FAMILY PARADIGMS AND HUMAN EMOTIONS

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ABSTRACT

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The primary objective of this research was to explore the relationship between family paradigms and human emotions. The research tested the relationship between closed paradigm vs. random paradigm and positive affect vs. negative affect. As a secondary objective, the research also extended the analysis to include open paradigm and synchronous paradigm.

The closed family reflects stability through tradition and focuses on the past. Relationships are cohesive with a strong sense of belonging. The family is group-oriented. Boundaries prohibit information from freely entering or exiting the family.

The random family lives for today and values freedom and independence; the individual always comes first. This family often appears chaotic to other paradigms and is discontinuity-oriented as it seeks change and new ideas. The family theme supports innovation but not hierarchy.

The open family orients to the past, present and future with balance between continuity and change. The family is consequence-oriented with flattened hierarchy and values both the individual and the group. Consensus occurs through communication and boundaries are semi-permeable.

The synchronous family is a harmonious system that operates on timelessness with no visible hierarchy. Members share consensus without communication through a special way of knowing. This family values individuality but provides stability with rigid system boundaries.

The current study occurred at a single-site location throughout four phases of data collection; the first two phases comprised the pilot study and the latter two phases comprised the working study. Participants (N=202) were college students in a Midwest University (primarily 20 – 22 years old). Demographics were collected using two surveys and the research implemented four revised versions of the Relational Paradigmatic Assessment Scale (RPAS) for collection of paradigm and emotions data. The emotions data were coded according to the Circumplex Model to produce measures of valence and arousal for each emotion word. Dialectical logic served as the framework for the study and established a *system of opposites* (e.g. closed paradigm vs. random paradigm and positive affect vs. negative affect).

Analyses were conducted with bivariate correlation (Phase III and Phase III/IV combined), ordinary least squares analysis (Phase IV) and ordinal regression analysis (Phase III/IV combined). Results of the study were interpreted according to Kantor and Lehr's Distance Regulation Perspective. Findings supported use of the distance regulation model in family paradigms research and further suggested that, in its current state, the model does not adequately consider emotions that accompany change in family structure.

Findings addressed the research question, *is there a relationship between family paradigms and human emotions?* Results showed negative correlation between cohesive paradigms (closed and synchronous) vs. distant paradigms (random and open). In addition, results also indicated that closed-type individuals respond least favorably to alternate paradigms (closed, open or synchronous) and open-type individuals respond most favorably to alternate paradigms (closed, random or synchronous). Moderating effects were revealed for education, relationship and religion. Gender served as a control variable.

Results are applicable toward assessments of families undergoing system change.

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To my husband Carl
and
Dr. Tom Luster
You both should have been here for this day

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It's difficult to find words to express the gratitude I feel for the support I received toward completion of my dissertation. When I began this journey nearly five years ago, I never imagined that I would complete the project without all the members of my support system. Two of my key supporters – my husband, Carl and Committee member, Dr. Tom Luster – provided guidance that helped to establish my research and set me on the path to success. Sadly, they are not with us to celebrate its completion. While we may not understand such losses, their influences and ideas continue to live through my research and my professional career. I am deeply grateful to my Committee Chair, Dr. Adrian Blow, for his support, patience and encouragement during the difficult times – to Dr. David Imig for continuous guidance throughout data collection, analysis and interpretation – to Dr. Francisco Villarruel for support, constant guidance and expertise following Dr. Luster's passing – to Dr. Kevin Berger for helping me to maintain my professional vision and encouraging me to continue during the tough times – and to Dr. Laura Symonds for providing support and encouragement and leading me to the resources I needed for my research. I would also like to thank Dr. Karen Wampler and the faculty and staff of HDFS for continual support and encouragement throughout my research. Additionally, I am grateful to Jason Huang (CSTAT) for his generosity and diligence in assisting me with data analysis. Special acknowledgements to Dr. Jean Davis Schlater, Dr. Verna Lee Hildebrand, the family of Dr. Beatrice Paolucci and the Graduate College at Michigan State University for supporting my research through Dissertation Completion Fellowships. Each project represents collective efforts by individuals with a common vision. I am grateful to each of you for sharing this vision with me.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Anthropologist Gregory Bateson, who was well known for bringing cybernetics to anthropology, first applied General Systems Theory to family systems during the 1940s (Ingold, 2000; Marcus, 1985; Nuckolls, 1995). His teachings suggested that family systems are comprised of interconnected parts that have bidirectional relationships with other family systems and the surrounding environment. Bateson introduced a new way for social scientists to view interpersonal relationships within the family, an approach that later served as a cornerstone for family therapy (Krause, 2007).

Many of Bateson's ideas emanated from his observations of the naven ritual practiced by the Iatmul people while in New Guinea (Krause, 2007). In this context Bateson developed an interpersonal theory of emotion with emphasis on "social construction of emotion categories" that relied upon "dialectical conflict and its dynamic principles" (Nuckolls, 1995, pp. 370-371). Bateson described emotions among males in the tribe as being centered on individualistic pride painted with competition and flamboyance while he saw Iatmul women reflecting a quiet and cooperative affect (Krause, 2007). Bateson described this mutually reinforcing system of opposites as schismogenesis (Nuckolls, 1995, p. 372). The dynamics that accompany this cultural structure enable the opposing systems to constrain each other when either system approaches excessive differentiation, thus preserving the cultural homeostasis. Bateson concluded from his study of the Iatmul people that emotions and the ethos they represented were central loci for expressing homeostatic balance (Nuckolls, 1995, p. 375).

Prior to the 1960s, family therapists and researchers focused primarily on pathological families in their attempt to derive better understanding about how families functioned (Bateson, Jackson, Haley & Weakland, 1956; Haley, 1959; Handel, 1967; Vogel & Bell, 1960; Wynne, Ryckoff, Day & Hirsch, 1958). While this approach generated valuable information toward understanding families, application of the information was limited by its narrow focus on behavioral characteristics of a single family member (Kantor & Lehr, 1975). These findings did not significantly increase knowledge about normal family function from a whole-family perspective. Kantor and Lehr addressed this shortfall in their pioneering work, *Inside the Family* (1975).

Based on information Kantor and Lehr collected within the family's natural setting, they described family life as a goal-seeking system, or process, that revolves around actual and metaphorical space. "How does a family set up and maintain its territory? How does it regulate distance among its own members?" (Kantor & Lehr, 1975, p. 7). Kantor and Lehr borrowed three key concepts from general systems theory—systems, feedback control and strategies—to explain family process. They described family systems as "…organizationally complex, open, adaptive, and information processing systems" (1975, p. 10). They further suggested that family systems maintain feedback control through feedback loops that determine the outcome of family communication and interaction (1975, p. 12). They also explained that family systems form strategies—rrecurring patterns of interaction—to help regulate and shape relationships among family members (1975, p. 15).

Family Systems

Family System typology describes family worldviews, or different *ways of knowing*. One system is neither more valid nor more desirable than another; it is just different from the others.

Kantor and Lehr described three types of family systems - closed, random and open (1975). Constantine expanded on Kantor and Lehr's theory to include the synchronous system (1986). Constantine's theoretical contribution produced a quadruplex model that is compatible with other four-fold typologies such as Leary's *Interpersonal Circumplex Model* (1957), Olson, Sprenkle and Russell's *Circumplex Model of Marital and Family Systems (*1979*)* and Beavers' *Centripetal/ Centrifugal Model* (1981). The quadruplex model also enabled integration of the four family types (closed, random, open and synchronous) with Kantor and Lehr's player parts (mover, follower, opposer and bystander) (1975) allowing for application of the theory in family intervention and industry.

Constantine (1986) expanded on Bateson's earlier ideas about the dynamic principles of dialectical conflict and argued that Family Paradigms reflects dialectical logic, a philosophy that considers alternative ways of viewing the world. To illustrate, Constantine proposed that the closed system is the *Thesis.* The random system represents the opposite way of thinking, or the *Antithesis*. The open family system is a combination, or *Synthesis* of the closed and random systems and the synchronous system (Constantine's claim to fame) is the *Antisynthesis.* By proposing alternate ways to view the world, Family Paradigms theory suggests that family systems can shift to alternate types of systems during times of severe stress or crisis.

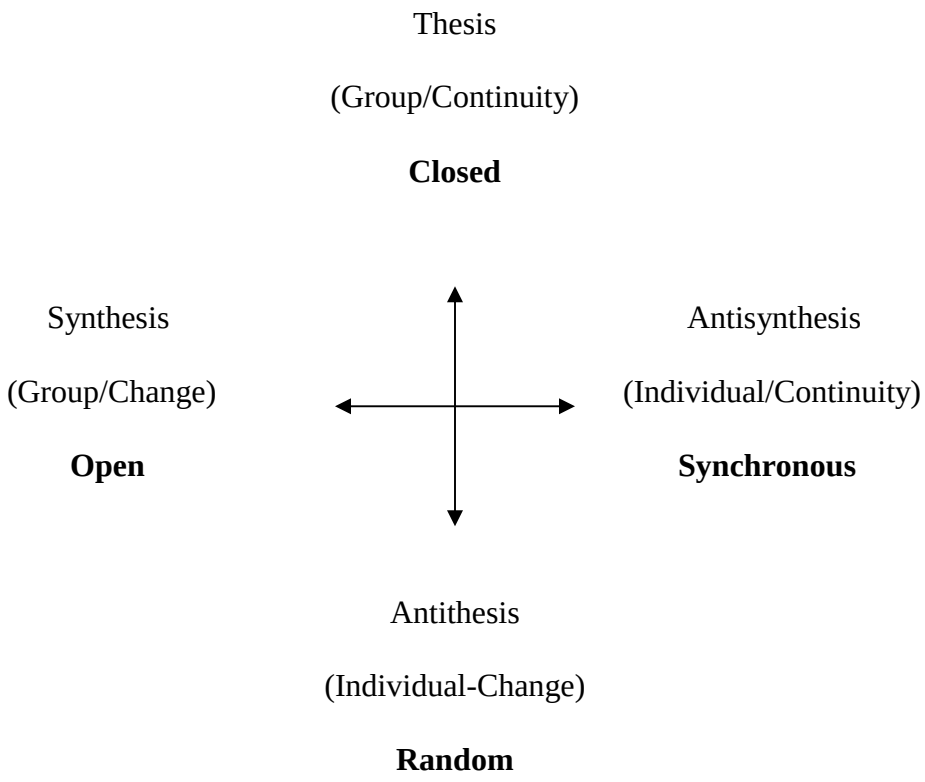


Figure 1
Constantine's Dialectic (Quadruplex) Model (Based on Constantine's Model of Unified Family Process Theory). Adapted from "Family Paradigms, Interpersonal Relationships & Family Systems" by D. R. Imig, 2005, p. 10). Adapted with permission

Closed Paradigm

The closed family reflects stability through tradition and members value time-tested ideas. This family commonly focuses on the past. Family members are cohesive and maintain very private relationships with loyalty and a strong sense of belonging. The closed family frequently operates under authoritative rule with the father generally in charge. The family is group-oriented. If conflict arises between the family group and an individual member, the group always comes first. Family secrets are quite common in this structure as the relational boundaries are structured and prohibit information from freely entering or exiting the family system (Constantine, 1986, 1993; Imig, 2005; Kantor & Lehr, 1975).

The enabled closed family is the picture portrayed by the "Leave it to Beaver" era. This is portrayed as a two-parent family with children, a three-bedroom home and a white picket fence. This structure provides stability for family members with a clear chain-of-command and most of the family's needs and goals are met (Constantine, 1986; Imig, 2005). Once a member is *in*, he or she is always *in*. Family members share appropriate meaning and emotions with each other through a balanced feedback mechanism. This balanced process of sharing is called *coupling* (Constantine, 1986, p. 196). In addition to stability, the closed system is also highly efficient. Since one person can make instant decisions and delegate tasks, the closed system is quite efficient at carrying out plans (Constantine, 1986; Imig, 2005; Kantor & Lehr, 1975). The military and police operate on the closed model (Imig, 2005).

The disabled closed family is inflexible and over-involved. Members of this family express high levels of frustration. This sometimes occurs when children go through adolescence and seek independence (Constantine, 1993). In times of crisis, the natural tendency of families is to do *more of the same* (Imig, 2005). Under severe stress, the closed family tries to enforce mechanisms that have worked in the past. The family responds by tightening its boundaries and increasing authority until the leadership becomes tyrannical. This only exaggerates the problem and leaves the family so tightly bound that family members become enmeshed (Constantine, 1986; Imig, 2005). Families in this state tend to avoid getting help from the outside. Lack of contact with the outside world only exacerbates the problem. Intervention for the rigidly enmeshed closed family often involves restructuring the family to counter the hierarchical leadership (Constantine, 1986; Imig, 2005).

Random Paradigm

The antithesis of the closed family is the random family. This family values freedom and independence. If conflict occurs between the needs of the family and the needs of an individual

member, then the individual always comes first (Constantine, 1986, p. 105). The random family often appears chaotic and unorganized to other types of families. It is discontinuity-oriented as it seeks change and new ideas. The family theme supports curiosity and innovation but the family does not support hierarchy (Constantine, 1986, 1993; Imig, 2000a; Kantor & Lehr, 1975). Parents in this type of family often treat the children as little adults and allow them to contribute toward family decision-making. Competition is the norm in random families as it sparks innovation. Children in the random family are frequently the "smartest kids on the block". Family members live "for today" as the family remains focused on the present (Constantine, 1986; Imig, 2005).

The enabled random family offers members plenty of freedom with few rules. This is often a very intellectual, high-energy family with a variety of social attachments. The family system encourages freedom in thinking with loose structure that respects individual needs (Constantine, 1986; Imig, 2005; Kantor & Lehr, 1975). This is the most flexible kind of system. In the business world, many high tech companies as well as art agencies and graphic design companies operate as random structures. These are organizations that encourage creativity and innovation.

The disabled random family is chaotic and distant. Family members lack cohesion and disengage. If somebody makes a decision, nobody follows it. This family is crisis-oriented (Imig, 2005). System boundaries change from flexible to disorderly as regulation fails. This allows anything to pass through. Members begin to rebel against their own individual freedom as they try to "rescue" the family from others (Kantor & Lehr, 1975, p. 176). Family members continually react to events with no closure. Intervention for the disabled random family often involves moving the family system toward reengagement through creative activities (Imig, 2005, p. 113).

Open Paradigm

The open family system orients to the past, present and future. This family structure is typically consequence-oriented with a healthy balance between continuity and change. The open system is ideal for many individuals because it stresses practical consensus through open communication. This system encourages multiple perspectives in an environment of flattened hierarchy. The open family values both the individual and the group and encourages participation toward collective goals (Constantine, 1986; Imig, 2005; Kantor & Lehr, 1975).

The enabled open family reaches consensus through communication. This is probably the most obvious characteristic of this system; family members talk a lot. The open family values diversity and different perspectives and respects the voice of each individual. Family boundaries are semi-permeable. The Open system allows information to pass through system boundaries for a while in order to allow access to new ideas, and then it closes the boundaries until the system has a chance to process the information. In this way, the open system maintains flexibility and allows change through new ideas, while at the same time, prevents chaos and system overload (Constantine, 1986, Imig, 2005; Kantor & Lehr, 1975).

In the disabled open system family members feel exhausted from information overload. Their efforts to resolve issues by gathering more and more information result in ambiguity and confusion (Imig, 2005). Members of the disabled open system sometimes withdraw emotionally. Other times, they simply talk about consensus but no longer share in any type of functional interaction. Intervention for the disabled open system includes purposeful disengagement with more focus on individuality to deter attention from meta-talk about communication. Families in open disablement benefit from focusing on individual mastery rather than collective goals (Imig, 2005, p. 113).

Synchronous Paradigm

The synchronous family is the least common type. This is a harmonious system that reflects natural alignment and deeply held beliefs. The context of this system is timeless; it does not operate in the past, present or future (Constantine, 1986, Imig, 2005). Members share consensus without communication through a special *way of knowing.* The synchronous system promotes learning through observation and listening. This system reflects no visible hierarchy, but the context of the synchronous system contains structure and patterns. Members understand common concepts but do not explicitly teach them to each other; they learn by being a part of the environmental context that contains the structure (Constantine, 1986; Imig, 2005). Religious organizations sometimes reflect synchronous structure.

Enabled synchronous systems radiate harmony and understanding. Family members share a sense of oneness with feelings of unity. In the synchronous family, members maintain cohesion through unspoken shared understandings. These families value individuality and, at the same time, provide stability with rigid system boundaries (Constantine, 1986; Imig, 2005).

Disabled synchronous families appear cult-like and devalue individual differences. These families are rigidly disengaged. The rigidity appears as “invariant repetition of interaction” with no homeostatic process to account for the repetition (Imig, 2005, p. 113). Synchronous systems that are disabled lose their coincidence capabilities and appear lifeless. They experience multiple failures as their previous ways of handling challenges no longer work. The most common intervention for disabled synchronous families involves reengagement of family members. Constantine suggests using one-way mirrors for this intervention. Selected family members initiate “open” communication and discussion while other family members observe (1986, p. 350). This method converts implicit discussions into explicit discussions and encourages more open communication.

