associated with part- and full-time work tends to have a greater influence over the initial discrepancy reduction effort from 9th to 10th grade than over the sustained effort from 10th to 12th grade.

Given that the occupational prestige associated with adolescents' career aspirations only had an effect on the economic security domain, a series of post-hoc tests were conducted on the basis of the hypothesis that the occupational prestige may be more of a proxy for expected income or some other aspect of work than an indicator of the expected timing of their transition to the labor force. To test this working hypothesis, the occupational prestige associated with adolescents' career aspirations was replaced by the "thing complexity" associated with adolescents' career aspirations in the preceding models. Given that highly thing-complex work (e.g., precision working) generally requires more advanced post-secondary training than low thing-complex work (e.g., handling), then complexity could be a proxy for adolescents' expected timing of their transition to the labor force. If it is, then it should have an effect on all the value domains and particularly it should influence the economic security value domain in a way that is similar to the effect of occupational prestige. If, however, it is a proxy for aspects of their

future career, then it may have a more dominant influence over the mastery value domain.

The results demonstrated that the thing complexity of career aspirations exclusively influenced the mastery domain such that adolescents who maintained more complex career aspirations tended to exhibit stronger discrepancy reduction and cohesion mechanisms within the linear trend data. Given the exclusivity of the influence of thing complexity and occupational prestige, the notion that the occupational prestige of career aspirations is a proxy for the anticipated timing of the transition to the labor force is called into question and the validity of the results associated with H_{8,4} is weakened. The findings suggest that factors like the prestige and thing complexity associated with occupational aspirations affect value system development on a domain-specific basis, reflecting the nature of anticipated work tasks (i.e., thing complexity) or the product of work tasks (i.e., prestige or income) and not the anticipated timing of the transition from school to work.

The potential moderating effect of sex on the moderator model of values development was examined as a post-hoc follow-up study given the literature suggesting sex-based socialization differences potentially promoting a stronger link between work experiences and values in males (Brown & Crace, 1996; Johnson, 2001a; Rowe & Snizek, 1995). The results revealed no significant sex differences in the interpersonal domain and only very limited differences in the mastery domain, but profound differences were identified in the economic security domain. In conceptual terms, males exhibited stronger cohesion and discrepancy reduction mechanisms and the discrepancy reduction mechanism had a stronger effect on the cohesion mechanism in adolescent

males; therefore, within this domain, males are clearly exhibiting more advanced value system development. Given that this profound effect of sex on value development is restricted to the economic security domain (and barring any biologically motivated explanations) suggests that males may be socialized to resolve conflicts in and crystallize their values with respect to economic security far earlier than females.

Implications

The net of these analyses suggests that the anticipated timing of the transition from school to work (as indicated by educational expectations) has an influence on the mechanisms responsible for establishing and maintaining the integrity of the value system. Those who expect a more imminent transition to the labor force exhibited more powerful discrepancy reduction and/or cohesion mechanisms than those who expect a more delayed transition. This conclusion is a fairly large generalization given the true complexity of the results, but this conclusion is fair given the consistency of the findings across all of the value domains and the analyses within these domains.

The impact of educational expectations on the moderator model of value system development is complex because at times educational expectations influenced the model of the linear trend in PTWVs and analogous FTWVs across time. In other cases, educational expectations influenced the quadratic trend and in some circumstances it influenced both trends. In conceptual language, educational expectations appeared to influence initial discrepancy reduction efforts from 9th to 10th grade by virtue of their impact on the quadratic trend model and in others they appeared to influence more gradual/sustained discrepancy reduction efforts from 9th to 12th grade given their impact on the linear trend. Future research could consider these differences to arrive at

propositions to explain why educational expectations have a different developmental impact on various value domains.

Regardless of the nature of the longitudinal impact of educational expectations on value system development, this influence is useful for adolescents. Those adolescents who expect to earn a college degree and beyond can afford and, therefore, may be better able to tolerate large value salience discrepancies and weaker value system cohesion during the high school period because they have time to address these issues. In contrast, adolescents who expect to move into the world of work after their senior year of high school have much less perceived time to solidify a core set of cohesive and consistent (i.e., not discrepant) work values. This group is simply running out of time as graduation day looms near and the combination of large value salience discrepancies, weaker value system cohesion and little time on the horizon may, out of necessity, prompt more precocious value system development. In short, the negative emotional/cognitive impact of larger value salience discrepancies and weaker value system cohesion may be moderated by the perceived time remaining until the transition from school to work. Future research could explore how the anticipated timing of the transition from school to work influences the negative affect presumably associated with weak value cohesion and large discrepancies during adolescence.

Goal 5: Part-time Work as a Context for Value System Development

An ongoing debate within the vocational and career development literature centers on the context of part-time work. Some research suggests that part-time work is associated with dysfunctional behaviors like substance abuse (Bachman & Schulenberg, 1993; Beman, 1995; Falck, Siegal, Wang, & Carlson, 1999; Jenkins, 1996; Mihalic &

Elliott, 1997; Mortimer et al., 1992; Paschall, Ringwalt, & Flewelling, 2002; Ploeger, 1997; Steinberg & Avenevoli, 1998; Valois, Dunham, Jackson, & Waller, 1999; Wu et al., 2003) and other research suggests that part-time work experiences are associated with functional outcomes like the development of work values associated with central work tasks (Skorikov & Vondracek, 1997), personal responsibility, and the development of social skills (Kablaoui & Pautler, 1991). Still other research suggests that the observed dysfunctional behaviors are associated with the intensity of part-time work (hours within a defined period) rather than part-time work experiences per se (Mortimer et al., 1992; Mortimer, Finch, Ryu, Shanahan, & Call, 1996; Mortimer & Johnson, 1999). Regardless of the validity of these particular positions on part-time work, the common theme across the literature suggests that part-time work is a context of career and vocational development. The present study, therefore, examined to what extent part-time work serves as an important context influencing work value system development.