Assumptions

Family paradigm theory describes three important assumptions that relate to family structure. The first of these assumptions states that pure paradigms are extremely uncommon. Family structure is usually a blend of different family types (Constantine, 1986; Imig, 2005). While a family may operate under one primary, dominant structure it still contains elements of other less-dominant structures. The second assumption addresses the validity of different types of structure. This assumption states that one structural arrangement is neither more valid nor more desirable than another. Different families can successfully operate under different structures, and what works for one family might not work for another (Constantine, 1986; Imig, 2005). This is not to say that family systems never fall into a state of disablement, families can begin to function in a way that is not congruent with their paradigm for any number of reasons. The third assumption addresses this idea and recognizes the existence of both enabled and disabled forms of family structure (Constantine, 1986; Imig, 2005).

Enablement and disablement of family systems are context-dependent. For example, a random family can function just fine until one of its members develops a serious illness and then becomes chaotic when the situation calls for cooperation from other family members. The family becomes too distant and disengages. Likewise, the closed family can become too close, or *enmeshed* in times of crisis. Neither condition is better or worse than the other, but both are dysfunctional and disabled for that particular family system. While it is outside the scope of this dissertation to describe detailed characteristics for each disabled structure, Constantine did a remarkable job of illustrating such characteristics in *Family Paradigms* (1986) and included sound suggestions for intervention.

Kantor and Lehr described a fourth assumption for family paradigm theory that relates to distance regulation of family members (1975, p. 159). Different family types maintain different levels of interpersonal distance or cohesiveness. Constantine added the synchronous paradigm to the distance-regulation model in *Family Paradigms* (1986, p. 194). Closed and synchronous families are typically more cohesive and group-oriented, while random and open families are usually more distant and individual-oriented. The distinguishing characteristic between closed and synchronous families and random and open families is their tendency toward continuity vs. change. Closed and synchronous family systems value continuity and are more structured and connected, while random and open families place more value on adaptability and are more flexible and separate (Constantine, 1986; Imig, 2005).

Family Systems in Transition: The Role of Emotions

One of the primary challenges for the family system undergoing severe stress brought about by illness, job loss, divorce, etc. is effective management of emotions among its members. At a time when the very structure of the system is at question and roles are often diffused, members of the family system experience an array of emotions. While some research suggests that anger, anxiousness, alienation and depression detract from an individual's thinking ability, and reduce their ability to take in information (Goleman, 2002), other research suggests that emotions provide implicit or explicit knowledge for the individual that promotes rational decision-making (Bechara & Demasio, 2004). Although the two views present conflicting theory, they both point to the importance of emotions during rational decision-making.

Decision-Making and Emotions

A basic tenet of Human Ecology Theory presupposes that decision-making in a family system is a rational process (Bubolz & Sontag, 1993). During decision-making, family members

first recognize the need for change, then they consider viable options, and finally, they identify the most logical choice based upon the needs of the family and available resources (Paolucci, Hall & Axinn, 1977). While Human Ecology Theory is generally accepted as a valid theory with popular support, the underlying logic that explains decision-making according to this theory is at question based on the information presented above, and also revealed through research that shows a *map* of human brain activity that occurs during processing of emotions (Posner, et al., 2009).

The idea of addressing emotions during stressful times within the family system is not new. For example, the importance of addressing emotions during therapy is well documented in the literature (Constantine, 1986; Franks, Gardner & Wampler, 2008; Griffin 1993, 2003; Smith et al. 1990). As stated by Constantine, "failure to take into account the emotional investment…an individual has in something can hinder the therapist or lead to unexpected outcomes" (1986, p. 76). Other researchers describe the importance of emotions in interactions among married couples, "…negative affect is the most reliable predictor of current and future marital satisfaction as well as future marital dissolution" (Franks, Gardner & Wampler, 2008, p. 111). See Also Gottman 1979; Griffin 1993, 2003; Rausch et al. 1974; Sanford, 2007 and Smith et al. 1990.

One of the challenges in addressing human emotions in the context of family systems is identifying measurable constructs for emotions. The research associated with this study underwent several changes in instruments in order to address this problem. After initial pilot phases and preliminary data analysis were conducted, the investigator identified positive affect vs. negative affect as the most suitable constructs for measuring the relationship between family paradigms and human emotions.

Positive affect vs. negative affect serves an interesting role as a system of opposites in the proposed research. As previously described, dialectical logic is a philosophy that considers alternative choices and supports the idea of opposites. For the proposed study, dialectical logic provides the framework for examining the relationship between closed paradigm, random paradigm, open paradigm and synchronous paradigm and positive affect vs. negative affect. This philosophy further explains the process by which individuals or systems transition from one state to another. For example, when a family experiences severe illness or other stress, individual members often respond by accepting new roles (breadwinner, caretaker, etc). A family that operates in a traditional manner with the father acting as breadwinner might transition into a more random-type system with the mother taking over the breadwinner role if the father becomes incapacitated. Much like individuals can transition between different roles in the family, family systems can also evolve through different paradigms, or worldviews when they experience change.

Identification of the Problem

Stress and transition are common phenomena among family systems as environmental conditions change and family members advance through developmental stages in the life cycle. This is generally understood and accepted as routine – it's *life.* However, successful transition of family systems into alternate states – or paradigms – depends largely upon the ability of family members to effectively manage stress associated with the situations and achieve a satisfactory resolution. One of the challenges in this process is framing the situation in a way that family members understand. When presented through the lens of dialectical logic, family paradigm theory provides such a model. Family paradigm theory offers clear descriptions of both enabled and disabled family system types and suggests specific action for family members to take toward

reinstating homeostasis. However, in its present state, family paradigm theory does not address human emotions for family systems undergoing transition. This research addressed that shortfall and explores the relationship between family systems and human emotions. Specifically, the primary objective of this study is to determine whether there is a relationship between closed paradigm vs. random paradigm and positive affect vs. negative affect. In addition to this focus, the current research considers relationships that include open paradigm and synchronous paradigm.

Purpose of the Study

The purpose of this survey study is to test the theory of dialectical logic that relates family paradigmatic orientation to human emotions while controlling for gender of participants at a Midwest University. The independent variable, family paradigmatic orientation, is defined as the overarching worldview of the relationship based on structure, behavior, and image. The dependent variable, human emotions, is defined as positive vs. negative affect, with subtypes of valence and arousal included in Phase III/Phase IV combined analyses (as described in the methods section). Control variables for the study include age, the number of years since birth, and self-reported gender of participants. Modifying variables are defined as follows: four-year education and above is completion of four or more years of education at the college or university level; relationship status is the current status of the participant in terms of being legally married to another individual of the opposite gender or living with a Significant Other; religious group is a group defined by reference to religious beliefs or lack of religious beliefs and political orientation is the thinking that characterizes a group or nation.

Significance of the Study

The current study focuses on the research question *is there a relationship between family paradigms and human emotions?* More specifically, the study explores the relationship between closed paradigm vs. random paradigm and positive affect vs. negative affect. Information gained through this research will enhance family paradigm theory by defining the emotions that accompany various paradigmatic transitions. Furthermore, the dissemination of this information to family members who are undergoing transitions should empower them to recognize and appropriate adequate attention to the emotions that occur during transitional times. This awareness of, and consideration for emotions during family system transitions will empower the family system to more successfully transition into an alternate enabled state. Results from this study will be disseminated among the general public as well as professionals. This strategy will maximize the use of research results toward more effective communication and conflict resolution among family members in various contexts.

In order to fully appreciate the value of this research toward conflict resolution, it is necessary to expand the focus of opposites - or dichotomy - beyond the boundary of the family and apply this concept to worldviews in general. Other sociologists have supported a general dichotomy in worldviews and argue for its significance in social science and cognitive science. For example, George Lakoff offers a convincing argument based upon morality in politics. Lakoff describes our nation's political structure in terms of two opposing worldviews founded on morality: the *Strict Father* model (Conservative) and the opposing *Nuturing Parent* model (Liberal) (2002, p 33). Lakoff applies conceptual metaphors when suggesting, "the models show how moral reasoning in politics is ultimately based on models of the family" (2002, p. 17). To exemplify this, Lakoff paraphrases columnist William Raspberry (Houston Chronicle, section A,

p. 30, February 4, 1995) in his description of the Conservative's view of the Liberal: "the government is an overindulgent, impractical mother and her citizens are her children, she has no self-discipline; she is indulging her children irresponsibly…this is not merely politics, it is a story with a moral" (Lakoff, 2002, p 6). At the very root of these two opposing worldviews is *morality* defined as self-discipline and self-reliance within the strict father model vs. love, empathy and nurturance within the nurturing parent model (2002, p 33).

The current research argues that interpersonal conflict in *any* context can result from opposing worldviews such as those presented in family paradigm theory, and furthermore, that individuals who are well versed about these opposing views will be better equipped to work through, or prevent interpersonal conflict in other contexts.

The significance of developing methodology for the proposed research lies in its ability to reveal new information that will enable social scientists and neuroscientists to question current limitations and explore new ideas. This information will represent a step toward explaining legitimate differences between individuals of opposing worldviews.

Research Hypotheses

Primary Hypothesis

The H_{01} null hypothesis for this study states, among participants who complete the revised RPAS, there is no relationship between the participants' relational paradigmatic orientation and the positive emotions vs. negative emotions they express in response to each paradigm statement.

Secondary Hypotheses

In order to better understand how moderator variables and control variables affect the relationship between family paradigms and human emotions, several additional hypotheses will

be tested in this study. Hypotheses H_{02} through H_{05} examine relationships between education, relation, religion and political orientation while controlling for age and gender.

The conceptual model used to test hypotheses for this study is illustrated in Figure 2 on page 37. This model addresses the following null hypotheses:

H_{01} *Among participants who complete the revised RPAS, there is no relationship between participants' relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{02} *Among participants who complete the revised RPAS, the participants' level of education does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{03} *Among participants who complete the revised RPAS, the participants' relationship status does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{04} *Among participants who complete the revised RPAS, the participants' religious status does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{05} *Among participants who complete the revised RPAS, the participants' political orientation does not affect the relationship between their relational*

paradigmatic orientation and the emotions they express in response to each paradigm statement

CHAPTER 2

LITERATURE REVIEW

The proposed research is based upon Family Paradigm theory and structured around dialectical logic. The literature review begins with a history and description of family paradigm theory followed by an explanation of dialectical logic and its potential to support family typology as outlined by family paradigm theory. The review continues by describing how the established system of opposites enables family paradigm theory to enter into research. Finally, the literature review discusses human emotions and suggests future applications of this information toward a greater understanding about the role of emotions in family transition.

Family paradigm theory evolved through the efforts of several individuals. Bateson provided a reasonable foundation for the theory with his application of general systems theory toward family systems (Ingold, 2000; Marcus, 1985; Nuckolls, 1995) and introduced the idea of dialectics and homeostasis among families (Krause, 2007; Nuckolls, 1995). Kantor and Lehr (1975) further developed the theory by identifying three distinct family systems – closed, random and open – based upon their observations of families in their natural environments (1975). Constantine (1986) later introduced the synchronous paradigm to Kantor and Lehr's model, a contribution that produced a quadruplex model for family paradigm theory making it compatible with other four-fold typologies such as Leary's *Interpersonal Circumplex Model* (1957); Olson, Sprenkle and Russell's *Circumplex Model of Marital and Family Systems (*1979*)* and Beavers' *Centripetal/Centrifugal Model* (1981). The quadruplex model also enabled integration of the four family types (closed, random, open and synchronous) with Kantor and Lehr's player parts (mover, follower, opposer and bystander) (1975) allowing for application of the theory in family intervention and industry. Imig (2005) further

developed family paradigms through his contribution and application of the Relational Paradigm Assessment Scale (RPAS) (2000b). This contribution provided an essential instrument that enabled measurement of paradigms, and moved family paradigm theory deeper into the research arena.

Family Process Theory

Based upon their observations of families in their homes, Kantor and Lehr identified five fundamental components in the family process theory: subsystems, access dimensions, target dimensions, structures and player parts. These components serve as the foundation for understanding structure and function in family systems and empower the theory with the ability to explain everyday family process.

Subsystems

Kantor and Lehr introduced the idea of subsystems in family process to explain different types of interaction that occur in family systems. They recognized the personal subsystem that belonged to each individual member, the interpersonal subsystem that two or more family members shared and the family-unit subsystem that included all family members (1975, p. 23). Kantor and Lehr observed that family members identified boundaries to define their relational system as a separate entity from the surrounding environment. Boundaries determined how much and what type of information passed into and out of the family system. Family process theory applies the theme of metaphorical space to define the spatial boundary around each subsystem. Overlapping boundaries define the interface where members form strategies to achieve common goals. Identifying the correct boundary interface is significant because it enables therapists to make “manifest a system’s latent or covert aims” (Kantor & Lehr, 1975, p. 33). The intention and meaning of the strategy depends on the interface where it occurs.

Access and Target Dimensions

Family interaction takes place within a social field, that contains access and target dimensions. These dimensions represent common resources and goals shared by family members. “Members of families gain access to target [dimensions] through the way in which they and their families regulate [access dimensions]” (Kantor & Lehr, 1975, p. 37). Access dimensions include the physical aspects of “family members’ quest for experience” and target dimensions describe the conceptual aspects…” (p. 36).

Access Dimensions

Kantor and Lehr (1975) identified three access dimensions in their framework: space, time and energy. They further identified one regulating mechanism and two operational mechanisms for each of these to help explain how the dimensions regulate family systems (see Table 1). Constantine introduced a fourth access dimension, material, in *Family Paradigms* (1986, p. 145). However, he did not identify mechanisms for this dimension in his theoretical framework. Imig (2005) later suggested the mechanisms of utilization, availability and suitability for material dimension. Since submechanisms have not yet been identified for material, this dimension remains a work in progress.

The first access dimension, *time,* reflects the meshing of individual rhythms in a family process. Family members structure activities around time as they exist in everyday life. This element contains three mechanisms: synchronizing, orienting, and clocking that help to explain the function of time within the family process (Kantor & Lehr, 1975, pp. 78-89). The second access dimension, *energy*, refers to quantitative and qualitative attributes of the family system. Family members carry energy in high or low quantities and with positive or negative charges (Constantine, 1986; Imig, 2005; Kantor & Lehr, 1975, pp. 90-102). In a family system, energy

represents the “co-constructed strategies and rules” (Imig, 2005, p. 51). This dimension also contains three mechanisms: mobilizing, investing and fueling (Imig, 2005; Kantor & Lehr, 1975, pp. 90-102). The third dimension, *space,* includes both interior and exterior space and also refers to system boundaries. Interaction within family systems occurs primarily within the interior space (Constantine, 1986; Imig, 2005; Kantor & Lehr, 1975, pp. 66-77). The mechanisms for space: bounding, linking and centering, prohibit certain ideas and language for some family systems and allow new ideas to flow freely for others (Imig, 2005, p. 104). Constantine introduced a fourth access dimension, *material*, as a relational element that reflects the family’s attitude toward acquiring and consuming goods (Constantine, 1986, p. 152; Imig, 2005). For some families, material goods are obstacles to personal freedom. For others, material items are valued artifacts from the past. The meaning of material for each family system depends upon the family’s worldview.

Target Dimensions

Target dimensions refer to family goals. These elements comprise the informational dimension in family systems (Constantine, 1985, p. 146). Kantor and Lehr introduced three target dimensions in their family process theory: power, affect and meaning. They described one regulating mechanism and two operational mechanisms for each element. Constantine later referred to the power dimension as *control* and introduced *content* as a fourth target dimension (see Table 2) (Constantine, 1986, pp. 145,155). Content describes immediate and literal interpretation, as opposed to more finite *meaning*, during family interaction (p. 145). This dimension allows individuals to make sense out of the situation at hand.

Table 1
Mechanisms and Submechanisms for Access Dimensions

Time	Synchronizing** (Monitoring, Priority-Setting, Programming, Coordinating, Reminding*)	Orienting (past, present, future, non-temporal, integrating*)	Clocking (Sequencing, Frequency-Setting, Duration-Setting, Pacing, Scheduling*)
Energy	Fueling (Surveying, Tapping, Charging, Storing, Requisitioning*)	Investing (Reconnoitering, Attaching, Committing, Detaching, Accounting*)	Mobilizing** (Gauging, Budgeting*, Mustering, Transforming, Distributing)
Space	Bounding (Mapping*, Screening, Routing, Patrolling	Linking (Bridging, Buffering, Blocking Out, Channeling, Recognizing*)	Centering** (Locating*, Gathering, Designing, Arranging, Spreading)
Material	Utilization**	Availability	Suitability
**	Regulating Mechanism		
( )	Submechanisms		

In family systems the target dimension *control* often resides at the center of conflict. Control describes "the ability of the family to accomplish and achieve what it wants in a manner consistent with its paradigmatic design" (Imig, 2005, p. 60). The mechanisms of mastery, efficiency and efficacy provide guidelines for the family system as its members determine how to get things done. The second target dimension, *affect*, describes the patterns families engage in to provide members with an affirmative sense of warmth, closeness and engagedness (Constantine, 1986, p. 162, Imig, 2005, p. 63). Affect includes the mechanisms of reciprocity, belonging and expression. Family members display affect in different ways depending on the structure of their system. For example, in some family systems members express affection in a private manner with close physical contact. In other systems members express affection through more playful, public interaction (Constantine, 1986, Imig, 2005, Kantor & Lehr, 1975.)

Kantor and Lehr defined *meaning* as "some kind of philosophical framework that provides us with explanations of reality and helps us define our identity" (1975, p. 37). They describe the primary target of the family's meaning system as "purposeful identity" (1975, p. 37). Meaning includes the mechanisms of purposefulness, connectedness and continuity. While some family systems derive meaning through a common set of shared values, others derive meaning by recognizing individual perspectives and "not" sharing. Meaning is closely related to *content*, the fourth target dimension Constantine introduced in family paradigm theory (1986, pp. 154-155). Constantine identified content as a separate dimension from meaning to distinguish between immediate, literal interpretations of situations and more continuous, value-laden interpretations. Imig further explains, "what is being sought is a rendering of reality (content). How that reality is interpreted (opportunity or problem) is the function of meaning" (2005, p. 71). The way individuals interpret various situations depends to a large degree on the image and structure of their family systems.

Table 2
Mechanisms for Target Dimensions

Control	Capability**	Efficiency	Efficacy
Affect	Belonging**	Reciprocity	Expression
Meaning	Purposefulness**	Connectedness	Continuity
Content	Reality**	Relativity	Representativeness
**	Modulating Mechanism		

Player Parts

The behavioral component of each family system describes the roles family members assume during goal-seeking activity within the context of the family's paradigm. Kantor and Lehr (1975) described four primary roles, or player parts that constitute the entire behavioral

range of social interaction for family systems: mover, follower, challenger and bystander. Constantine supported this player-part typology with family paradigm theory (1986).

The mover in a family system represents a collective action that becomes the central focus of the family. This role most often belongs to one or more family members but may represent an individual or family commitment or illness. The mover is whatever initiates action within the family (Constantine, 1986, p. 124; Imig, 2005, p. 74; Kantor & Lehr, 1975, pp. 183-184). The *follower* supports and agrees with an existing action. This position requires strong interpersonal skills. An effective follower can have as much impact on family decisions as the mover. Mover-follower interaction occurs most often in the closed family structure. These dynamics add stability to the system. While the closed family system thrives on this stability, other family systems seek change and new ideas. The opposer in a family brings new ideas to the system. The individual who assumes this player part often stops or interferes with existing activity and enables the family to change directions or entertain new ideas (Constantine, 1986, p. 125-126; Imig, 2005, p. 78; Kantor & Lehr, 1975, pp. 184-185). Imig (2005) refers to the opposer as the *challenger* because of negative connotations that are frequently associated with the term "opposer" (2005, p. 78). For the purpose of this research, the term opposer and the term challenger are interchangeable. However, the term opposer will be used to describe this player part. The opposer is most often valued in the random family and least often valued in the closed family as this individual may be viewed as a threat to the stability of the closed system (Imig, 2005, p. 79). The bystander in a family system has a much less active role. This individual does not typically speak much but comments on the family process in a non-biased manner. The bystander is essentially a non-participant. However, although the bystander does not initiate or follow action, this player part is essential to the family system. The bystander is in the best

position to see and understand the family process (Constantine, 1986, pp. 126-127; Imig, 2005, pp. 79-80; Kantor & Lehr, 175, pp. 188-198).

Individuals who possess the skills to interchange between all four player parts hold the best positions within a family system. These individuals stand to gain the most through effective interpersonal communication (Imig, 2005, p. 74). Families comprised of individuals who possess these skills achieve a high level of enablement and realize the most goals.

Dialectical Logic

Much like individuals can transition between different player parts, family systems can evolve through different paradigms. Dialectical logic is a philosophy that considers alternative ideas to the ones believed to be true (Imig, 2005, p. 9). In some circumstances, when none of the alternatives seem logical, a completely new idea is constructed, or synthesized, that makes more sense than any of the others. Constantine paralleled the idea of dialectical logic with a process he identified as morphogenetic sequence to explain how some family systems evolve through different paradigms over time (Constantine, 1986, p. 174).

Without any order or structure a group tends to fall into a predictable pattern of stability and change over its life cycle (Constantine, 1986, p. 171). A group with no structure or leadership has a natural tendency to identify a leader. As time elapses, members become discontent and rebel against the leader's authority. They focus more on individual feelings than group tasks. After a while, members begin to look to each other for direction as they establish new goals and norms. At some point the group completes its work and dissolves. The members leave the group with a sense of "integrated identification" and "separate but common memories" that define the group that now exists only in the minds of its members (Constantine, 1986, p. 170).

Constantine applied morphogenetic sequence to a family system's orientation to continuity vs. change over time. He suggested that the natural sequence of family systems favors the early emergence of closed–type systems in families followed by random-type systems and then open-type systems, ending with synchronous-type systems (Constantine, 1986, p. 174).

Constantine described the closed paradigm as a group-oriented, continuity-oriented system that seeks to continue the past into the future (1986, p. 97). When the needs of individual members conflict with the needs of the group, then the group always comes first. According to Constantine, the closed structure is the least complex. Families with young children frequently function in this structure to provide direction and leadership for the children. As the children grow into adolescence and begin to rebel, the family frequently falls into a more random structure that supports independence. This structure is primarily individual-oriented and discontinuity-oriented maximizing change from the past in a radical focus on the present" (1986, p. 97). When the needs of the random family conflict with the needs of the individual, then the needs of the individual always come first.

Once the children reach adulthood, the conflict typically subsides and the family system falls into more of a consensual, egalitarian, open structure. Constantine described the open structure as predominantly consequence-oriented with a tendency to integrate the past, present and future into a blend of continuity and discontinuity that maximizes effectiveness (1986, p. 97). In this paradigm, the individual and the group are both equally important; the needs of one do not overpower the needs of the other.

After many years of renegotiating the family's guiding principles, the family system sometimes achieves a state of "unspoken closeness" characterized with "high levels of agreement" (1986, p. 174). Constantine introduced this as the synchronous paradigm and

described it as a coincidence-oriented paradigm characterized by complete agreement. Since everyone is of one state of mind, the issue of group vs. individual does not exist (1986, p. 97). Constantine suggested that members within a synchronous paradigm connect through coincidence rather than organized behavior (1986, p. 97). He further described "timeless, atemporal quality" about the synchronous system that is "*neither* continuity – nor discontinuity-oriented" (1986, p. 97).

This application of morphogenetic sequence illustrates dialectical logic in family paradigm theory. The family system changes between paradigms in response to the changing needs of its members. However, before the family actually transitions, it must first consider the new paradigm as a viable option, or in dialectic terms, an alternative. Constantine's application of dialectical logic identifies the closed paradigm as the *thesis,* the random paradigm as its opposite, or *antithesis*, the open paradigm as a combination of the closed and random, or the *synthesis* and the synchronous paradigm as not closed, random or open: the *antisynthesis* (see Figure 1 on page 4) (Constantine, 1986, p. 97). The significance of this dialectical quality about family paradigm theory lies in its compatibility with other "systems of opposites" such as that described by Kantor and Lehr's (1975) distance regulation perspective.

Distance Regulation Model

Kantor and Lehr (1975) identified five fundamental components in family process theory: subsystems, access dimensions, target dimensions, structures and player parts. These components are the fundamental building blocks for the theory enabling it to go beyond standard description and achieve a more dynamic position within the family system. When considered through the lens of dialectical logic, these components of family process help to explain distance regulation within family systems through everyday family process.

Two basic elements of family systems that influence interpersonal dynamics are system feedback and relational orientation (Imig, 2005, p. 9). While system feedback mechanisms in a family system regulate change vs. continuity for the family, relational orientation determines the family's focus on individual vs. group (p. 9). Interestingly, the theoretical image formed by these components produces a *system of opposites* that mirrors dialectical logic (see Figure 1 on page 4). This relationship is especially useful in the current research because it provides a framework for interpreting emotions data.

Family systems typically reflect one of four possible combinations of system feedback and relational orientation:

- Closed paradigm – cohesive continuity
- Random paradigm – distant change
- Open paradigm – cohesive change
- Synchronous paradigm – distant continuity

Kantor and Lehr's distance regulation perspective suggests that subsystems, access dimensions, target dimensions, structures and player parts all work together to maintain the characteristic conditions described above (e.g. cohesive continuity among members in the closed paradigm and distant change among members in the random paradigm) (1975, pp. 221-224). To illustrate, members of the closed family commonly claim areas of the home as private space and expect other family members to request permission to enter into those areas. Additionally, boundaries in the closed paradigm often prevent new ideas from entering into family conversation and limit conversation among family members to "approved" topics. Furthermore, in the closed family the needs of the family typically come before the needs of the individual (Constantine, 1986, Imig, 2005, Kantor & Lehr, 1975).

Let's assume for a moment that an adolescent child in a closed-type family walks into his father's office without knocking and interrupts a business call by demanding $200 to help purchase a motorcycle. In doing so, the adolescent uses profane language that is typically not tolerated in the household. This interaction sets off a reaction that elicits anger and disappointment for the father. Additionally, the father feels the need to regain control of the adolescent in order to restore homeostasis within the family system.

In this example, conflict at the interface of interpersonal vs. personal subsystems occurs because the adolescent is using prohibited language in demanding money for personal goals that may not be compatible with family goals. The conflicts that are apparent in this example reflect distance vs. cohesion (the adolescent desires to place personal goals – spending money on self - ahead of family goals – saving money for family) and continuity vs. change (adolescent introduces new language into the family system that is outside acceptable boundaries and violates the father's private space). There are several other conflicts that my be extracted from this example but the dynamics are essentially the same; the feedback loop in this interaction elicits responses based upon the subsystems, access dimensions, target dimensions, player parts and structure of the family unit in an attempt to restore homeostasis.

While the distance regulation model provides a useful mechanism for recognizing sources of conflict in the family system, this model does not necessarily consider the emotions that accompany the conflict. In family paradigm theory, family crisis or severe illness sometimes acts as a perturbation that pushes the family system into a different paradigm. A primary goal of the current research is to gain a better understanding about emotions that accompany conflict within family systems. Specifically, the research aims to understand positive vs. negative emotions that occur among family members in response to *alternative* paradigms. This

information should be applicable toward assessing families in crisis and making recommendations toward successful paradigmatic transition.

Human Emotions

What are emotions? Past scholars described emotions in terms of the observable body reactions that characterized them: the rapid heartbeat, goose bumps, increased respiration and dry mouth that occurred during emotional responses. James, for example argued, “If we fancy some strong emotion and then try to abstract from our consciousness of it all the feelings of its characteristic body symptoms, we find that we have nothing left behind, no ‘mind stuff’ out of which the emotion can be constituted” (1884,193).

This prompted later scholars like LeDoux (1996) and Damasio (1994) to examine the constituent parts of emotions that James described. The latter scholars recognized unconscious bodily reactions to emotions as well as the associated feelings that accompany emotions. They also acknowledged the more cognitive, conscious input of the cerebral cortex that contributes toward the body’s response. However, during their exploration of emotions the researchers also recognized that the basic primitive fear response did not require cognitive processing of information or overt feelings of the body. Another researcher, Ohman (1999) conducted emotions research about the same time and demonstrated that the fear response does not require consciousness. The famous snake experiment used participants who feared snakes to show an unconscious reaction of fear. The individuals were presented with slides of snakes in rapid succession such that they could not consciously process the images, yet the individuals still experienced elevated skin conductance responses (Franks, 2006, p. 53).

In reaction to these findings, LeDoux (1996) and Damasio (1994) introduced new ideas that changed the way modern sociologists view emotions. These researchers acknowledged not

only the significance of the body's overt response toward emotions but also the importance of cortical reasoning in offsetting emotional responses (Franks, 2006, p. 53). The scholars placed emotions in the unconscious, as well as the conscious realm.

What is the significance of this information in relation to family paradigms and human emotions? The response to this question is best considered in terms of decision-making. As previously stated, some noteworthy scholars in the field believed that decision-making was a rational process based primarily upon available resources and goals (Bubolz & Sontag, 1993; Paolucci, Hall & Axonn, 1977). This idea is significant to the history of Human Ecology theory as the idea of rational decision-making is one of the basic premises of the theory and discounts the value of emotions in the decision-making process (Bubolz & Sontag, 1993). In more recent times, scholars have questioned whether emotions subconsciously influenced decision-making, and may have actually provided benefit during the decision-making process. In their neural theory of economic decision, Bechara and Damasio reported that emotions moderate the interaction between environmental factors and decision-making, thus enabling "fast and advantageous decisions" (2004, p. 336).

The distinction of whether emotions play a significant role in the decision-making process is relevant to the current research. In its present form, Family Paradigm theory does not provide adequate focus on emotions during interpersonal interaction. This is an important consideration for families undergoing change because the primary goal in these situations is to reduce stress and restore homeostasis within the family system. Without ample consideration for emotions, recommended paradigmatic changes for families experiencing stress may elicit unexpected negative emotions and leave the family in a more disabled state.

Emotions in Research

This study previously identified the usefulness of dialectical logic and distance regulation as optimal frameworks for understanding family paradigms. The next logical step toward understanding the relationship between family paradigms and human emotions is to identify measurable dimensions of emotions. Posner et al. (2009) offered a useful approach toward this goal in their study focused on emotions and the Circumplex Model of Affect. Based on findings from their fMRI study, the researchers reported that "valence" and "arousal" represented two distinct, measurable dimensions of emotions with separate neural networks in the brain. This finding provided a framework for combining data from Phase III and Phase IV in the current research.

Historically, neuroscientists and social scientists did not have access to technology that provided information about brain activity during neural processing of emotions. This changed with the introduction of functional Magnetic Resonance Imaging (fMRI) and Positron Emission Tomography (PET). These imaging devices now enable scientists to monitor and record brain activity in response to specific stimuli, including stimuli that are known to evoke certain emotions. This technology opened the door for integrated research among neuroscientists and behavioral scientists; it is now possible to study brain activity that occurs in conjunction with social behavior. However, in spite of this opportunity, researchers have been slow to join efforts toward this goal.

In response to this observation, the current study proposes future research aimed toward combining efforts among social scientists and neuroscientists into common research. While it is outside of the scope of this dissertation to conduct the proposed research and report the findings,

the groundwork for future research is established (see Implications for Future Research for additional explanation).

CHAPTER 3

METHODOLOGY

Overview

This study includes methodology that evolved over the course of three years and occurred in four phases. The first two phases comprised a pilot study that served as a guide for revisions of the instruments and study design. The primary research question remained the same during all phases of the study, *is there a relationship between closed paradigm vs. random paradigm and positive affect vs. negative affect?* In answer to this question, all phases included collection of data related to demographics, family paradigms and emotions. The distinguishing factor between phases occurred in the format of the emotions instrument; the first and second phases used an open-ended instrument (see Appendix F and Appendix G), the third phase used a multiple-choice instrument (see Appendix H) and the fourth phase used the Positive and Negative Affect Schedule (PANAS) (see Appendix I) to collect emotions data. Investigators reviewed the data following each phase of the study and implemented appropriate changes. The data that elicited the most concern were the emotions data. The open-ended responses in Phase I and Phase II revealed a general inability among participants to articulate their emotions. Investigators predicted that participants would articulate emotions more clearly if they selected from a list of 30 emotions words rather than responding to open-ended questions (see Figure 3 on page 47). This format was implemented for Phase III. However, additional review of data following this phase revealed continued lack of clarity among participants in recording their emotions. Investigators implemented the PANAS in response to this finding and the PANAS was used to collect emotions data during Phase IV.

Following data collection, researchers explored several options for coding and analyzing data. Review of recent literature (Posner, et al., 2009) revealed potential usefulness for the Circumplex Model of Affect (Russell, 1980) to serve as a foundation for recoding and combining emotions data from Phase III and Phase IV of the study, thereby increasing the power of the study. After careful consideration, Investigators opted to convert the emotions data according to the Circumplex Model of Affect and performed analysis using the transformed data (see Appendix L for description of data transformation). In addition, because the PANAS is a validated instrument, a separate analysis was performed using emotions data collected during Phase IV in order to evaluate the usefulness of the instrument for future research focused on family paradigms.

Procedure

Researchers contacted students through the instructor of a 400-level college course at a Midwest University and invited them to participate in the study. The course focused on interpersonal relationships within the family. Participation in the study was offered as an alternative option for required participation in the course. After explaining the study to the participants, researchers requested their consent to participate. Individuals who agreed to participate completed the revised Relational Paradigmatic Assessment Scale (RPAS-1, RPAS-2, RPAS-3, or RPAS-4) and the demographic survey.