The Dynamic Interrelationships between Standard- and Goal-Oriented Values and Present-Oriented Experiences.

The model forwarded by Boldero and Francis (2002) suggests a conceptual and statistical link between present-oriented experience and the value system. Standard-oriented values (i.e., PTWV) are presumed to affect and are affected by behavior and experience directed toward the present (i.e., PTWE). Goal-oriented values (i.e., FTWV) are presumed to be engaged in a dynamic exchange with behavior and experience directed toward the future (see Figure 42). The classes of experiences and values directed toward present- or future-oriented goals are presumably conceptually distinct, yet they are not presumed to be independent. Therefore, this model suggests that both

types of experiences are associated with both classes of values but the size and nature of the relationship varies as a function of their orientation toward time.

The results springing from this conceptual model and research question 3 support the proposition that mastery-oriented experiences and values associated with part-time work exhibit cohesion (i.e., statistically significant correlations) at the sample level. The results suggest that interpersonal-oriented part-time work experiences and values exhibited weak cohesion and virtually no cohesion was detected between values and experience within the economic security domain.

In terms of the cohesion between part-time work experiences (i.e., present oriented experiences) and values associated with anticipated full-time work (i.e., goal-oriented values), PTWE and FTWV within the interpersonal domain exhibited weak cohesion and cohesion was even weaker within the mastery domain. Within both domains, the associations are statistically significant. No cohesion was detected between the PTWE and FTWV within the economic security domain.

Comparing the magnitude of the cohesion estimates (e.g., correlations) between PTWVs and PTWEs against the cohesion estimates between FTWVs and PTWEs (see Table 46), within the mastery domain the PTWV-PTWE correlations are statistically significantly larger than the FTWV-PTWE correlations. This suggests that present experiences and standard-oriented values (i.e., PTWVs) exhibit stronger cohesion than present experience and goal-oriented values (i.e., FTWVs) and is therefore consistent with Figure 42.

The net of this set of analyses suggests that the association between present-oriented experiences and standard-oriented values is greater than the association between these

experiences and goal-oriented values. These results therefore support a fundamental proposition of the model of the value system forwarded by Boldero and Francis (2002).

The model of experience and values examined presently suggests that the link between values and experiences can be cast into cohesion and discrepancy reduction terms. The discrepancy reduction mechanism suggests that large differences between the importance we place upon a particular value and the analogous experiences we have should prompt changes in our values, experiences, or both toward reducing the difference between our values and experiences. The cohesion mechanism suggests that as experience changes over time, analogous values should change in a similar fashion to maintain a small discrepancy between what we value and what we experience (Rokeach, 1973; Schulenberg et al., 1993). From a longitudinal perspective, the discrepancies between the salience of values and analogous experiences are presumed to decrease and the cohesion between values and analogous experiences are presumed to increase over the high-school years as the value system becomes more interconnected with experience.

Given the longitudinal assumptions concerning the cohesion mechanism, the association (i.e., correlation) between the value system and experience is presumed to increase across the adolescent years. Values are presumed to have a greater influence over the contexts we select and the behaviors and experiences we select within these contexts and vice versa. Within this developmental model, the cross-sectional correlations between part-time work experiences and standard- and goal-oriented values were predicted to increase across the high-school years because cohesion between values and experience presumably increases during this period.

Although the results demonstrated some change toward greater cohesion (i.e. larger correlations) between present-oriented experiences (PTWE) and standard-oriented work values (PTWV) within some of the value domains during the 10th and 11th grades, comparing the 9th grade correlations to the 12th grade correlations demonstrated no statistically significant change in cohesion. Moreover, the cohesion between present-oriented experiences and goal-oriented work values did not demonstrate statistically significant changes. This null finding may be the result of adolescents lacking meaningful personal control over their part-time work experiences. Adolescents may be unable to or employers may simply constrain adolescents' ability to select the experiences they have and/or emphasize on the job. If either or both are true, then adolescents may be incapable of refining their work tasks to become commensurate with their work values. In sum, the predicted longitudinal increase in cross-sectional cohesion between present-oriented work experiences and standard- and goal-oriented work values was not realized in this study.

The discrepancy reduction mechanism, cast into a developmental framework, suggests that discrepancies between work experience and values at the sample level should decrease over the high school years because person-in-context harmony is the preferred state. Employing RMANOVA, the results demonstrate that the discrepancies between values associated with part-time work and analogous experiences were quite small across the high school years, and this may have contributed to the findings and ultimately the conclusion that statistically significant sample-level discrepancy reduction was not observed between PTWVs and PTWEs during the high school years.

Employing OLS regression, the presumed associations between a PTWV-PTWE discrepancy at an earlier occasion and the same discrepancy a year later were assessed to determine if larger discrepancies predicted smaller discrepancies a year later. Although the results yielded some aberrations, the prevailing pattern of findings suggests that larger discrepancies at an earlier occasion predict smaller discrepancies at a later occasion. These findings, therefore, support the proposition that discrepancy reduction is an active and influential mechanism promoting integration of the person-in-context unit of analysis, but the mechanism is more active in the face of a larger discrepancy. Combining the RMANOVA and OLS regression findings suggests that adolescents in this sample tended to exhibit small discrepancies between standard-oriented work values (i.e., PTWVs) and analogous experiences (i.e., PTWEs), but when large discrepancies were observed, they tended to predict smaller discrepancies a year later.