Design

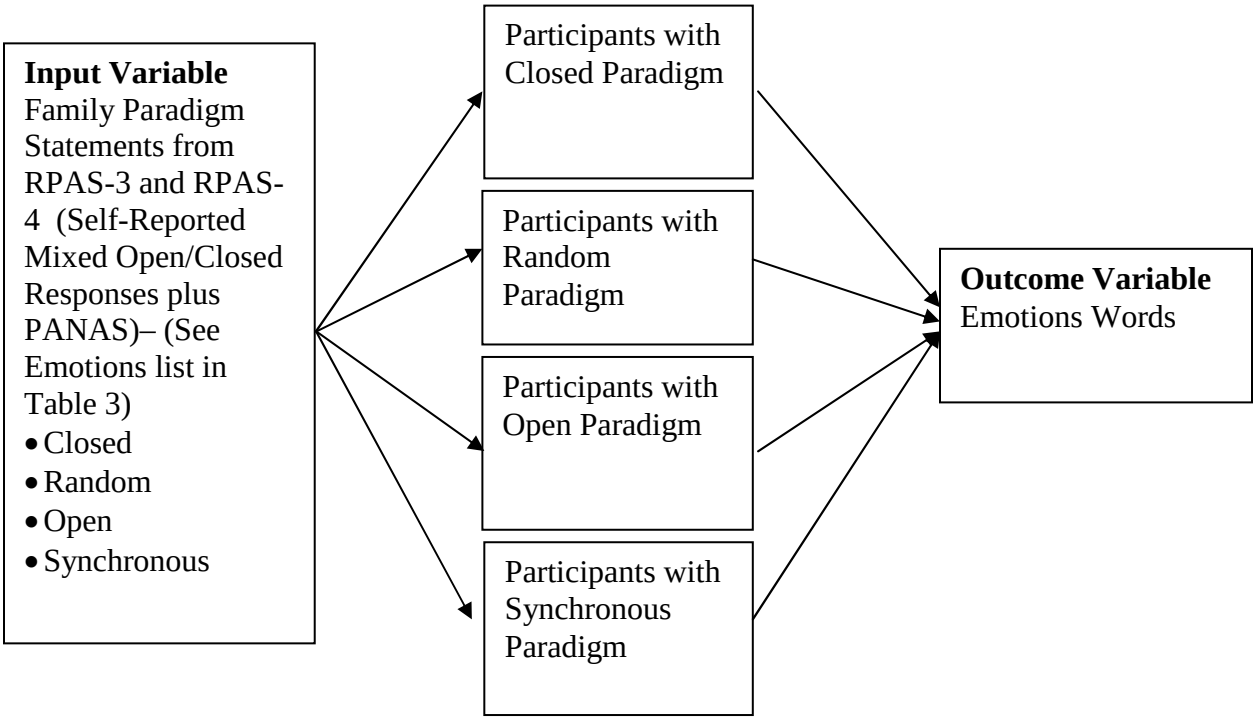
Development of methodology for the proposed research was survey-based and conducted using an exploratory design with a revised Relational Paradigmatic Assessment Scale (RPAS-1, RPAS-2, RPAS-3 or RPAS-4) and a demographic survey. The study included a total of 257

participants: 40 in the pilot study (Phase I and Phase II) and 217 in the working study (Phase III and Phase IV). Of the 257 participants, 253 completed the surveys at a single-site location.

The major dependent variable for this research was *emotion* and the major independent variable was *paradigmatic orientation* as described by Family Paradigm Theory. The theory defines four family paradigms: closed, random, open and synchronous (see Appendices F, G, H, and I). Moderator variables for the study included: *education, relationship, religion and political orientation* and control variables included *age* and *gender*.

Participants in all four phases completed a revised RPAS and provided demographic information including gender, age, level of education, marital status, and political orientation. In addition, participants in Phase III and Phase IV also provided information related to significant relationship with others, religious affiliation, home country, native language and government organization of home country. With the exception of religious affiliation and significant relationship with others, all variables in the last group described were excluded from final analyses because the data were insufficient to produce significant findings. However, these data were coded in case they can contribute toward future research conducted in response to this study.

The changes in study design during development of the methodology improved the measurability of emotions. Conceptual models for the development of the four-phase model are depicted in Figure 2 and Figure 3.



Controls: *age* and *gender*

Figure 2
Conceptual Model for Phase III and Phase IV Combined

Participants

Pilot Study: Phase I and Phase II

The pilot study collected information about emotions using open-ended questions. This part of the study was comprised of 40 participants at a Midwest University. Of these students, 36 were enrolled in a 400-level college course on Interpersonal Relations of the Family at the University. The researcher or study representative explained the study to the participants and requested consent for participation. All 40 participants (100%) completed the study. Demographics for participants included 10 males (25%) and 30 females (75%). The students ranged in age from 19 years to 48 years with a mean age of 23.5 years.

The marital status of participants included 30 single, never married (75.0%), three single, living with a significant other (7.5%), five married (12.5%), one divorced (2.5%), and one missing data (2.5%). The highest level of education reported by the participants included six sophomore (15.0%), 17 junior (42.5%), 11 senior (27.5%), three graduate/professional degree (7.5%) and three other (7.5%).

The political orientation for this group included four moderately liberal (10%), 33 neither liberal nor conservative (82.5%), two moderately conservative (5%) and one extremely conservative (2.5%).

Working Study: Phase III and Phase IV

The third and fourth phases of the study comprised the primary data collection phases that served as the foundation for data analysis and interpretation of results and the discussion.

Phase III

During the third phase of the study participants provided emotional responses on the RPAS-3 (see Appendix H) from a list of 30 emotions words (see Table 3). This part of the study was comprised of 143 participants at a Midwest University who were students in a 400-level course on Interpersonal Relations of the Family. The researcher, or study representative, explained the study to participants and requested consent for participation. Initially, 158 participants provided informed consent and completed the study. However, 15 participants (9.5%) were removed from the study prior to data analysis because their emotion responses included multiple occurrences of missing data. This resulted in 143 participants for Phase III of the study. Demographics for participants in this group included 60 males (42.0%) and 83 females (58.0%). The students ranged in age from 20 years to 51 years with a mean age of 22.3 years. The marital status for participants in Phase III included 118 single, never married (82.5%), 17

single, living with a significant other (11.9%), six married (4.2%), one divorced (.7%), and one missing data (.7%). The highest level of education reported by the participants included 93 attended college (65.0.%), 21 college, two-year degree (14.7%), 26 college, four-year degree (18.2%), two graduate/professional degree (1.4%) and one missing data (.7%).

Table 3
Emotions Words Included in Phase III of Development

1.	Exhausted
2.	Confused
3.	Ecstatic
4.	Guilty
5.	Suspicious
6.	Angry
7.	Hysterical
8.	Frustrated
9.	Sad
10.	Confident
11.	Embarrassed
12.	Happy
13.	Mischievous
14.	Disgusted
15.	Frightened
16.	Enraged
17.	Ashamed
18.	Cautious
19.	Smug
20.	Depressed
21.	Overwhelmed
22.	Hopeful
23.	Lonely
24.	Jealous
25.	Bored
26.	Love-struck
27.	Surprised
28.	Anxious
29.	Shocked
30.	Shy

Phase IV

During the fourth phase of the study participants provided emotion responses to RPAS-4 using the Positive and Negative Affect Schedule (PANAS) (see Appendix I and Appendix J). This phase was comprised of 59 participants at a Midwest University who were students in a 400-level course on Interpersonal Relations of the Family. The researcher, or study representative, explained the study to the participants and requested consent for participation. All 59 participants (100%) completed the study. Demographics for participants included 17 males (28.8%) and 42 females (71.2%). The students ranged in age from 20 years to 50 years with a mean age of 22.4 years.

The marital status of participants in Phase IV included 49 single, never married (83.1%), four single, living with a significant other (6.8%), four married (6.8%), one remarried (1.7%), and one missing data (1.7%). The highest level of education reported by the participants included 46 attended college (78.0%), three college, two-year degree (5.1%), nine college, four-year degree (15.3%) and one other (1.7%). Descriptive statistics for this group are recorded in Table 4 on page 58.

Phase III and Phase IV Combined

The working phase of the study was comprised of 202 participants: 77 males (38.1%) and 125 females (61.9%). Ages of participants in the combined group ranged from 20 to 51 years with a mean age of 22.3 years.

The marital status of participants in this group included 167 single never married (82.7%), 21 single, living with a significant other (10.4%), 10 married (5.0%), one divorced (.5%), one remarried (.5%) and two missing data (1.0%). The highest level of education reported by the participants included 139 attended college (68.9%), 24 college, two-year degree (11.9%),

35 college, four-year degree (17.3%), two graduate/professional degree (1.0%), one other (.5%) and on missing data (.5%). Descriptive statistics for the working group are recorded in Table 18 on page 87.

Conceptual Definitions

This study includes several variables that require conceptual definitions in order to fully understand the relationship between family paradigms and human emotions. These definitions are provided in a list that follows.

Independent Variable

Paradigmatic orientation: Recorded as values assigned to family paradigm statements for closed paradigm, random paradigm, open paradigm and synchronous paradigms on RPAS-1, RPAS-2, RPAS-3 and RPAS-4.

Dependent Variable

Human emotions: Recorded as emotions words on RPAS-1, RPAS-2, RPAS-3 and RPAS-4.

Moderator Variables

Education, relationship status, religious affiliation and *political orientation:* Self-reported through selection of appropriate categories by participants on demographic surveys. Additionally, participants in Phase III and Phase IV of the study indicated their marital status by responding to open-ended question “C2” that described relationship type for others in the same household (see Appendix E). Conceptual and operational definitions for these variables are included in Appendix A. In addition to these data, additional information was collected from participants that described number in household, closeness of significant relationship, native language, home country, and government organization. The latter data were excluded from final

data analyses but coded and included in Appendix A in case these data are useful in future research related to this study.

Control Variables

*Age and gender:*Age was self-reported by indicating number of years and gender was indicated through selection of appropriate category by participants on demographic surveys. Conceptual and operational definitions for these variables are included in Appendix A.

Inclusion Criteria

Inclusion criteria for this study were English-speaking college students, 18 years of age or older who were enrolled in a 400-level family relations course at a Midwest University. Additional inclusion criteria were mental competency and the ability to read and write in the English language.

Exclusion Criteria

Exclusion criteria were students who were less than 18 years of age, or who were mentally incompetent.

Instruments

Demographic Survey

The study used two different demographic surveys to collect information about the participants (see Appendix D and Appendix E). The original demographic survey was used during Phase I and Phase II of the pilot study. This instrument collected information related to gender, age, education, marital status, number in household and political orientation (see Appendix D). Based upon review of preliminary data and additional review of related literature, the demographic survey was revised prior to Phase III of the study. The revised demographic survey was used during Phase III and Phase IV of the working study (see Appendix E). The

modified survey collected information related to gender, age, education, student status, number in household, relationship of others in household, significant relationship, home country, native language, religious group, government organization and political orientation. Data extracted from this demographic survey and used for data analyses included gender, age, education, relationship status, religious affiliation and political orientation.

Relational Paradigmatic Assessment Scale (RPAS)

Standard RPAS

The standard RPAS consists of ten questions followed by four statements for each question (Imig, 2000b). Four of the questions on the scale relate to target dimensions, or goal elements (affect, control, content and meaning), and four questions relate to access dimensions, or resource elements (space, material, time and energy). Each question includes four response statements (a,b,c,d) reflecting one statement for each paradigm - closed, random, open and synchronous. Participants respond by assigning a 0-10 value for each statement that indicates how closely the statement describes their relationship or family system. The two remaining questions rate the overall importance of each element in the relationship. Prior to completing the scale, participants are instructed to assign a value of ten to only one statement for each question and then respond to the remaining three statements using a scale from 0-9. Responses on the scale are analyzed to produce quartile scores and cluster scores that reflect the paradigmatic orientation related to each element (see Appendix K). It should be noted that on the original RPAS, participants rate their "current" relationships and (separately) also rate their "ideal" relationships. This information was also collected for the current research, but based upon the massive amount of information collected, Investigators decided to focus on data provided about "current" relationships for this study.

The Relational Paradigm Assessment Scale (RPAS) underwent several revisions during development. However, all versions are felt to have construct validity because they were specifically designed to measure family paradigm structure and player parts as described by family paradigm theory (Constantine, 1993a, Hidecker, 2004; Imig, 1993a, 2000a; Imig & Phillips, 1992). One of the earliest versions of RPAS, the *Family Regime Assessment Scale* (FRAS), is recognized as a useful research instrument within the discipline of family science (Touliatos, Perimutter & Strauss, 1999, pp. 50-51). During development of the next version, the Paradigm Assessment Scale (PAS), participants in a study commented on the appropriateness and the wording of the PAS (Hidecker, 2004; Imig & Phillips, 1992). Hidecker (2004) summarized several reports (Imig, 1993a, 2000a; Imig et al., 1996; Imig & Phillips, 1992; Pate, 1994; Pegorarro, 1999; Villarruel et al., 1995; Ward, 1997) and concluded, "family participants have felt that the FRAS and the R-PAS are representative of family functioning which is a component of content validity" (2004, pp. 22-23). Since RPAS (or variations of this scale) is the only instrument available to measure family paradigms, construct validity has not been established. Variations of RPAS have been used to assess paradigmatic orientation in a variety of situations related to divorce (Pate, 1994); behavior under stress (Imig, 1993a, 2000a); home schooling (Pegorraro, 1999), men's groups (Imig et al., 1996), family businesses (Imig et al., 1996) and older child adoption (Ward, 1997). Test-retest reliability has not yet been established for RPAS.

Revised RPAS

The primary instrument used to collect data related to paradigmatic orientation for each relationship in the current study was the *Revised Relational Paradigmatic Assessment Scale* (RPAS-1, RPAS-2, RPAS-3, or RPAS-4) (see Appendices F, G, H and I) (Imig, 2000b).

RPAS-1 and RPAS-2: Pilot phase. For this study, the RPAS was revised to include four questions: two that represented access dimensions (space and material) and two that represented target dimensions (control and affect). Investigators abbreviated the RPAS to ensure that participants could complete the survey in the two-hour time frame allotted for each research session. Researchers felt that a 10-question scale along with the demographic survey would be difficult to complete in this amount of time. After considering the value of each element to the outcome of the study, Investigators decided to include questions related to the elements of space, material, affect and control in the relationship.

Prior to phase I of the study, the RPAS underwent further revisions to include open-ended responses that described emotions participants felt in response to each statement as it applied to their relationship. Additionally, Phase I also collected information describing whether each statement applied to the participant's relationship in a positive (+) way, a negative way (-), neither a positive nor a negative way (0) or both a positive and a negative way (+/-). This resulted in the development of RPAS-1 (see Appendix F).

Preliminary data analysis following Phase I of the study revealed difficulty in measuring the emotion responses. Most responses were presented by participants in sentence form resulting in difficulty with coding the information. In response to this, the Investigators for the study revised RPAS-1 to include instructions for participants to list "one or two words" that described how they felt in response to each statement. Additionally, the Investigators also discussed the value of including an intensity value for each emotion word on a scale from 1-5. This variable was also added to RPAS-1 and resulted in RPAS-2 (see Appendix G).

Further data analysis following phase II of the study revealed continued difficulty in measuring participant emotion responses. The responses suggested a general inability among

participants to articulate the emotions they experienced. Based on this observation, Investigators revised RPAS-2 prior to Phase III with the addition of a list of 30 emotion words for participants to use in describing their emotions (see Table 3 on page 39).

RPAS-3 and RPAS-4: Working study. For phase III of the study, researchers introduced RPAS-3 that included the list of 30 emotion words (see Table 3 and Appendix H). In addition, researchers also added question 5 to RPAS-3 in order to determine the overall importance of each element (control, affect, space and material) in the relationship (see Figure 3 on page 47).

Phase III produced somewhat more measurable results. However, data analysis following this phase continued to show multiple responses that did not reflect emotions; participants frequently responded with words that were not included on the 30-word emotion list. In order to produce more measurable results, researchers implemented the use of the Positive and Negative Affect Schedule (PANAS) during the fourth phase. The RPAS-4 resulted from combining the RPAS with the PANAS. This instrument recorded family paradigm information as well as information that described positive and negative affect.

The data set collected during Phase IV was combined with Phase III data and comprised the Working Study. This data set was categorized according to the Circumplex Model of Affect and was further used to test the hypotheses for the study (see Figure 4 and Appendix M).

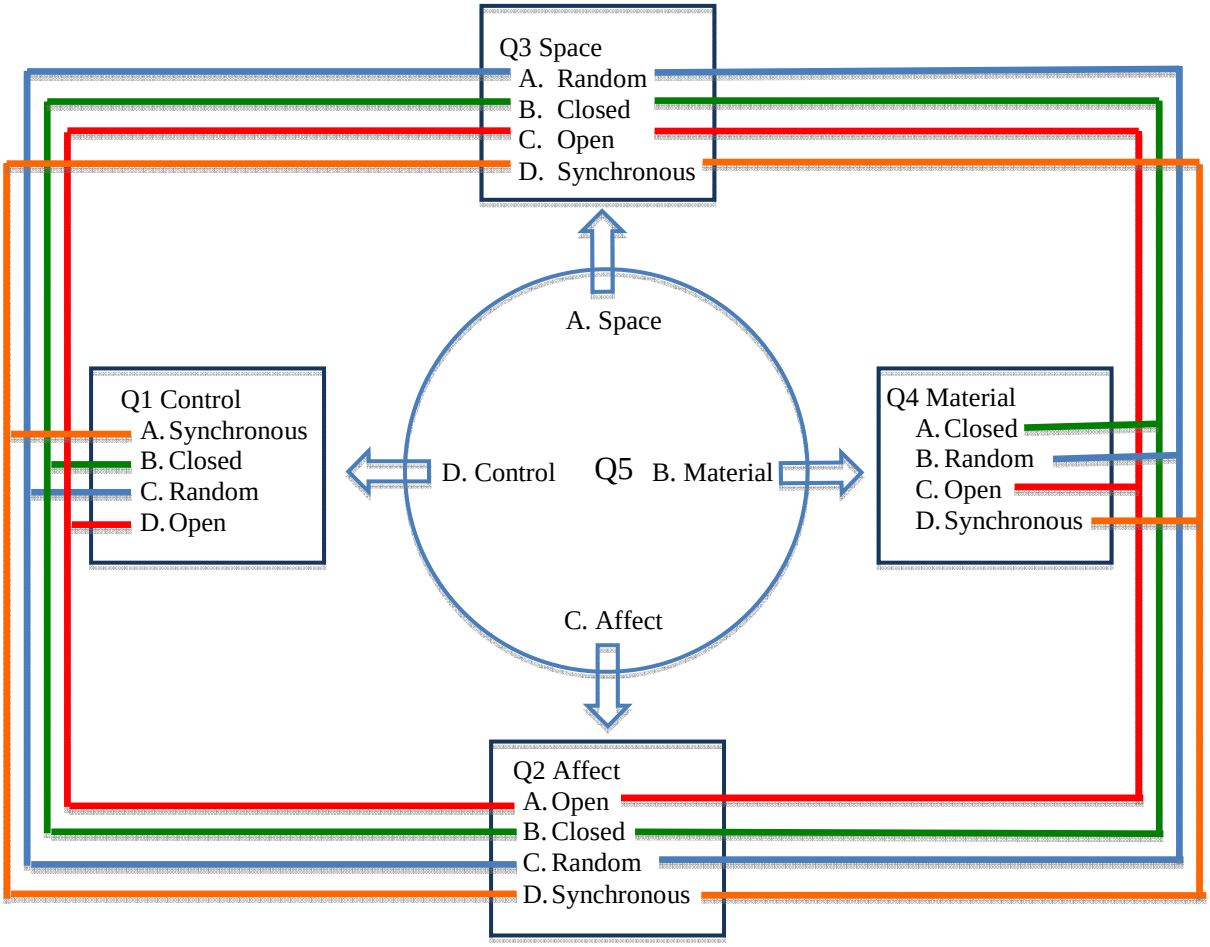


Figure 3
Conceptual Model for Phase III and Phase IV Depicting Inclusion of Question 5. For interpretation of the references to color in this and all other figures, the reader is referred to the electronic version of this dissertation.

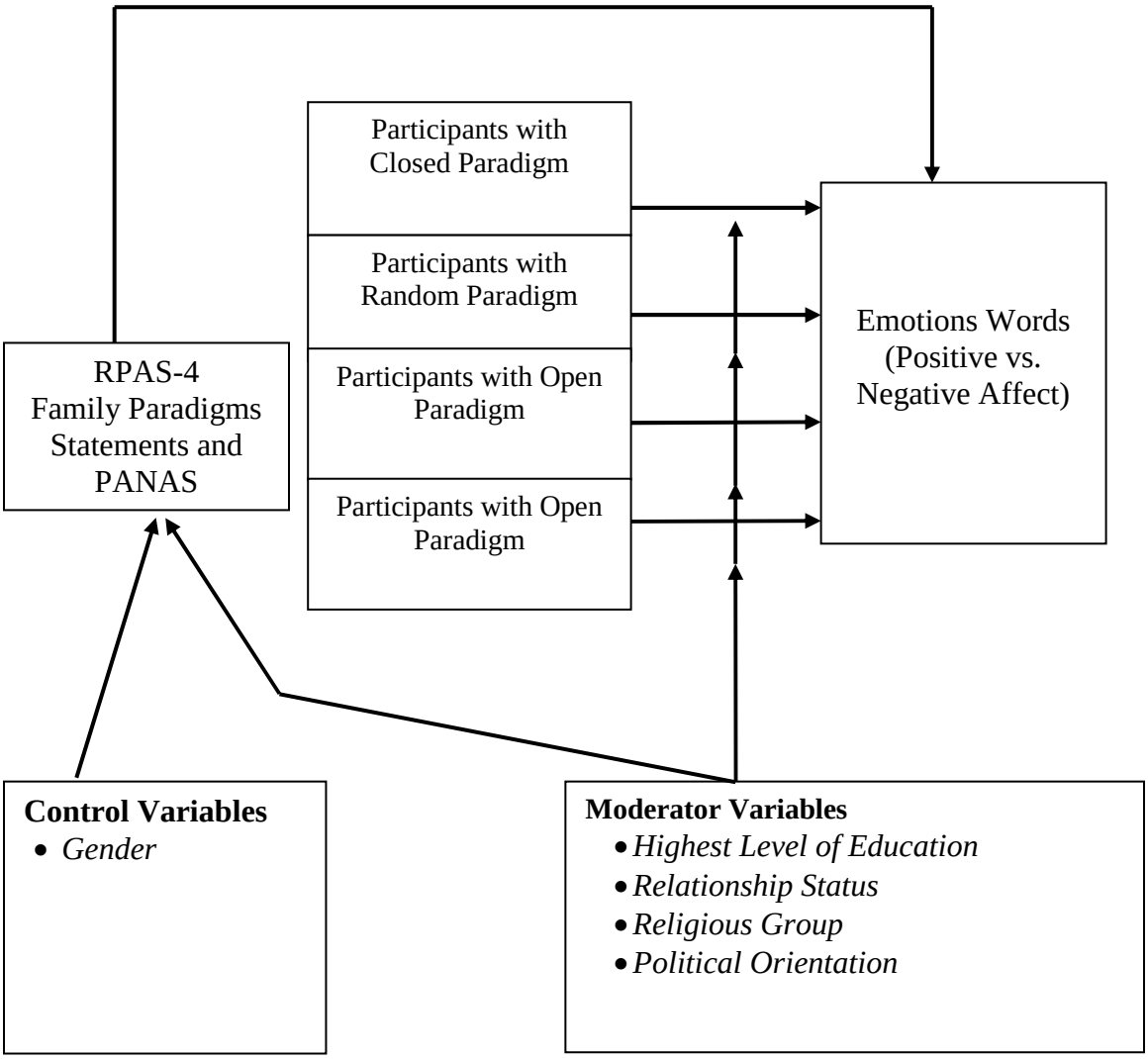


Figure 4
Conceptual Model for Phase IV

Positive and Negative Affect Schedule (PANAS)

The Positive and Negative Affect Schedule (PANAS) was used to record emotions during Phase IV of the study (see Appendix C and Appendix J). The PANAS is a self-administered mood assessment. Scores have a direct interpretation and indicate the intensity of the emotional response for two affective state dimensions: positive affect and negative affect. Scores are determined by summing responses from each scale: positive affect (PA) items (interested,

excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, and active) and negative affect (NA) items (distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery and afraid). Scoring yields separate scores for PA and NA that range from 10-50.

Reliability and validity of PANAS have been widely reported in the literature (Crawford & Henry, 2004; Watson & Clark, 1994; Watson & Vaidya, 2003). Test-retest reliability results indicate coefficient for general ratings are sufficiently high to suggest they indicate participant's trait affect and internal consistency for this scale is reported at 0.84 - 0.90 (Watson, Clark & Tellegen, 1988). Appendix C provides additional information related to this instrument.

Coding

In preparation for data analysis, data for the study were coded according to the scales of measurement used during data acquisition. Variables measured at the nominal level were coded with dummy variables that indicated whether the variables were present (0 = no, 1 = yes). Variables measured at this level included gender, live alone, significant relationship, and religious affiliation. Categorical variables included education, marital status and political orientation. These variables were also measured at the nominal level. However, education and marital status were first coded with unique codes for each categorical level and annotated with unique labels and then recoded with dummy variables for analysis. Additionally, based upon the discrimination achieved between different levels of political orientation (respondents selected from five categories ranging from liberal to conservative) these data were analyzed at the interval level. The variable age was also measured at the interval level and coded with the value reported by participants during data acquisition.

Research Hypotheses

Primary Hypothesis

The H_{01} null hypothesis for this study states, among participants who complete the revised RPAS, there is no relationship between the participants' relational paradigmatic orientation and the emotions they express in response to each paradigm statement.

Secondary Hypotheses

In order to better understand how moderator variables and control variables affected relationships between family paradigms and human emotions, several additional hypotheses were tested in this study. Hypotheses H_{02} through H_{05} examined relationships between education, relationship status, religious group and political orientation while controlling for gender.

The conceptual model used to test hypotheses for this study is illustrated in Figure 4 on page 48. This model addresses the following null hypotheses:

H_{01} *Among participants who complete the revised RPAS, there is no relationship between participants' relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{02} *Among participants who complete the revised RPAS, the participants' level of education does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{03} *Among participants who complete the revised RPAS, the participants' relationship status does not affect the relationship between their relational*

paradigmatic orientation and the emotions they express in response to each paradigm statement

H_{04} *Among participants who complete the revised RPAS, the participants' religious status does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{05} *Among participants who complete the revised RPAS, the participants' political orientation does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

Data Analysis

Data analysis for the study occurred in four stages. Analyses were conducted using Mac OS × version 16.0 SPSS statistical analysis software (SPSS Inc, Chicago, IL).

Univariate Analyses

The first stage of analysis consisted of univariate with descriptive statistics. Categorical variables in these analyses included gender, relationship status, education and religious status. Data for each variable were analyzed with frequency tables and then graphically plotted using histograms (for interval data) and bar charts (for categorical data) to assess for shape, frequency distribution, central tendency, and variability. Data were also analyzed for skewness, kurtosis, outliers, gaps and peaks. In addition, interval data were tested for normal distribution using the Shapiro-Wilk normality test.

Frequency distributions and percentages for these variables were reviewed. Review of the charts and graphs for gender revealed data that were well suited for further analysis. However,

review of marital status, education and religion showed several categories that contained less than three data points. In order to include these variables in further analysis, categories for "marital status' were collapsed to include "married or living with a significant other" and "single or divorced, not living with a significant other"; categories for "education" were collapsed to include "less than a four-year degree" and "four-year degree and higher" and categories for "religion" were collapsed to include "religious affiliation" and "no religious affiliation" (see Table 4 and Table 17).

Descriptive statistics for continuous variables were calculated and reported as mean, standard deviation, minimum value and maximum value. Continuous variables for the study included age, political orientation, closed paradigm, random paradigm, open paradigm and synchronous paradigm (see Table 5 and Table 18). Age values ranged from 20 to 50 (M = 22.38, SD = 4.591), political orientation values ranged from 0 to 4 (M = 1.79, SD = 1.056), closed paradigm values ranged from 0.08 to 0.34 (M = .2033, SD = .0540), random paradigm values ranged from 0.15 to 0.52 (M = .2973, SD = .0662), open paradigm values ranged from 0.11 to 0.42 (M = .2898, SD = .0628) and synchronous paradigm values ranged from 0.09 to 0.31 (M = .2096, SD = .0555).

Normality of distribution for continuous variables was assessed using the Shapiro-Wilk test and each dataset was analyzed for kurtosis and skewness. Data for closed paradigm, random paradigm, open paradigm and synchronous paradigm passed the normality test at the 95% confidence interval. However, data for age and political orientation failed the normality test at this confidence interval. Further review of box plots for political orientation revealed a bell-shaped curve with normal distribution so this variable was retained for further analysis.

Review of box plots for age were analyzed and showed skewness in distribution greater than four. Box and whisker plots were generated in order to identify outliers and these values were checked for accuracy against original data. These data were transformed using natural log, square root and exponent transformations to improve symmetry, but transformation of data was not successful in compensating for the skew. The data indicated that a high number of participants (50 out of 59) reported ages between 20 – 22 years. The resulting bias rendered the data invalid for use as a moderator variable and age was omitted from further Phase IV analysis.

Bivariate Analyses

The next stage of data analysis consisted of bivariate analyses to test for significant relationships between continuous variables in each phase of the study. During this stage, analyses were performed using Spearman's correlation to examine relationships between closed paradigm, random paradigm, open paradigm, synchronous paradigm and political orientation.

Multivariate Analyses

In order to determine whether emotional responses were related to paradigmatic orientation, two different multivariate analyses were conducted. During Phase IV data analyses, ordinary least squares (OLS) regression was used to compare paradigm scores with corresponding levels of emotions (positive affect vs. negative affect) while statistically controlling for gender. In addition, education, relationship status (relation), religious status (religion) and political orientation were included in the model to test for other moderating effects. A probability of $p < 0.05$ was established as the required value to reject the null hypotheses. Scores for each paradigm reflected the sum of corresponding paradigm complex coefficient values across Q1, Q2, Q3 and Q4 (see appendix K):

For Phase III/IV combined analyses, ordinal regression models of emotions were tested separately for valence (pleasure vs. displeasure) and arousal (activated vs. deactivated) using paradigms as primary predictors. Separate ordinal regression analyses were run for each outcome variable: closed valence, random valence, open valence, synchronous valence, closed arousal, random arousal, open arousal and synchronous arousal. Findings were summarized and interpreted in the results section of this dissertation (see Table 31 on page 113 and Table 32 on page 116).

CHAPTER 4

RESULTS

The primary purpose of this study was to explore the relationship between closed vs. random family paradigms and positive vs. negative human emotions. Following data collection, the study focused on two phases from data collection for analyses: Phase IV included data from the 59 participants who rated their emotions according to the PANAS and Phase III/IV combined included data collected using PANAS combined with data collected using the open-ended emotions survey.

The initial plan for analysis was to focus on Phase IV data collected using PANAS because the PANAS is a validated instrument. For this reason, Phase IV analysis is presented first. The decision to combine Phase III and Phase IV was based upon literature related to the Circumplex Model of Affect (Posner et al., 2009; Russell, 1980) that revealed potential benefit in framing emotions according to the Circumplex Model. This process entailed combining Phase III and Phase IV data to provide a larger dataset with more comprehensive analysis. Additionally, as described by Posner et al. (2009) the circumplex model posits that, "all emotions can be described as a linear combination of two underlying, largely independent neurophysiological systems, valence and arousal" (p. 2). Results that follow reflect a two-tier model of analysis – Phase IV analysis followed by Phase III/Phase IV combined analysis - with emotions for Phase IV coded as positive and negative affect (see Appendix N), and emotions for Phase III/Phase IV combined coded as valence and arousal (see Appendix M).

Phase IV Analyses

These analyses tested the H_{01} hypothesis, *among participants who complete the revised RPAS, there is no relationship between participants' relational paradigmatic orientation and the emotions they express in response to each paradigm statement.* Additional sub-hypotheses included:

H_{02} *Among participants who complete the revised RPAS, the participants' level of education does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{03} *Among participants who complete the revised RPAS, the participants' relationship status does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{04} *Among participants who complete the revised RPAS, the participants' religious status does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{05} *Among participants who complete the revised RPAS, the participants' political orientation does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

Univariate Analyses for Phase IV

Analysis of data for this study was conducted using Mac OS × version 16.0 SPSS statistical analysis software (SPSS Inc, Chicago, IL). The first stage consisted of univariate analyses with descriptive statistics of Phase IV data. Categorical variables in this analysis included gender, relationship status, education and religious status. Frequency distributions and percentages for these variables were reviewed using bar charts and graphs. As described in methods section, review of the charts and graphs for gender revealed data that were well suited for further analysis. However, review of marital status, education and religion showed several categories that contained less than three data points. In order to include these variables in further analysis, categories for "marital status' were collapsed to include "married or living with a significant other" and "single or divorced, not living with a significant other"; categories for "education" were collapsed to include "less than a four-year degree" and "four-year degree and higher" and categories for "religion" were collapsed to include "religious affiliation" and "no religious affiliation" (see Table 2).

Descriptive statistics for continuous variables were calculated and reported as mean, standard deviation, minimum value and maximum value. Continuous variables for the study included age, political orientation, closed paradigm, random paradigm, open paradigm and synchronous paradigm (see Table 3). Age values ranged from 20 to 50 (M = 22.38, SD = 4.591), political orientation values ranged from 0 to 4 (M = 1.79, SD = 1.056), closed paradigm values ranged from 0.08 to 0.34 (M = .2033, SD = .0540), random paradigm values ranged from 0.15 to 0.52 (M = .2973, SD = .0662), open paradigm values ranged from 0.11 to 0.42 (M = .2898, SD = .0628) and synchronous paradigm values ranged from 0.09 to 0.31 (M = .2096, SD = .0555).

Normality of distribution for continuous variables was assessed using the Shapiro-Wilk test and each dataset was analyzed for kurtosis and skewness. Data for closed paradigm, random paradigm, open paradigm and synchronous paradigm passed the normality test at the 95% confidence interval. However, data for age and political orientation failed the normality test at this confidence interval. Further review of box plots for political orientation revealed a bell-shaped curve with normal distribution so this variable was retained for further analysis.

Table 4
Descriptive Statistics for Categorical Data in Phase IV (PANAS) (N=59)

	Category	*Frequency*	*Percent*	*Valid Percent*
Gender	Female	42	71.2	71.2
	Male	17	28.8	28.8
Relationship Status	Married or Living with Significant Other	9	15.3	15.5
	Single or Divorced, Not Living with Significant Other	49	83.1	84.5
	Missing	1	1.7	
Education	Less than Four Year Degree	49	83.1	84.5
	Four Year Degree or Higher	9	15.3	15.5
	Missing	1	1.7	
Religion	Religious Affiliation	46	78.0	79.3
	No Religious Affiliation	12	20.3	20.7
	Missing	1	1.7	

Table 5
Descriptive Statistics for Continuous Data in Phase IV (PANAS) (N=59)

	Mean	*SD*	*Min*	*Max*
Demographics				
Age	22.38	4.591	20	50
Political orientation	1.79	1.056	0	4
Paradigms				
Closed	.2033	.0540	0.08	0.34
Random	.2973	.0662	0.15	0.52
Open	.2898	.0628	0.11	0.42
Synchronous	.2096	.0555	0.09	0.31

Review of box plots for age were analyzed and showed skewness in distribution greater than four. Box and whisker plots were generated in order to identify outliers and these values were checked for accuracy against original data. These data were transformed using natural log, square root and exponent transformations to improve symmetry, but transformation of data was not successful in compensating for the skew. The data indicated that a high number of participants (50 out of 59) reported ages between 20 – 22 years. The resulting bias rendered the data invalid for use as a moderator variable and age was omitted from further Phase IV analysis.