As a follow-up to the longitudinal discrepancy findings discussed presently and those discussed within goal 1, the relative influence of the PTWV-FTWV and PTWV-PTWE discrepancies on the change in PTWV was assessed to determine which discrepancy had a greater influence over the change in PTWVs over time. In other words, does the discrepancy between standard-oriented values and present experiences have a greater, lesser, or equivalent influence over the change in PTWVs relative to the discrepancy between standard- and goal-oriented values. Employing residualized gain scores that were generated by predicting a PTWV with itself at an earlier occasion, suggests a complex set of findings that varied across the three value domains. This complexity is spelled out in the results section and will not be reiterated here. Rather, the net of these findings will be presented along with some implications.

The net of these results yields four general conclusions. First, all of the statistically significant associations across the three domains were negative, supporting the expectation that positive discrepancies between conceptually similar values (PTWV is larger than either the analogous FTWV or PTWE) predicted negative residualized gain in PTWV across time. In other words, those 9th graders who, for example, valued the PTWV aspect of interpersonal values more than a FTWV analogue (see Table 51) decreased the salience of the PTWV toward discrepancy reduction during the 10th grade relative to their peers. Second, the discrepancy between part-time work values and analogous experiences was a significant predictor of the residualized gain in mastery values associated with part-time work, independent of the PTWV-FTWV discrepancy across the high school years. Third, the discrepancy between part-time work values and analogous full-time work values was a significant predictor of the residualized gain in interpersonal values associated with part-time work across the high school years. Fourth, the target discrepancies demonstrated no consistent pattern of influence within the economic security values domain, but each discrepancy was a significant predictor of residualized gain during the high school years. Across time, the independent influence of the PTWV-FTWV discrepancy increased and became statistically significant within the mastery and economic security domain and remained statistically significant within the interpersonal domain. This suggests a potential developmental shift in the independent influence of the two types of discrepancies. Discrepancies associated with career-related values appear to become more influential and discrepancies associated with part-time work values appear to become less influential as students move closer to the transition to post-secondary educational and/or work settings.

The preceding analyses were replicated but the outcome was changed from PTWV to FTWV and the PTWV-PTWE discrepancy was replaced with the FTWV-PTWE discrepancy. In general, the PTWV-FTWV discrepancy has an independent effect on the residualized gain in FTWV over time. This was particularly true within the interpersonal domain. Furthermore, the FTWV-PTWE discrepancy did not have an independent effect on the residualized gain in FTWV over time. This was particularly true within the economic security and interpersonal domains. These general findings were tempered by a few important exceptions. Within the mastery domain, neither the PTWV-FTWV nor the FTWV-PTWE discrepancies had a consistent independent effect on the residualized gain in FTWV over time. After the transition from 9th to 10th grade, the independent effect of both discrepancies was zero. Within the economic security domain, the independent effect of the PTWV-FTWV discrepancy remained statistically significant through the 11th grade and thereafter neither discrepancy was influential. The preceding analyses were replicated but the discrepancy between FTWV and related part-time work experiences (i.e., PTWE) was removed from the model because previous analyses demonstrated (See H_{3,8}) that PTWV mediated the relationship between FTWV and PTWE for the mastery and interpersonal domains and no relationship was found between PTWE and FTWV in the economic security domain.

These results demonstrated that the discrepancy between a FTWV and its analogous PTWV predicted the residualized gain in the FTWV across time for all three value domains, but for mastery and interpersonal values the influence declined across the high school years. Comparing the present results to the immediately preceding results suggests that the effect of the FTWV-PTWE discrepancy is correlated with the PTWV-

FTWV discrepancy and this colinearity reduced the effect of the PTWV-FTWV discrepancy to zero within the mastery domain during the transitions from 10th to 11th grade and 11th to 12th grade and within the interpersonal domain from the 11th to 12th grade transition.

Implications

The net of these findings suggest that part-time work experiences are generally not engaged (or engaged in a weak dynamic fashion) with analogous aspects of the value system. Moreover, and from a systems perspective, the person-in-context unit did not exhibit decreasing discrepancies or increasing cohesion between values and analogous experiences at the sample level during the high school period. This weak to nonexistent link between values and experiences suggests that adolescents may be unable and/or they may not be afforded the opportunity to exhibit personal control over the experiences they have in their part-time work settings.

The results demonstrated that discrepancy reduction is an active mechanism promoting consistency between values and experience, but this mechanism appears to be activated by larger discrepancies. The results also demonstrate that the discrepancy between goal- and standard-oriented values has a much larger independent influence over the change in goal- (FTWV) and standard-oriented (PTWV) values than the discrepancies between values and present-oriented experience during the high school years. In other words, discrepancies between conceptually similar values appear to have a greater and growing influence over the change in adolescents' value system and the discrepancy between values and part-time work experiences appears to have a smaller and shrinking influence over value system change across the high school years. Therefore, earlier work

experiences seem to be more influential than later experiences but the influence of these value-experience discrepancies is weaker than the influence of value system discrepancies. If, for whatever reason, adolescents have little personal control over their part-time work settings, then modifying aspects of their value system appears to be a viable means of reducing discrepancies and increasing cohesion and it appears that this is the typical strategy in this sample of adolescents. Therefore, the part-time work setting appears to be an influential context for vocational development and the influence appears to flow from the context to the person rather than in a reciprocal fashion.

Standard-Oriented Values as a Mediator of the Relationship between Goal-Oriented Values and Present-Oriented Experiences

The conceptual framework of goal- and standard-oriented values presented above (Boldero & Francis, 2002) not only serves as a means of demonstrating the conceptual link between PTWVs and FTWVs, it also suggests the nature and size of the relationships between PTWVs, FTWVs, and current part-time work experiences. Given that PTWVs presumably guide and are most directly influenced by current experience, the association between a PTWV and analogous experience is predicted to be stronger than the association between a FTWV and the same experience. Moreover, the association between a FTWV and analogous experience may be mediated by the PTWV (see Figure 10). In other words, a change in present experience may yield a change in standard-oriented values and this value change may yield a change in its goal-oriented value analogue. The nature of these relationships is depicted in Figure 42.