Bivariate Analyses for Phase IV

Bivariate analyses were conducted to test for significant relationships between continuous variables in Phase IV. Specifically, analyses were performed using Spearman's correlation to examine relationships between closed paradigm, random paradigm, open paradigm, synchronous paradigm and political orientation.

Correlates for Closed Paradigm, Random Paradigm, Open Paradigm, Synchronous Paradigm and Political Orientation in Phase IV

Based upon the theory of dialectical logic, the researcher for the current study predicted that bivariate correlation would reveal negative correlation between individuals and groups with

opposing worldviews. Specifically, the researcher for the study predicted that bivariate correlation would reveal negative correlation between participants who scored high on closed paradigm compared to participants who scored high on random paradigm. Additionally, based upon Kantor and Lehr's model of distance regulation (1975), the researcher also predicted that paradigms characterized by cohesiveness among family members (closed paradigm and synchronous paradigm) would reveal negative correlation with paradigms characterized by interpersonal distance between family members (random paradigm and open paradigm). Table 6 presents findings from these analyses.

Results of the analyses showed significant negative correlation between closed paradigm and random paradigm. This finding indicates that individuals who reported higher levels of closed paradigmatic orientation also reported proportionally lower levels of random paradigmatic orientation compared to individuals who reported lower levels of closed paradigmatic orientation. In other words, participants who perceived high levels of cohesiveness in their relationship with a focus on group goals perceived lower levels of personal freedom and less sense of individuality compared to individuals who perceived low levels of cohesiveness in their relationship with less focus on group goals.

Table 6
Correlation Between Closed, Random, Open and Synchronous Paradigm Scores and Political Orientation for Phase IV (PANAS) Using Pearson's (N=59)

Correlations			*Closed*	*Rand*	*Open*	*Synch*	*Politic*
Pearson's	*Closed*	Correlation Coeff.	1	-.497***	-.164	-.194	.053
		Sig. (2-tailed)		.000	.215	.140	.693
	Rand	Correlation Coeff.	-.497***	1	-.420***	-.233	-.050
		Sig. (2-tailed)	.000		.001	.076	.709
	Open	Correlation Coeff.	-.164	-.420***	1	-.471***	.023
		Sig. (2-tailed)	.215	.001		.000	.865
	Synch	Correlation Coeff.	-.194	-.233	-.471***	1	-.019
		Sig. (2-tailed)	.140	.076	.000		.888
	Politic	Correlation Coeff.	.053	-.050	.023	-.019	1
		Sig. (2-tailed)	.693	.709	.865	.888	

**.05<P≤10 **P≤0.05 ***P≤0.01*

Results also indicate a significant negative correlation between open paradigm and synchronous paradigm. This finding indicates that individuals who perceived adaptability in their relationships and group values focused on diversity and individual voice also perceived proportionally lower levels of group harmony, unity and consensus without communication compared to individuals who perceived lower levels of group adaptability with less focus on diversity and individual voice.

Interestingly, results also showed significant negative correlation between open paradigm and random paradigm. In other words, individuals who perceived more adaptability in their relationship and group values focused on diversity and individual voice with agreement through consensus also perceived proportionally lower levels of personal freedom and focus on individuality.

Surprisingly, results for this analysis showed no significant correlation between paradigmatic orientation and political orientation. This relationship was explored further in the analysis of Phase III/Phase IV combined data.

Multivariate Analysis for Phase IV

In order to determine whether emotional responses were related to paradigmatic orientation, ordinary least squares (OLS) regression analysis was used to compare closed paradigm scores and random paradigm scores with corresponding levels of emotions (positive affect vs. negative affect) while statistically controlling for gender. In addition, education, relationship status (relation), religious status (religion) and political orientation were included in the model to test for other moderating effects.

Scores for each paradigm reflected the sum of corresponding paradigm complex coefficient values across Q1, Q2, Q3 and Q4 (see Appendix K):

Paradigm Scores

Closed paradigm score = Q1bi + Q2bi+ Q3bi + Q4ai

Random paradigm score = Q1ci + Q2ci+ Q3ai + Q4bi

Open paradigm score = Q1di + Q2ai+ Q3ci + Q4ci

Synchronous paradigm score = Q1ai + Q2di+ Q3di + Q4di

Scores for emotions reflected mean scores for each category (positive vs. negative) across Q1, Q2, Q3 and Q4 (see Appendix N):

Positive Affect Scores

Closed positive score = Mean [Q1b + Q2b + Q3b + Q4a]

Random positive score = Mean [Q1c + Q2c+ Q3a + Q4b]

Open positive score = Mean [Q1d + Q2a+ Q3c + Q4c]

Synchronous positive score = Mean [Q1a + Q2d+ Q3d + Q4d]

Negative affect Scores

Closed negative score = Mean [Q1b + Q2b + Q3b + Q4a]

Random negative score = Mean [Q1c + Q2c+ Q3a + Q4b]

Open negative score = Mean [Q1d + Q2a+ Q3c + Q4c]

Synchronous negative score = Mean [Q1a + Q2d+ Q3d + Q4d]

Findings Addressing Research Hypotheses

Findings addressing primary hypothesis. The H_{01} hypothesis states, *there is no relationship between participants' relational paradigmatic orientation and the emotions they express in response to each paradigm statement.* This hypothesis was tested using ordinary least squares (OLS) regression analysis. Table 7 presents the results from this analysis. Findings indicate that, when controlling for other variables in the model, each .01 unit increase in closed paradigm is associated with .199 unit decrease in random positive affect measured by PANAS. This means that individuals who scored high on closed paradigm responded with lower levels of positive emotions when they were presented with random-type situations compared to individuals who scored low on closed paradigm. Findings from this analysis also revealed a near-significant negative relationship between closed paradigm and closed negative emotional responses. This means there was a trend among individuals who scored high on closed paradigm to respond to closed-type situations with increasingly less negative emotions compared to individuals who scored low on closed paradigm.

Interestingly, findings also indicated a near-significant positive relationship between gender and closed positive responses. This indicates there was a trend among female participants to respond to closed-type situations with more positive emotions compared to male participants.

Table 7
Exploratory Ordinary Least Squares (OLS) Regression of the Likelihood of Closed Positive Valence, Random Positive Valence, Closed Negative Valence and Random Negative Valence with Closed and Random Paradigm Predictors Included in the Model and Gender Controlled (N=59)

Predictors	Model 1: Closed Positive Valence (B)	Model 2: Random Positive Valence (B)	Model 3: Closed Negative Valence (B)	Model 4: Random Negative Valence (B)
Model				
R^2	.118	.121	.060	.037
Intercept	9.586	11.950	6.823	6.292
Paradigm				
Closed Centered	.014	-.199**	-.137*	-.036
Random Centered	-.077	-.089	-.055	-.041
Cl_×_Ran	-.004	.004	.002	.001
Demographics				
Gender	1.587*	.803	.605	.834

**.05<P≤10 **P≤0.05 ***P≤0.01*

Findings addressing secondary hypotheses. In order to test hypotheses H_{02}, H_{03}, H_{04} and H_{05} (below), additional OLS regression analysis was used to test for moderating effects of education, relation, religion and political orientation on significant relationships identified in Table 7. Results from this analysis are described in Table 8.

H_{02} *Among participants who complete the revised RPAS, the participants' level of education does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{03} *Among participants who complete the revised RPAS, the participants' relationship status does not affect the relationship between their relational*

paradigmatic orientation and the emotions they express in response to each paradigm statement

H_{04} *Among participants who complete the revised RPAS, the participants' religious status does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{05} *Among participants who complete the revised RPAS, the participants' political orientation does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

Table 8
Exploratory Ordinary Least Squares (OLS) Regression Model of the Likelihood of Random Positive Valence with Closed Paradigm Predictor and Moderating Variables Education, Relation, Religion and Political Orientation Included in the Model with Gender Controlled (N=59)

Predictors for Random Positive Affect	Model 1: (B)	Model 2: (B)	Model 3: (B)	Model 4: (B)	Model 5: (B)
Model					
R^2	.121	.146	.206	.161	.083
Intercept	11.950	11.330	12.264	10.864	11.842
Paradigm					
Closed Centered	-.199**	-.210**	-.146**	-.348**	-.149**
Random Centered	-.089				
Cl_×_Ran	.004				
Demographics					
Gender	.803	1.697*	.568	1.362	.932
Education		1.712*			
Closed_×_Educ		.168			
Relation			-1.630*		
Closed_×_Relation			-.303*		
Religion				1.148	
Closed_×_Religion				.257*	
Politic					.153
Closed_×_Politic					.002

**.05<P≤10 **P≤0.05 ***P≤0.01*

With gender statistically controlled, results from this analysis revealed a near-significant main effect for education on random positive affect. These results suggest that participants with four-year degrees or higher tend to respond to random-type situations with more positive affect compared to participants with less than four-year college degrees.

Additionally, findings also revealed a near-significant main effect for relation on random positive emotions. This means that participants who were married or living with a significant other tended to respond to random-type situations with less positive emotions compared to participants who were single. Additionally, results also showed and a near-significant interaction

effect for relation on the relationship between closed paradigm and random positive affect. These results indicate that participants who scored high on closed paradigm and were married or living with a significant other also tended to respond to random-type situations with less positive emotions compared to participants who scored high on closed paradigm and were single.

Results also indicated a near-significant interaction effect for religion on the relationship between closed paradigm and random positive affect. In other words, participants with closed-type paradigms and religious affiliations tended to respond to random-type situations with more positive emotions compared to participants with closed-type paradigms without religious affiliation.

Findings from this analysis raised further questions about potential relationships between closed paradigm and random paradigm and positive vs. negative affect for open paradigm and synchronous paradigm. Based upon the exploratory design of this study, additional analysis was conducted on the data to explore these relationships. Table 9 (below) summarizes these findings.

Table 9
Exploratory Ordinary Least Squares (OLS) Regression Model of the Likelihood of Open Positive Valence, Synchronous Positive Valence, Open Negative Valence, Synchronous Negative Valence, with Closed and Random Paradigm Predictors Included in the Model and Gender Controlled (N=59)

Predictors	Model 1: Open Pos Val (B)	Model 2: Synch Pos Val (B)	Model 3: Open Neg Val (B)	Model 4: Synch Neg Val (B)
Model				
R^2	.143	.153	.051	.023
Intercept	11.455	9.665	5.988	6.596
Paradigm				
Closed Centered	-.141*	-.117	.005	-.044
Random Centered	-.194**	-.134**	-.001	-.035
Cl_×_Ran	-.003	-.004	.001	.004
Demographics				
Gender	380	-1.514*	1.052	.320

**.05<P≤10 **P≤0.05 ***P≤0.01*

With closed paradigm and random paradigm included as predictors in the model and gender statistically controlled, findings show that each .01 unit increase in random paradigm is associated with .194 unit decrease in open positive affect measured by PANAS. This means that individuals who scored high on random paradigm responded with lower levels of positive emotions in response to open-type situations compared to individuals who scored low on random paradigm.

Results also revealed a near-significant relationship between closed paradigm and open positive emotions. This means that participants who scored high on closed paradigm tended to respond to open-type situations with less positive affect compared to participants who scored low on closed paradigm.

Additional findings revealed that each .01 increase in random paradigm was associated with a .134 decrease in positive synchronous affect. In other words, individuals who scored high on random paradigm responded with lower levels of positive emotions when they were presented with synchronous-type situations compared to individuals who scored low on random paradigm.

Findings further revealed a near-significant relationship between gender and synchronous positive affect. More specifically, results showed a trend suggesting female participants responded to synchronous situations with lower levels of positive emotions compared to male participants.

Additional OLS regression analysis was used to test for moderating effects of education, relation, religion and political orientation on significant relationships identified in Table 9. Results from these analyses are described in Table 10 and Table 11 below.

Table 10
Exploratory Ordinary Least Squares (OLS) Regression Model of the Likelihood of Open Positive Valence with Random Paradigm Predictor and Moderating Variables Education, Relationship, Religion and Political Orientation Included in the Model with Gender Controlled (N=59)

Predictors for Open Positive Affect	Model 1: (B)	Model 2: (B)	Model 3: (B)	Model 4: (B)	Model 5: (B)
Model					
R^2	143	.153	.160	.207	.101
Intercept	11.455	11.340	11.634	9.654	11.639
Paradigm					
Closed Centered	-.141*				
Random Centered	-.194**	-.108*	-.103**	-.147	-.143**
Cl_×_Ran	-.003				
Demographics					
Gender	380	.343	-.079	.177	-.054
Education		-.148			
Random_×_Educ		-.565			
Relation			.436		
Random_×_Relation			-.369**		
Religion				2.41**	
Random_×_Religion				.031	
Politic					.161
Random_×_Politic					.001

**.05<P≤10 **P≤0.05 ***P≤0.01*

With random paradigm included in the model and gender statistically controlled, results from this analysis revealed a significant main effect for religion on open positive emotions. These results suggest that, on average, participants with religious affiliation score 2.41 units higher on positive emotions when presented with open-type situations compared to participants with no religious affiliation.

Additionally, results also showed a significant interaction effect for random paradigm × relation on open positive affect (see Figure 5). In other words, participants with random paradigms who were also married or living with a significant other tended to respond to open-

type situations with less positive affect compared to participants with random paradigms who were single.

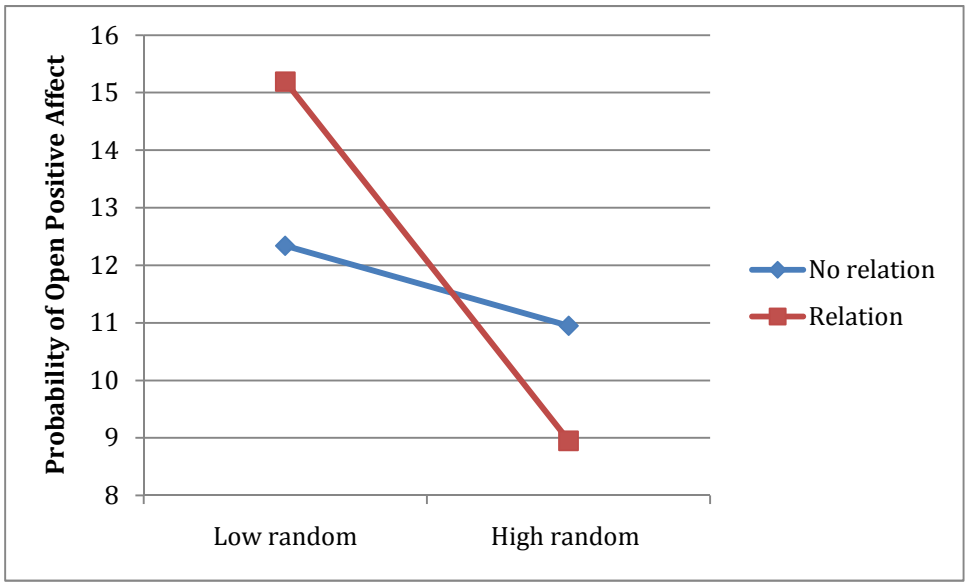


Figure 5
Interaction Effect Of Random Paradigm × Relationship on Open Positive Affect with Gender Controlled

Table 11
Exploratory Ordinary Least Squares (OLS) Regression Model of the Likelihood of Synchronous Positive Valence with Random Paradigm Predictor and Moderating Variables Education, Relationship, Religion and Political Orientation Included in the Model with Gender Controlled (N=59)

Predictors for Synchronous Positive Affect	Model 1: (B)	Model 2: (B)	Model 3: (B)	Model 4: (B)	Model 5: (B)
Model					
R^2	.153	.307	.132	.151	.128
Intercept	9.665	9.342	9.999	9.022	9.812
Paradigm					
Closed Centered	-.117				
Random Centered	-.134**	-.031	-.074	.055	-.085
Cl_×_Ran	-.004				
Demographics					
Gender	-1.514*	1.835**	1.049	1.299	1.176
Education		-.145			
Random_×_Educ		-.939**			
Relation			-.679		
Random_×_Relation			-.125		
Religion				.952	
Random_×_Religion				-.171	
Politic					-.300
Random_×_Politic					-.002

**.05<P≤10 **P≤0.05 ***P≤0.01*

With random paradigm and education included in the model, results revealed a significant main effect for gender on synchronous positive affect. These results suggest that, on average, females respond 1.84 units higher on positive affect when presented with synchronous situations compared to males.

Findings further revealed a significant interaction effect for random paradigm × education on synchronous positive affect. In other words, the effect of random paradigm on synchronous positive valence depended on respondents' education. Specifically, while random paradigm showed little effect on synchronous positive emotions for participants with less than four years of

college education, random paradigm showed a large negative association with synchronous positive emotions for participants with more than four years of college education.

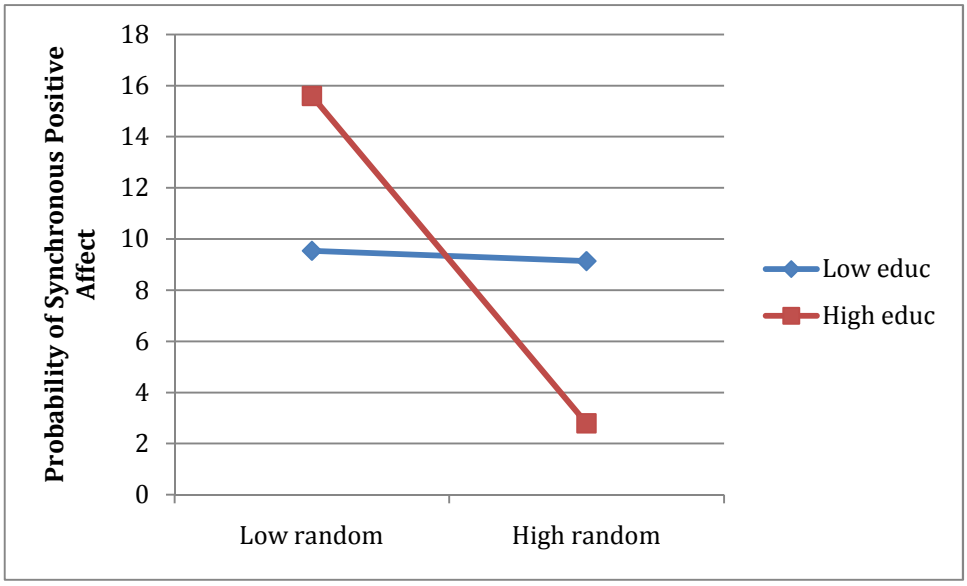


Figure 6
Interaction Effect Of Random Paradigm × Education on Synchronous Positive Affect with Gender Controlled

Additional OLS regression analysis was conducted in order to include open paradigm and synchronous paradigms as predictors in the model (see Table 13 below). Note that closed paradigm was excluded from this model in order to avoid collinearity. Closed paradigm was included in a separate model described in Table 16.

Table 12
Exploratory Ordinary Least Squares Regression (OLS) of the Likelihood of Closed Positive Valence, Random Positive Valence, Open Positive Valence, Synchronous Positive Valence, Closed Negative Valence, Random Negative Valence, Open Negative Valence and Synchronous Negative Valence with Random Paradigm, Open Paradigm and Synchronous Paradigm Predictors Included in the Model and Gender Controlled (N=59)

Predictors	Model 1: Closed Pos Val (B)	Model 2: Rand Pos Val (B)	Model 3: Open Pos Val (B)	Model 4: Synch Pos Val (B)	Model 5: Closed Neg Val (B)	Model 6: Rand Neg Val (B)	Model 7: Open Neg Val (B)	Model 8: Synch Neg Val (B)
Model								
R^2	.187	.259	.237	.309	.078	.064	.066	.052
Intercept	10.246	11.981	11.734	10.274	6.844	6.288	5.930	6.717
Paradigm								
Closed Centered								
Random Centered	-.061	.120	-.012	.003	.086	-.012	-.019	.018
Open Centered	-.049	.113	.141	.017	.135	.042	-.007	.066
Synch Centered	.083	.192**	.107	.234**	.136	.056	.017	.052
R_×_O	.006	.020**	.012	.013*	.001	-.006	-.005	-.001
R_×_S	.012	-.001	-.012	.009	-.008	-.005	.000	-.002
O_×_S	.018	-.018	.004	.007	.004	.008	.002	.012
Demo-graphics								
Gender	1.262	.638	.172	1.043	.481	.735	1.032	.226

**.05<P≤10 **P≤0.05 ***P≤0.01*

Findings from this analysis showed that, when controlling for other predictors in the model, each .01 unit increase in synchronous paradigm was associated with .192 unit increase in random positive affect. This means that individuals who scored high on synchronous paradigm responded with higher levels of positive emotions when they were presented with random-type situations compared to individuals who scored low on synchronous paradigm.

Results from this analysis also revealed a significant relationship between synchronous paradigm and synchronous positive emotions. Specifically, a .01 increase in synchronous paradigm was associated with a .234 unit increase in positive synchronous affect. In other words, individuals who scored high on synchronous paradigm responded with higher levels of positive emotions when they were presented with synchronous-type situations compared to individuals who scored low on synchronous paradigm.

Findings further showed a significant interaction effect for random paradigm × open paradigm on random positive affect (see Figure 7). This means that the effect of random paradigm on random positive emotions depended on respondents' scores on open paradigm. Specifically, with both random paradigm and open paradigm included in the model, low scores on random paradigm combined with high scores on open paradigm were associated with less positive emotions in response to random-type situations compared to low scores on random paradigm combined with low scores on open paradigm. However, open paradigm did not appear to affect the relationship between random paradigm and random positive affect when random scores were high. High random scores were associated with little change in emotions in response to random-type situations whether open paradigm scores were high or were low.

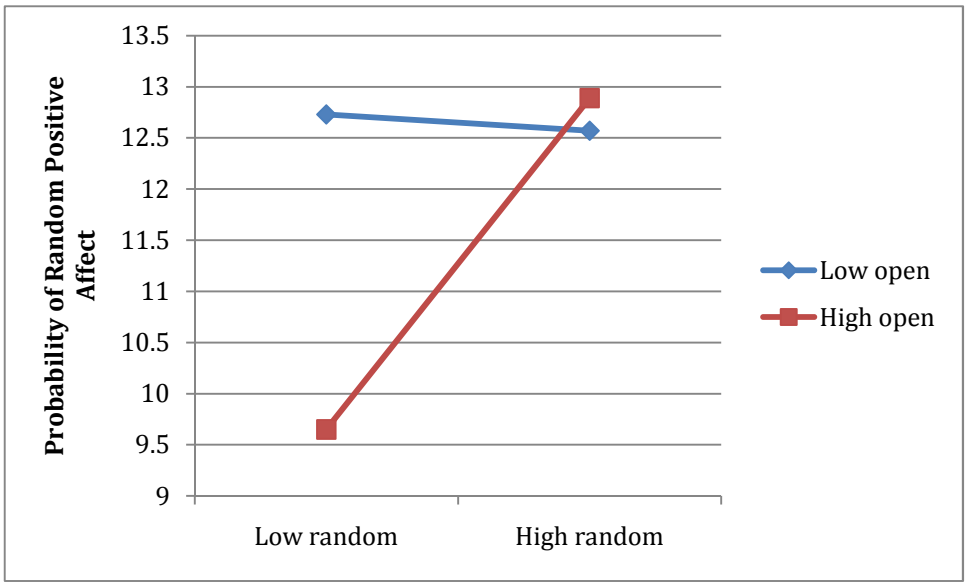


Figure 7
Interaction Effect of Random Paradigm × Open Paradigm on Random Positive Affect with Gender Controlled

In addition, findings revealed a near-significant interaction effect for random paradigm × open paradigm on synchronous positive affect. This finding suggests that the effect of random paradigm on synchronous positive valence depended on respondents' scores for open paradigm. Specifically, low random paradigm scores combined with low open paradigm scores tended to show high levels of synchronous positive valence and high random scores combined with high open scores also tended to show high levels of synchronous positive valence. In contrast, low random scores combined with high open scores tended to show low levels of synchronous positive affect and high random scores combined with low open scores also tended to show low levels of synchronous positive affect.

Following this phase of exploratory analysis, additional OLS regression was again conducted to test for moderating effects of education, relation, religion and political orientation on significant relationships identified in Table 13.

Table 13
Exploratory Ordinary Least Squares (OLS) Regression Model of the Likelihood of Random Positive Valence with Synchronous Paradigm Predictor and Moderating Variables Education, Relation, Religion and Political Orientation Included in the Model with Gender Controlled (N=59)

Predictors for Random Positive Affect	Model 1: (B)	Model 2: (B)	Model 3: (B)	Model 4: (B)	Model 5: (B)
Model					
R^2	.259	.096	.102	.093	.040
Intercept	11.981	11.782	12.375	10.928	12.069
Paradigm					
Closed Centered					
Random Centered	.120				
Open Centered	.113				
Synchronous Centered	.192**	.054	.099	.190	.091
R × O	.020**				
R × S	-.001				
O × S	-.018				
Demographics					
Gender	.638	.520	.073	.551	.206
Education		1.353			
Synch_×_Educ		.270			
Relation			-1.868*		
Synch_×_Relation			-.132		
Religion				1.287	
Synch_×_Religion				-.153	
Politic					.163
Synch_×_Politic					-.001

**.05<P≤10 **P≤0.05 ***P≤0.01*

With synchronous paradigm and relation included in the model, results from this analysis revealed a near-significant main effect for relation on random positive affect. These results suggest that respondents who were married or living with a significant other tended to respond with less positive affect in response to random situations when compared to respondents who were single.

Interestingly, with any moderating variable (education, relation, religion or political orientation) included in the model, the relationship between synchronous paradigm and random

positive affect was no longer significant. The effects of the moderating variables appeared to reduce the association between synchronous paradigm and random positive affect. No other main effects or interaction effects were identified in this analysis.

Table 14
Exploratory Ordinary Least Squares (OLS) Regression Model of the Likelihood of Synchronous Positive Valence with Synchronous Paradigm Predictor and Moderating Variables Education, Relation, Religion and Political Orientation Included in the Model with Gender Controlled (N=59)

Predictors for Synchronous Positive Affect	Model 1: (B)	Model 2: (B)	Model 3: (B)	Model 4: (B)	Model 5: (B)
Model					
R^2	.309	.352	.336	.279	.261
Intercept	10.297	9.329	9.857	9.023	9.777
Paradigm					
Closed Centered					
Random Centered	.003				
Open Centered	.001				
Synchronous Centered	.223**	.181**	.256**	.280**	.206***
R × O	.013*				
R × S	.009				
O × S	.007				
Demographics					
Gender	1.043	1.79**	1.45**	1.53**	.1.35*
Education		2.24**			
Synch_×_Educ		.227			
Relation			-.948		
Synch_×_Relation			-.415**		
Religion				.881	
Synch_×_Religion				-.107	
Politic					-.252
Synch_×_Politic					-.001

**.05<P≤10 **P≤0.05 ***P≤0.01*

Results from this analysis showed interesting effects for gender on synchronous positive affect when the moderating variables were included in the model. When synchronous paradigm

was included as a predictor along with education, relation or religion, then findings revealed a significant main effect for gender on synchronous positive affect. These results suggest that, when compared to males, females scored 1.79 units higher on positive affect in response to synchronous-type situations with education included in the model; females scored 1.45 units higher on synchronous positive affect with relation included in the model; and females scored 1.54 units higher on synchronous positive affect with religion included in the model. Additionally, findings also revealed a near-significant main effect for gender on synchronous positive emotions when synchronous paradigm and political orientation were included in the model. It is interesting to note that, without the inclusion of the moderating variables, results did not indicate a main effect for gender on synchronous positive affect.

In addition to these findings, results also revealed a significant main effect for education on synchronous positive affect. This means that participants with a four-year college degree or higher scored 2.24 units higher on positive affect when presented with synchronous situations compared to participants who had less than a four-year college degree.

Findings further showed a significant interaction effect for synchronous paradigm × relation. This means that the effect of synchronous paradigm on synchronous positive emotions depended on the respondents' relationship status. Specifically, while synchronous paradigm showed a slight negative effect on positive emotional responses to synchronous-type situations for participants who were married or living with a significant other, synchronous paradigm was associated with increased levels of synchronous positive emotional responses for participants who were single (see Figure 8 below).

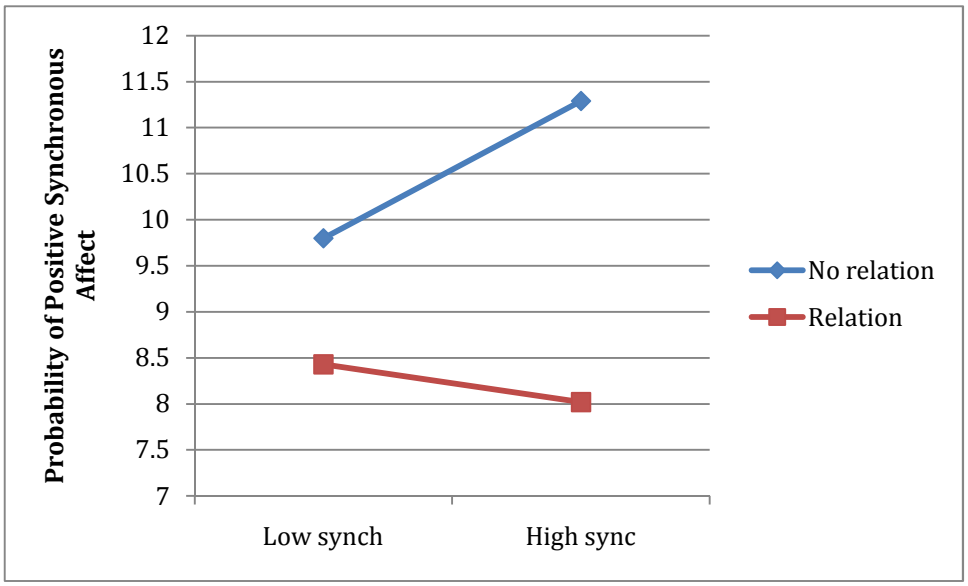


Figure 8
Interaction Effect of Synchronous Paradigm × Relation on Synchronous Positive Affect with Gender Controlled

Additional OLS analysis was conducted to include closed, open paradigm and synchronous paradigms as predictors in the model with random paradigm excluded in order to avoid collinearity. All other outcome variables remained the same for this exploratory analysis.

Table 15

Exploratory Ordinary Least Squares (OLS) Regression of the Likelihood of Closed Positive Valence, Random Positive Valence, Open Positive Valence, Synchronous Positive Valence, Closed Negative Valence, Random Negative Valence, Open Negative Valence and Synchronous Negative Valence with Closed Paradigm, Open Paradigm and Synchronous Paradigm Predictors Included in the Model and Gender Controlled (N=59)

Predictors	Model 1: Closed Pos Val (B)	Model 2: Rand Pos Val (B)	Model 3: Open Pos Val (B)	Model 4: Synch Pos Val (B)	Model 5: Closed Neg Val (B)	Model 6: Rand Neg Val (B)	Model 7: Open Neg Val (B)	Model 8: Synch Neg Val (B)
Model								
R^2	.193	.158	.195	.271	l076	.069	.073	.062
Intercept	10.109	11.651	11.803	9.911	6.967	6.495	6.027	6.768
Paradigm								
Closed Centered	.090	-.073	.034	.030	-.084	.009	.021	-.012
Random Centered								
Open Centered	.049	.063	.210**	.057	.051	.022	-.024	.034
Synch Centered	.144*	.105	.136*	.251***	.051	.057	.024	.031
C_×_O	.012	-.005	.003	-.002	-.001	-.001	-.002	-.002
C_×_S	.010	.008	.012	.001	.006	.008	.008	.006
O_×_S	.015	-.014	.014	.004	.008	.009	.001	.013
Demo-graphics	1.137	.907	.428	1.137	.564	.732	1.003	.252
Gender								

**.05<P≤10 **P≤0.05 ***P≤0.01*

When controlling for other predictors in the model, results from this analysis showed a significant main effect for open paradigm on open positive affect. Specifically, each .01 unit increase in open paradigm was associated with .210 unit increase in open positive affect. This means that individuals who scored high on open paradigm responded with higher levels of

positive emotions when they were presented with open-type situations compared to individuals who scored low on open paradigm.

Findings also revealed a significant main effect for synchronous paradigm on synchronous positive affect. Each .01 unit increase in synchronous paradigm was associated with .251 unit increase in synchronous positive emotions. Individuals who scored high on synchronous paradigm also reported more positive emotions in response to synchronous-type situations compared to participants who scored low on synchronous paradigm. Since moderating effects for this relationship were previously explored in Table 15, the moderating analysis will not be repeated here.

Additionally, results also showed a near-significant main effect for synchronous paradigm on closed positive affect. In other words, participants who scored high on synchronous paradigm tended to respond to closed-type situations with more positive emotions compared to participants who scored low on synchronous paradigm.

Surprisingly, findings also revealed a near-significant main effect for synchronous paradigm on open positive affect. This means that, with closed, open paradigm and synchronous paradigms included in the model, participants who scored high on synchronous paradigm tended to respond to open-type situations with more positive emotions compared to individuals who scored low on synchronous paradigm. Since synchronous paradigm and open paradigm represent (respectively) cohesive relationships and relationships characterized by interpersonal distance, this finding was unexpected.

Following this exploratory analysis, additional OLS regression was conducted to test for moderating effects of education, relation, religion and political orientation on significant relationships identified in Table 15.

Table 16
Exploratory Ordinary Least Squares (OLS) Regression Model of the Likelihood of Open Positive Valence with Open Paradigm Predictor and Moderating Variables Education, Relation, Religion and Political Orientation Included in the Model with Gender Controlled (N=59)

Predictors for Open Positive Affect	Model 1: (B)	Model 2: (B)	Model 3: (B)	Model 4: (B)	Model 5: (B)
Model					
R^2	.195	.145	.161	.216	.117
Intercept	11.803	11.078	11.420	9.498	11.401
Paradigm					
Closed Centered	.034				
Random Centered					
Open Centered	.210**	.161**	.104	.149	.158**
Synchronous Centered	.136**				
C × O	.003				
C × S	.012				
O × S	.014				
Demographics					
Gender	.428	1.09	.708	.883	.675
Education		1.55			
Open_×_Educ		-.106			
Relation			-.336		
Open_×_Relation			.267*		
Religion				2.36**	
Open_×_Religion				-.024	
Politic					.145
Open_×_Politic					-.013

**.05<P≤10 **P≤0.05 ***P≤0.01*

With open paradigm included in the model and gender statistically controlled, results from this analysis showed a significant main effect for religion on open positive affect. These results suggest that, on average, participants with a religious affiliation scored 2.36 units higher on positive affect when presented with open-type situations compared to participants with no religious affiliation. This supports findings reported in Table 10 with random paradigm included as a predictor variable.