Employing the statistical procedure endorsed by Baron and Kenny (1986) to test for a mediator model, the results contained in Tables 9, 31, 46, and 47-49 suggest that

standard-oriented values (i.e., PTWVs) generally mediate the relationship between present experience (i.e., PTWEs) and goal-oriented values (i.e., FTWVs). Two anomalies exist, however, and they involve the mastery domain during the 12th grade and the interpersonal domain during the 10th grade. In these two cases, the results suggest partial mediation such that the association between a FTWV and PTWE decreases but remains statistically significant in the presence of the analogous PTWV. But in the case of the mastery domain during the 12th grade, the remaining direct effect of FTWV on PTWE is exceptionally small. The interpersonal domain was not included in this set of analyses because no statistically significant association between present-oriented experience and goal-oriented values was observed, and thus, there was no relationship to be mediated by the analogous standard-oriented value.

A synthesis of the findings from Goal 5 and Implications

These results support the proposition that the part-time work available to adolescents may offer little variability in terms of income and advancement and/or the opportunity to influence promotion and income decisions within their work settings. The results, however, suggest that adolescents may be exhibiting some measure of control over the selection of part-time jobs and tasks within those jobs that satisfy and foster mastery and interpersonal values. Given the presumed dynamic relationship between values and experiences, the mastery and interpersonal experiences may also have a meaningful impact on analogous standard-oriented (PTWVs) and to a lesser extent goal-oriented (FTWVs) values. Finally, the results support the conceptual model of values suggesting that the dynamic link between present-oriented experience and goal-oriented values is mediated by standard-oriented values.

Combining the results from goal 5, suggesting greater cohesion between standard-oriented work values and present part-time work experiences, and the results from H_{3,4}, suggesting that PTWE exhibited little change in the face of a PTWE-PTWV discrepancy, leads to the conclusion that the strength of the presumed dynamic relationship between values and experience varies across domains, is generally weak, and generally does not vary across the standard- (PTWV) and goal-oriented (FTWV) analogue of the value system. The exceptions to these patterns are mainly present within the mastery domain. Within the mastery domain, there is a moderate association between values and experience, and standard-oriented (PTWV) values and present experience (PTWE) exhibit a stronger association than goal-oriented values (FTWV) and present experience (PTWE).

The pattern of discrepancy reduction and cohesion findings from goal 5 suggests that part-time mastery experiences appear to be qualitatively different than economic security and interpersonal experiences. Future research could explore why this difference across domains exists and what factors mitigate or enhance this cross-domain difference. From a person-level perspective this difference, for example, could be a function of personal control. If adolescents are capable of exhibiting more control over their mastery experiences than their interpersonal and economic security experiences, then the link between mastery values and experiences would be presumably stronger than the association between economic and interpersonal experiences and values. The lack of increasing cohesion between work values and experiences discussed above supports this interpretation. Moreover, the discrepancy data suggest that adolescents may generally have a poorer understanding of the mastery opportunities available within a job, thus

yielding larger discrepancies between values and experiences. Future research could examine the influence that adolescents have over the selection and performance of various work tasks. Future research could also assess the accuracy of adolescents' estimates of the opportunities available within part-time work to determine if mastery estimates are generally less valid than their estimates of interpersonal and economic security opportunities.

Alternatively, from a context-level perspective, part-time work settings may permit more personal control over mastery experiences than they permit over interpersonal and/or economic security experiences. Part-time work experiences available to adolescents infrequently afford much control over economic security factors like income and opportunities for promotion. The variability of income and the opportunity for advancement in the jobs available to adolescents relative to full-time jobs available to high school and college graduates tends to be fairly constricted to minimum wage and entry-level positions. Once again, the lack of increasing cohesion between work values and experiences discussed above supports this interpretation. Future research could explore the veracity of these person and context-level hypotheses and could combine them into a person-in-context model to demonstrate how both levels interact to yield the observed domain differences.

Goal 6: Assessing the Interaction of the Discrepancy Reduction and Cohesion

Mechanisms within the Person-in-Context Unit of Analysis

An unfolding assumption of developmental contextualism (Vondracek et al., 1986) and the models of the human value system (and related experiences) utilized in this study assume that humans pursue within-person and person-within-context harmony. The

model of values suggests that human development proceeds in a dynamically interactive fashion, such that values guide contextual experiences and contextual experiences guide values. Furthermore, the endorsed model of the value system supports the position that humans aim to become and remain congruent with their environments and endeavor to change aspects of themselves or their environment to establish and maintain a balance within the person-in-context unit. This model assumes that discrepancy reduction and cohesion mechanisms act and interact to establish and maintain harmony within the value system and between the value system and experience.

The results presented up to this point suggest that discrepancy reduction and cohesion mechanisms operate to establish and maintain harmony between values and experiences. As in the value system, the combination of these two mechanisms suggests a potential interactive relationship in which the discrepancy between values and experience moderates the relationship between a change in values and analogous experiences over time (see Figure 7). The results associated with H_{3,4} support this moderator model across all three value domains. In other words, the discrepancy between a standard-oriented value and analogous experience moderates the relationship between the change in standard-oriented values and analogous experiences across time.

To further illuminate the nature of the discrepancy reduction process, adolescents who exhibited either large positive (i.e., $PTWV > PTWE$) or negative ($PTWV < PTWE$) $PTWV-PTWE$ discrepancies were examined longitudinally to determine whether the standard-oriented work values, present part-time work experiences, or a combination of both change to achieve discrepancy reduction. The trends depicted in Figures 27-29 suggest that, under the condition of an initially large discrepancy, both standard-oriented

work values and analogous present part-time work experiences change toward discrepancy reduction. The only exception to this trend was observed in the economic security domain when the salience of the value was greater than that of the reported experience. In this case, a large discrepancy relative to the total sample of discrepancy scores was small as compared to the discrepancy scores exhibited in all of the other domains.⁴⁰

The magnitude of the discrepancy and subsequent discrepancy reduction within the mastery domain is exceptional when compared to the economic security and interpersonal domain as is the discrepancy reduction process. The extreme discrepancy groups exhibited much larger discrepancies within the mastery domain than in the other two domains. This suggests that the discrepancy between values and experiences is substantially more variable within the mastery domain and this variability increased the chances of detecting a statistically significant relationship.

Both the PTWV and PTWE aspects of the mastery domain exhibited substantial changes toward discrepancy reduction across time. This pattern is markedly different than the economic security and interpersonal domains in which PTWE was fairly static relative to the change in PTWV across time. This difference in the malleability of work experiences across time is consistent with the relative lack of cohesion between PTWV and PTWE within the economic security domain and further suggests that adolescents may take or be afforded more personal control over their mastery work experiences and part-time work settings than they have in their economic security (e.g., income and promotion) and interpersonal experiences.

⁴⁰ Note: all the variables employed in Figures 27-29 are standardized, thus they are on the same metric. Moreover, the scale of the x- and y-axes are identical in Figures 27-29; hence, the magnitude of the initial discrepancy and the discrepancy reduction over time is comparable across all the plots.

Implications

Results reported earlier suggest that adolescents may have little personal control over their part-time work experiences and this circumstance may impede greater cohesion and consistency in the person within context unit. The present results suggest, however, that under the condition of large value-experience discrepancies adolescents act to not only change their values but also their experiences to reduce said discrepancies. At the sample level, cohesion between work experiences and values appears to be weak and discrepancy reduction is generally nonexistent, but at the person level, those adolescents who experience large discrepancies, particularly in the mastery domain, engage the presumed cohesion and discrepancy reduction mechanisms in the presumed interactive fashion to resolve discrepancies and restore harmony in the person-in-context unit. In brief, part-time work appears to serve as an influential context for vocational development and the adolescent and the context appear to influence one another to yield greater congruence between a person's values and their work experiences.

Goal 7: Assessing Person and Context Variability in Discrepancy Reduction and Cohesion Mechanisms and their Interaction Linking the Value System and Experience

The part-time work experiences of students who expect a more imminent transition to the labor force are temporally closer and may be more similar to the work experiences they anticipate having as a member of the full-time work force than those work experiences that college-bound youth expect. As in goal 4, students who expect a more rapid transition to the labor force (as indicated by less advanced educational expectations and less prestigious career aspirations) are predicted to exhibit stronger cohesion and discrepancy reduction mechanisms than those who expect a delayed transition.

Therefore, this prediction yields the same statistical model examined in goal 6 (see Figure 7), but in this case, educational expectations and career aspirations are predicted to statistically interact with the moderator model of discrepancy reduction and cohesion linking work values and associated part-time work experiences (see Figures 12 and 14).

Furthermore, previous research suggests that sex-role socialization differences may yield a sex difference in the strength of the cohesion and discrepancy reduction mechanisms linking work values and experiences (Brown & Crace, 1996; Johnson, 2001a; Rowe & Snizek, 1995). The extant findings and theory suggest that the socialization practices directed toward child and adolescent males may prompt stronger links between values and experience than these socialization practices directed toward females.

Across the mastery, economic security and interpersonal domains, the findings associated with educational expectations generally failed to support the research hypotheses focusing on the link between PTWVs and analogous PTWEs. The only exception involved one relationship within the mastery domain. The discrepancy between part-time work experiences and values had a stronger influence over the change in part-time work values over time in those students who expected to earn a high school or two-year degree than in those who expected to earn more advanced degrees. This finding is consistent with the general expectation that the discrepancy between work experiences and analogous values should be more influential in adolescents who expect a high school or 2-year degree, because part-time work experiences are more likely to be applicable to their career options upon the completion of their expected education than they are to those adolescents who expect a 4-year degree and beyond.

Furthermore, the results associated with the occupational prestige of career aspirations failed to support the position that adolescents who aspired to less prestigious jobs would expect a more imminent transition to the labor force and would therefore exhibit stronger discrepancy and cohesion mechanisms. In a notable case of consistency within this study, the results consistently demonstrated that the occupational prestige data had no effect over the proposed moderator model of person-in-context value and experience development (see Figure 14).

Implications

Although adolescents who expect a more imminent transition to the full-time labor force could benefit from a stronger link between work experience and values, the data suggest that they are not capitalizing on this opportunity. The prestige associated with adolescents' career aspirations had no statistically significant influence and their educational aspirations only had a very limited effect on the proposed moderator models. These null findings suggest that the prestige of adolescents' career aspirations and their educational expectations have little or no influence over the strength of the discrepancy reduction and cohesion mechanisms. Adolescents who presumably will enter the labor market directly out of high school or shortly thereafter are not demonstrating a stronger link between their present work experiences and values than those who expect a more delayed transition. Strengthening the link between work experiences during high school and developmental processes related to work and career could be exceptionally helpful to adolescents who expect a more imminent transition to the labor force, because they are simply afforded less time to engage in career exploration, make career-related decisions and arrive at career choices.

Of course, such an objective is challenged by the limited breadth and depth of opportunities available within the part-time labor market. Even within this labor market, however, adolescents may have the opportunity to emphasize particular aspects of their job that suit their values and interests in a way that strengthens the link between present work experience and career goals. As a cashier within a fast-food establishment, the job task may be identical across all of the cashiers, but one may choose to emphasize different aspects of the job to suit their career goals. Whether it is customer service, accounting, or the logistics of moving from an order to the finished product, an adolescent may be encouraged to develop a more acute understanding of a subset of their job tasks as a cashier depending on the nature of their career aspirations.

Regarding the effect of sex on the proposed moderator model, the results demonstrated that sex had no effect on the strength of the cohesion mechanism linking part-time work experiences and values. Statistical analyses testing the effect of sex on the moderator model suggest that sex has no effect within the economic security and interpersonal domains and only a very limited effect within the mastery domain. The discrepancy between part-time work experiences and values had a greater influence on the linear change in values for males. The net of these tests suggests that sex has little influence on the moderator model of the discrepancy reduction and cohesion mechanisms promoting and reinforcing the presumed link between experiences and values associated with part-time work.

A Person-Centered Perspective on the Discrepancy Reduction and Cohesion Mechanisms

In general, the focus of the theoretical development within the introductory chapters and the statistical analyses that followed was to test for the existence of nomothetic

relationships and mechanisms within a sample of adolescents. These analyses, however, did not reveal for whom these relationships and mechanisms held and for whom they did not. In other words, these analyses represent sample-level trends and did not distinguish those adolescents who conform to the trend and those who do not. For example, findings presented in this study support the existence of a complex process of value system development involving cohesion, discrepancy reduction, and interactions between the two mechanisms in a sample of adolescents, but these processes may be more active for some adolescents and less active for others.

The nomothetic focus of this study was challenged by several models testing the possibility that these presumed nomothetic relationships were in fact idiothetic, varying on the basis of person- and context-centered variables like occupational and educational aspirations, sex, or the pattern of part-time work experience (see Figures 12-17). Three patterns of findings from these moderator models supported the proposition that the influence of the discrepancy reduction and cohesion mechanisms promoting value system development and value-experience linkages were not nomothetic within the target sample of adolescents.

First, adolescents who reported consistent non-employment across the high school years exhibited stronger cohesion than their age mates who reported unstable employment (i.e., periods of employment and non-employment). Second, adolescents who expected to earn less advanced educational degrees, and by extension a more imminent transition to the labor force, generally exhibited more advanced value system development. Finally, adolescent males exhibited stronger discrepancy reduction and cohesion mechanisms within the economic security value domain (PTWV and FTWV

linkages) than adolescent females, suggesting that males may be more advanced in their value system development within this domain.

These three patterns of findings demonstrate how the presumed nomothetic relationships varied on the basis of person- and context-level factors, but as the language “pattern of findings” suggests, many exceptions to these trends were identified. All three sets of findings involved the examination of many different associations and within this large class of associations some supported the notion that value system development varied as a function of person- and context-centered variables and other findings did not. In some cases, value system development varied, but only within a particular value domain and not for the other two domains. As reported above for example, the strength of the discrepancy reduction and cohesion mechanisms varied by sex within the economic security domain, but this variability by sex was not observed within the mastery or interpersonal domains. In brief, the results appear to be entirely contingent on particular value domains and particular mechanisms and relationships within domains.

Although these analyses demonstrated that the influence of the discrepancy reduction and cohesion mechanisms differed across adolescents distinguished on the basis of person- and context-level variability, this approach was limited by the fact that the participants were only distinguished from one another on the basis of one variable in each analysis. Given this limitation, targeted combinations of sex, work experience patterns, and educational expectations could be used to better define classes of adolescents who should exhibit more extreme discrepancy reduction and cohesion differences. Distinguishing groups of adolescents for whom the relationships held and for whom they did not, along person- and context-level factors, could aid in further understanding the

operation of the target mechanisms and in intervention efforts that seek to anticipate, employ, and manipulate work values as adolescents seek out and acquire part-time work experiences and identify career pathways. The complexity of the findings, however, represents a formidable barrier to this person-centered approach. The findings of this study demonstrate that the effect of the target person- and context-centered variables on the nomothetic relationships were not consistent within or between value domains. Unfortunately, the results do not point to two or more person- and/or context-level variables, which would in their combination yield groups that exhibit more extreme differences in value system development across two or more value domains than any one of the person- or context-level variables.

The complexity of the results reported here suggests that any future research along this vein must be firmly grounded in a combination of theory and empirical findings, preferably associated with a particular value domain (like these findings reported in this study) to identify particular configurations of person- and/or context-level variables that presumably predict more or less advanced value system development. Post-hoc exploratory analyses may simply be too crude, given the identified complexity, and may lead to more questions and confusion than answers.

Limitations

The study of human values has the potential to improve our understanding of how cognitive regulatory factors become a salient and durable influence over behavior and how aspects of the context that are either independent or dependent upon human choices and behavior contribute to their change and development. The present study aimed to not only assess the development of values in context, but the longitudinal design and the

sample of adolescents permitted an examination of value system development during a period when, as most theorists presumed, the value system emerges as an influential aspect of choice and behavior.

The results of this study contribute to our understanding of work values and part-time work experiences during the adolescent period when, as the vocational literature presumes, orientations toward the world of work and vocational behavior have a critical effect on post-secondary educational and early career choices. Our understanding of the impact of part-time work on adolescent vocational development is far from complete and yields mixed findings in terms of direction (i.e., Do work experiences cause person-level factors or do person-level factors cause work experiences?), magnitude (e.g., To what extent do work experiences influence the person and vice versa?) and valence (e.g., Does work have a damaging or beneficial effect on adolescent development?). This study contributes information to all three classes of inquiry and does so with a large and longitudinal dataset, which makes this study unlike most within the vocational literature.

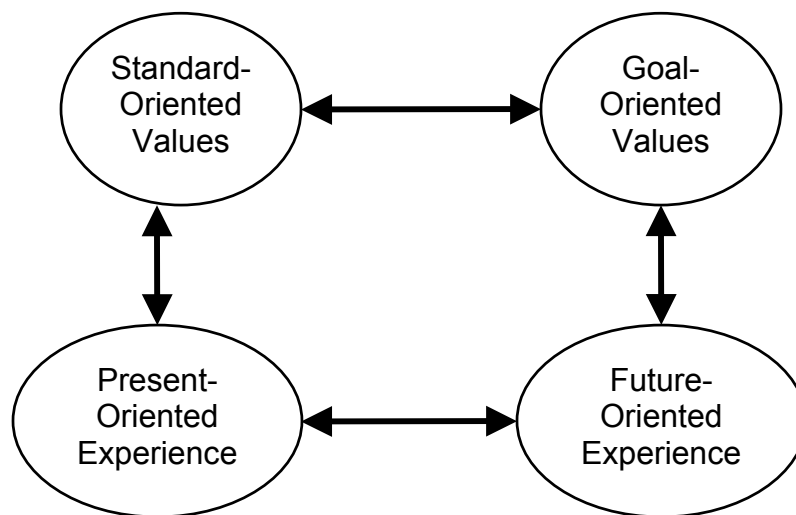
This study has a number of threats to validity. In terms of the methods employed in this study, the principal threats to validity appear to be threats to measurement, internal, and external validity. The present study employs a limited number of items and only one source of information (i.e., the adolescent participant) to assess complex constructs like mastery work values and experiences. Moreover, the constructs have not been assessed with a sophisticated measurement protocol from either a conceptual (e.g., multiple judges) or a quantitative perspective (e.g., confirmatory factor analysis). This study attempted to mitigate the conceptual deficit by examining work value constructs forwarded within the literature. In addition, it mitigated the quantitative threat by

subjecting the measurement items to confirmatory factor analysis. If the constructs are invalid, then the internal and external validity of the present study are threatened as well because findings springing from invalid constructs are conceptually invalid as well.

Aside from the potential impact of the measurement protocol on external validity, the present study employs a sample of participants that, on the one hand, are adequately representative of adolescents residing in St. Paul, Minnesota during the early 1990's, but on the other hand, are not an adequate reflection of adolescents on the national level during the same period. Given the demographics and geographic location of the sample, the generalizability of the findings springing from this study may be restricted to a particular demographic residing in a particular place at a particular time. Fortunately, this validity concern is tempered by theory and research within the values literature, suggesting that the core mechanisms examined in the proposed study are relatively independent of the observed demographic, geographic, and temporal particularities of this sample of participants.

Figures

Figure 42.
A Path Model of Conceptual Relationship between Standard- and Goal-Oriented Values and Present Experience.



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Appendix

Definition of unemployment from the 1990 U.S. Census
(http://www.census.gov/td/stf3/append_b.html#EMPLOYMENT)

EMPLOYMENT STATUS--The data on employment status were derived from answers to questionnaire items 21, 25, and 26, which were asked of a sample of persons. The series of questions on employment status was asked of all persons 15 years old and over and was designed to identify, in this sequence: (1) persons who worked at any time during the reference week; (2) persons who did not work during the reference week but who had jobs or businesses from which they were temporarily absent (excluding layoff); (3) persons on layoff; and (4) persons who did not work during the reference week, but who were looking for work during the last four weeks and were available for work during the reference week. (For more information, see the discussion under "Reference Week.")

The employment status data shown in this and other 1990 census tabulations relate to persons 16 years old and over. Some tabulations showing employment status, however, include persons 15 years old. By definition, these persons are classified as "Not in Labor Force." In the 1940, 1950, and 1960 censuses, employment status data were presented for persons 14 years old and over. The change in the universe was made in 1970 to agree with the official measurement of the labor force as revised in January 1967 by the U.S. Department of Labor. The 1970 census was the last to show employment data for persons 14 and 15 years old.

Employed--All civilians 16 years old and over who were either (1) "at work"--those who did any work at all during the reference week as paid employees, worked in their own business or profession, worked on their own farm, or worked 15 hours or more as unpaid workers on a family farm or in a family business; or (2) were "with a job but not at work"--those who did not work during the reference week but had jobs or businesses from which they were temporarily absent due to illness, bad weather, industrial dispute, vacation, or other personal reasons. Excluded from the employed are persons whose only activity consisted of work around the house or unpaid volunteer work for religious, charitable, and similar organizations; also excluded are persons on active duty in the United States Armed Forces.

Unemployed--All civilians 16 years old and over are classified as unemployed if they (1) were neither "at work" nor "with a job but not at work" during the reference week, and (2) were looking for work during the last 4 weeks, and (3) were available to accept a job. Also included as unemployed are civilians who did not work at all during the reference week and were waiting to be called back to a job from which they had been laid off. Examples of job seeking activities are:

Registering at a public or private employment office

Meeting with prospective employers

Investigating possibilities for starting a professional practice or opening a business

Placing or answering advertisements

Writing letters of application

Being on a union or professional register

Civilian Labor Force--Consists of persons classified as employed or unemployed in accordance with the criteria described above.

Experienced Unemployed--These are unemployed persons who have worked at any time in the past.

Experienced Civilian Labor Force--Consists of the employed and the experienced unemployed.

Labor Force--All persons classified in the civilian labor force plus members of the U.S. Armed Forces (persons on active duty with the United States Army, Air Force, Navy, Marine Corps, or Coast Guard).

Not in Labor Force--All persons 16 years old and over who are not classified as members of the labor force. This category consists mainly of students, housewives, retired workers, seasonal workers enumerated in an off season who were not looking for work, institutionalized persons, and persons doing only incidental unpaid family work (less than 15 hours during the reference week).

Worker--This term appears in connection with several subjects: journey-to-work items, class of worker, weeks worked in 1989, and number of workers in family in 1989. Its meaning varies and, therefore, should be determined in each case by referring to the definition of the subject in which it appears.

Actual Hours Worked Last Week--All persons who reported working during the reference week were asked to report in questionnaire item 21b the number of hours that they worked. The statistics on hours worked pertain to the number of hours actually worked at all jobs, and do not necessarily reflect the number of hours typically or usually worked or the scheduled number of hours. The concept of "actual hours" differs from that of "usual hours" described below. The number of persons who worked only a small number of hours is probably understated since such persons sometimes consider themselves as not working. Respondents were asked to include overtime or extra hours worked, but to exclude lunch hours, sick leave, and vacation leave.

Limitation of the Data--The census may understate the number of employed persons because persons who have irregular, casual, or unstructured jobs sometimes report

themselves as not working. The number of employed persons "at work" is probably overstated in the census (and conversely, the number of employed "with a job, but not at work" is understated) since some persons on vacation or sick leave erroneously reported themselves as working. This problem has no effect on the total number of employed persons. The reference week for the employment data is not the same for all persons. Since persons can change their employment status from one week to another, the lack of a uniform reference week may mean that the employment data do not reflect the reality of the employment situation of any given week. (For more information, see the discussion under "Reference Week.")

Comparability--The questionnaire items and employment status concepts for the 1990 census are essentially the same as those used in the 1980 and 1970 censuses. However, these concepts differ in many respects from those associated with the 1950 and 1960 censuses.

Since employment data from the census are obtained from respondents in households, they differ from statistics based on reports from individual business establishments, farm enterprises, and certain government programs. Persons employed at more than one job are counted only once in the census and are classified according to the job at which they worked the greatest number of hours during the reference week. In statistics based on reports from business and farm establishments, persons who work for more than one establishment may be counted more than once. Moreover, some tabulations may exclude private household workers, unpaid family workers, and self-employed persons, but may include workers less than 16 years of age.

An additional difference in the data arises from the fact that persons who had a job but were not at work are included with the employed in the census statistics, whereas many of these persons are likely to be excluded from employment figures based on establishment payroll reports. Furthermore, the employment status data in census tabulations include persons on the basis of place of residence regardless of where they work, whereas establishment data report persons at their place of work regardless of where they live. This latter consideration is particularly significant when comparing data for workers who commute between areas.

Census data on actual hours worked during the reference week may differ from data from other sources. The census measures hours actually worked, whereas some surveys measure hours paid for by employers. Comparability of census actual hours worked data may also be affected by the nature of the reference week (see "Reference Week").

For several reasons, the unemployment figures of the Census Bureau are not comparable with published figures on unemployment compensation claims. For example, figures on unemployment compensation claims exclude persons who have exhausted their benefit rights, new workers who have not earned rights to unemployment insurance, and persons losing jobs not covered by unemployment insurance systems (including some workers in agriculture, domestic services, and religious organizations, and self-employed and unpaid family workers). In addition, the qualifications for drawing unemployment compensation

differ from the definition of unemployment used by the Census Bureau. Persons working only a few hours during the week and persons with a job but not at work are sometimes eligible for unemployment compensation but are classified as "Employed" in the census. Differences in the geographical distribution of unemployment data arise because the place where claims are filed may not necessarily be the same as the place of residence of the unemployed worker.

The figures on employment status from the decennial census are generally comparable with similar data collected in the Current Population Survey. However, some difference may exist because of variations in enumeration and processing techniques.

Vita
Erik J. Porfeli

Erik J. Porfeli graduated from the University of Pittsburgh with a degree in Psychology and spent the next 5½ years as a social worker for the Lake and Portage County Departments of Human Services. During that period, Mr. Porfeli earned a Master's of Education degree in Rehabilitation Counseling from Kent State University. While completing the Master's degree, Mr. Porfeli completed a course in Career Counseling and Development with Dr. Mark Savickas. During that course and thereafter, Dr. Savickas provided career counseling to Mr. Porfeli and encouraged him to pursue a Ph.D. in Human Development with Dr. Fred Vondracek. Though Dr. Vondracek's persistence, Mr. Porfeli was accepted as a doctoral student of Human Development and Family Studies at the Pennsylvania State University. During the next several years Mr. Porfeli worked and/or published with Drs. Fred Vondracek, Michael Shanahan, Spencer Niles and Michael Rovine in the areas of career and vocational development and research methods and statistics. Upon completing the requirements for the degree of Doctor of Philosophy, Dr. Porfeli joined the faculty as an Assistant Professor in the Department of Educational Leadership at the University of North Carolina at Charlotte.

Dr. Porfeli's publications include:

- Porfeli, E. J. (2003). Designing lives and empowering clients: The case of Sue. *Career Development Quarterly* 51 (4), 300-305.
- Shanahan, M. J., Porfeli, E. J., Mortimer J. T., & Erickson, L. (In Press). Subjective age identity and the transition to adulthood: When adolescents become adults. In F. F. Furstenberg, R. Rumbaut, & R. Settersten (Eds.) *On the Frontier of Adulthood: Theory, Research, and Public Policy*. Chicago: U. of Chicago Press.
- Shanahan, M. J., & Porfeli, E. J. (2002). Integrating the life course and life span: Formulating research questions with dual points of entry. *Journal of Vocational Behavior* 61 (3), 398-406.
- Vondracek, F. W. & Porfeli, E. J. (2002). Counseling psychologists and schools: Toward a sharper conceptual focus. *The Counseling Psychologist* 30 (5), 749-756.
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- Wiesner, M. F., Vondracek, F. W., Capaldi, D. M., & Porfeli, E. J. (2003). Childhood and Adolescent Predictors of Early Adult Career Pathways. *Journal of Vocational Behavior* 63 (3), 395-328.