Additionally, results also showed a near-significant moderating effect for open paradigm × relation on open positive emotions. In other words, the effect of open paradigm on open positive emotions tended to depend on the respondent's relationship status. Specifically, while open paradigm appeared to have little effect on positive emotional responses to open-type situations for people who were single, open paradigm had near-significant association with open positive emotions for people who were married or living with a significant other.

Phase III/IV Combined Analysis

Phase III/IV combined analyses were based on the same H_{01} hypothesis that was tested in the Phase IV analysis, *among participants who complete the revised RPAS, there is no relationship between participants' relational paradigmatic orientation and the emotions they express in response to each paradigm statement.* Hypotheses H_{02}, H_{03}, H_{04} and H_{05} were also included in this phase of analysis:

H_{02} *Among participants who complete the revised RPAS, the participants' level of education does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{03} *Among participants who complete the revised RPAS, the participants' relationship status does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{04} *Among participants who complete the revised RPAS, the participants' religious status does not affect the relationship between their relational*

paradigmatic orientation and the emotions they express in response to each paradigm statement

H_{05} *Among participants who complete the revised RPAS, the participants' political orientation does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

Univariate Analyses for Phase III/IV Combined

Analysis of data for this phase of the study was conducted using Mac OS × version 16.0 SPSS statistical analysis software (SPSS Inc, Chicago, IL). This stage consisted of univariate analysis with descriptive statistics of Phase III/IV data combined. Categorical variables included gender, education, relationship status (relation) and religious status (religion). As with the Phase IV analysis, frequency distributions and percentages for Phase III/Phase IV combined variables were reviewed using bar charts and graphs. Review of the charts and graphs for gender revealed data that were well suited for further analysis. However, review of marital status, education and religion again showed several categories that contained fewer than three data points. In order to include these variables in this phase of analysis, categories for marital status, education, and religion were collapsed as they were for analysis in Phase IV: categories in "marital status' were collapsed to include "married or living with a significant other" and "single or divorced, not living with a significant other"; categories for "education" were collapsed to include "less than a four-year degree" and "four-year degree and higher" and categories for "religion" were collapsed to include "religious affiliation" and "no religious affiliation" (see Table 17).

Table 17
Descriptive Statistics for Categorical Data in Phase III/IV Combined

	Category	*Frequency*	*Percent*	*Valid Percent*
Gender	Female	123	61.9	61.9
	Male	77	38.1	38.1
Relationship Status	Married or Living with Significant Other	32	15.8	16.0
	Single or Divorced, Not Living with Significant Other	168	83.2	84.0
	Missing	2	1.0	
Education	Less than Four Year Degree	163	80.7	81.5
	Four Year Degree or Higher	37	18.5	18.5
	Missing	2	1.0	
Religion	Religious Affiliation	157	77.7	78.9
	No Religious Affiliation	42	20.8	21.1
	Missing	3	1.5	

Descriptive statistics for continuous variables were calculated and reported as mean, standard deviation, minimum value and maximum value. Continuous variables for the study included age, political orientation, closed paradigm, random paradigm, open paradigm and synchronous paradigm (see Table 18 below). Age values ranged from 20 to 51 (M = 22.33, SD = 4.054), political orientation scores ranged from 0 to 4 (M = 1.74, SD = 1.038), closed paradigm scores ranged from 0.07 to 0.41 (M = .2157, SD = .0618), random paradigm scores ranged from 0.13 to 0.52 (M = .2843, SD = .0662), open paradigm scores ranged from 0.11 to 0.49 (M = .2891, SD = .0638) and synchronous paradigm scores ranged from 0.08 to 0.36 (M = .2108, SD = .0601).

Table 18
Descriptive Statistics for Interval Data in Phase III/IV Combined (N=202)

	Mean	*SD*	*Min*	*Max*
Demographics				
Age	22.33	4.054	20	51
Political orientation	1.74	1.038	0	4
Paradigms				
Closed	.2157	.0618	0.07	0.41
Random	.2843	.0662	0.13	0.52
Open	.2891	.0637	0.11	0.49
Synchronous	.2108	.0601	0.08	0.36

Based upon the problematic distribution of age in Phase IV analysis, review of frequency distribution for age was also assessed prior to Phase III/IV combined analysis. Review of the data revealed skewness in distribution greater than four. Box and whisker plots were generated in order to identify outliers and these values were checked for accuracy against original data. These data were transformed using natural log, square root and exponent transformations to improve symmetry, but transformation of data was not successful in compensating for the skew. The data indicated that a high number of participants (181 out of 202) reported ages between 20 – 23 years. The resulting bias rendered the data invalid for use as a moderator variable and age was omitted from further Phase III/IV combined analysis.

Bivariate Analysis for Phase III/IV Combined

Bivariate analysis was conducted to test for significant relationships between continuous variables in Phase III/IV combined. Specifically, analyses were performed using Spearman's rho correlation to examine relationships between closed paradigm, random paradigm, open paradigm, synchronous paradigm and political orientation.

Correlates for Closed Paradigm, Random Paradigm, Open Paradigm, Synchronous Paradigm and Political Orientation

As previously described in the Phase IV analysis, researchers predicted that analysis for bivariate correlation would reveal negative correlation between individuals and groups with opposing worldviews. Table 19 presents findings from bivariate correlation analysis of Phase III/IV combined data.

Table 19
Correlation Between Closed, Random, Open and Synchronous Paradigm Scores and Political Orientation for Phase III/IV Combined Using Pearson's (N =202)

Correlations			*Closed*	*Rand*	*Open*	*Synch*	*Politic*
Spear-	*Closed*	Correlation Coeff.	1	-.574***	-.380***	.049	.096
man's		Sig. (2-tailed)		.000	.000	.492	.176
rho	*Rand*	Correlation Coeff.	-.574***	1	-.064	-.398***	-.112
		Sig. (2-tailed)	.000		.366	.000	.117
	Open	Correlation Coeff.	-.380***	-.064	1	-.552***	-.012
		Sig. (2-tailed)	.000	.366		.000	.870
	Synch	Correlation Coeff.	.049	-.398***	-.552***	1	.039
		Sig. (2-tailed)	.492	.000	.000		.584
	Politic	Correlation Coeff.	.096	-.112	-.012	.039	1
		Sig. (2-tailed)	.176	.117	.870	.584	

**.05<P≤10 **P≤0.05 ***P≤0.01*

Results of the analyses showed significant negative correlation between several paradigms: closed paradigm and random paradigm; closed paradigm and open paradigm; random paradigm and synchronous paradigm and open paradigm and synchronous paradigm. This finding suggests that, on average, individuals who scored high on closed paradigm also scored low on random paradigm and low on open paradigm; individuals who scored high on random paradigm also scored low on closed paradigm and low on synchronous paradigm. Individuals who scored high on open paradigm also scored low on closed paradigm and low on synchronous

paradigm and individuals who scored high on synchronous paradigm also scored low on random paradigm and low on open paradigm.

Findings from the analysis showed no significant correlation between political orientation and closed paradigm, random paradigm, open paradigm or synchronous paradigm. This supports similar findings from the Phase IV analysis.

Multivariate Analysis for Phase III/IV Combined

Scores for each paradigm reflected the sum of corresponding paradigm complex coefficient values across Q1, Q2, Q3 and Q4 (see appendix K):

Closed paradigm score = Q1bi + Q2bi+ Q3bi + Q4ai

Random paradigm score = Q1ci + Q2ci+ Q3ai + Q4bi

Open paradigm score = Q1di + Q2ai+ Q3ci + Q4ci

Synchronous paradigm score = Q1ai + Q2di+ Q3di + Q4di

Scores for emotions reflected the sum of indicator variables for each category of emotion across Q1, Q2, Q3 and Q4 (see Appendix M):

Closed pleasure score = Q1b + Q2b + Q3b + Q4a

Random pleasure score = Q1c + Q2c+ Q3a + Q4b

Open pleasure score = Q1d + Q2a+ Q3c + Q4c

Synchronous pleasure score = Q1a + Q2d+ Q3d + Q4d

Emotions: Valence and Arousal

Ordinal regression models of emotions were tested separately for valence (pleasure vs. displeasure) and arousal (activated vs. deactivated) using closed paradigm and random paradigm as primary predictors in order to answer the research questions: 1. *Is there a relationship between closed paradigm vs. random paradigm and pleasure emotions vs. displeasure emotions? 2. Is*

there a relationship between closed paradigm vs. random paradigm and activated emotions vs. deactivated emotions? Separate ordinal regression analyses were run for each outcome variable; random valence, closed valence, random arousal and closed arousal using primary predictors closed paradigm and random paradigm (see Table 20).

Table 20
Exploratory Ordinal Regression of the Likelihood of Random Valence, Closed Valence, Random Arousal and Closed Arousal Responses with Closed Paradigm and Random Paradigm Predictors Included in the Model and Gender Controlled (N=202)

Predictors		Model 1: Closed Valence Odds Ratio	Model 2: Random Valence Odds Ratio	Model 3: Closed Arousal Odds Ratio	Model 4: Random Arousal Odds Ratio
Paradigm					
	Closed	1.0356	0.9616	0.9771	0.9802
	Random	1.0450*	1.0587**	0.9920	1.0429*
	Closed × Random	1.0010	1.0020	1.0020	0.9990
Demographics					
	Gender	0.9724	0.8261	1.0534	1.241

**.05<P≤10 **P≤0.05 ***P≤0.01*

Results from this analysis showed a main effect of random paradigm on random valence. With gender statistically controlled, findings revealed that scoring high on random paradigm greatly increased the probability of responding to random situations with pleasure emotions. Results indicated that for each .01 unit increase in random paradigm, the expected odds of scoring in the next higher category of pleasure emotions in response to random situations increased by a factor of 1.06.

Surprisingly, findings also revealed a near-significant main effect for random paradigm on closed positive emotions. This reflects a trend among participants who scored higher on

random paradigm to also respond to closed type situations with higher scores for positive emotions.

Findings further showed a near-significant main effect for random paradigm on random arousal. This result suggested that the higher participants scored on random paradigm, the greater the probability that they would also score higher on active emotions vs. deactive emotions.

In order to test hypotheses $H_{02,}$ H_{03} and H_{04} (below), additional ordinal regression analyses were used to test for moderating effects of education, relation, religion and political orientation on significant relationships identified in Table 20. Results from this analysis are described in Table 21.

H_{02} *Among participants who complete the revised RPAS, the participants' level of education does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{03} *Among participants who complete the revised RPAS, the participants' relationship status does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{04} *Among participants who complete the revised RPAS, the participants' religious status does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{05} *Among participants who complete the revised RPAS, the participants' political orientation does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

Table 21
Exploratory Ordinal Regression Model of the Likelihood of Random Valence with Random Paradigm Predictor and Moderating Variables Education, Relation, Religion and Political Orientation Included in the Model with Gender Controlled (N=202)

Predictors for Random Valence	Model 1: (Odds Ratio)	Model 2: (Odds Ratio)	Model 3: (Odds Ratio)	Model 4: (Odds Ratio)	Model 5: (Odds Ratio)
Paradigm					
Closed Centered	0.9616				
Random Centered	1.0587**	1.0800**	1.0811***	1.0020**	1.0887***
Cl_×_Ran	1.0020				
Demographics					
Gender	0.8261	0.7780	0.8869	0.8932	0.8976
Education		0.6151			
Random_×_Educ		1.0060			
Relation			1.8478*		
Random_×_Relation			0.9980		
Religion				1.1514	
Random_×_Religion				0.9231	
Politic					0.9831
Random_×_Politic					1.0305
**.05<P≤10 **P≤0.05 ***P≤0.01*					

With education, relation, religion and political orientation included in the model, results showed a near-significant main effect for relation on random positive valence. In other words, there was a trend among participants who were married or living with a significant other to score higher on positive valence when presented with random-type situations compared to participants who were single. No other main effects or interaction effects were identified in this analysis.

Results from this analysis raised further questions about potential relationships between closed paradigm and random paradigm and open valence, synchronous valence, open arousal and synchronous arousal. Based upon the exploratory design of this study, additional analyses were conducted on the data to explore these relationships. Table 22 (below) summarizes the findings.

Table 22
Exploratory Ordinal Regression of the Likelihood of Open Valence, Synchronous Valence, Open Arousal and Synchronous Arousal Responses with Closed Paradigm and Random Paradigm Predictors Included in the Models and Gender Controlled (N=202)

Predictors		Model 1: Open Valence Odds Ratio	Model 2: Synchronous Valence Odds Ratio	Model 3: Open Arousal Odds Ratio	Model 4: Synchronous Arousal Odds Ratio
Paradigm					
	Closed	0.9213**	0.9503**	0.9656	0.9930
	Random	0.9541*	0.9871	0.9940	0.9930
	C × R	1.0070**	0.9990	0.9960	1.0030
Demographics					
	Gender	2.0751**	0.6637	1.0253	1.3418

**.05<P≤10 **P≤0.05 ***P≤0.01*

Findings from this analysis showed a main effect for closed paradigm on open valence. Specifically, results indicated that, when controlling for other predictors in the model, scoring high on closed paradigm greatly decreased the probability of responding to open-type situations with pleasure emotions. Results indicated that for each .01 unit increase in closed paradigm, the expected odds of scoring in the next lower category of pleasure emotions in response to open-type situations increased by a factor of 0.92.

Findings also showed a main effect for closed paradigm on synchronous valence. Results indicated that scoring high on closed paradigm greatly decreased the probability of responding to synchronous-type situations with pleasure emotions. Findings showed that for each .01 unit

increase in closed paradigm, the expected odds of scoring in the next lower category of pleasure emotions in response to synchronous-type situations increased by a factor of 0.95.

Additional findings revealed a significant main effect for gender on open positive emotions. This result indicates that, when compared to males, female participants showed 2.08 higher expected odds of scoring in the next higher category for pleasure emotions in response to open-type situations.

Results also showed a near-significant main effect for random paradigm on open positive emotions. This finding reflected a trend toward greater probability among participants who scored high on random paradigm to also respond to open-type situations with less positive emotions compared to participants who scored low on random paradigm.

In addition, findings revealed a significant interaction effect for closed paradigm × random paradigm on open positive valence. Participants who scored low on closed paradigm and low on random paradigm were more likely to report more positive emotions when presented with open-type situations compared to participants who scored high on closed paradigm and high on random paradigm. Participants who scored low on both closed paradigm and random paradigm revealed the highest expected odds of responding with more positive emotions in response to open-type situations. As scores increased for closed paradigm and random paradigm, the expected odds of scoring in a higher category of positive emotions in response to open-type situations decreased. Participants who scored high on closed paradigm and high on random paradigm revealed the highest expected odds of scoring in a low category for positive emotions in response to open-type situations.

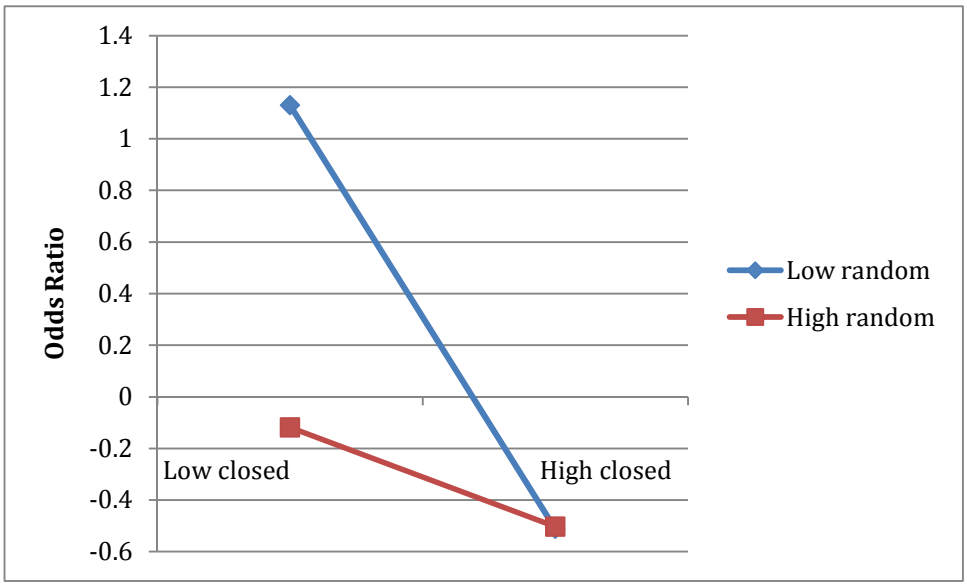


Figure 9
Interaction Effect of Closed Paradigm × Random Paradigm on Open Valence with Gender Controlled

No further main effects or interaction effects were identified from this analysis. However, in order to test for moderating effects of education, relation, religion and political orientation, additional analyses were conducted to test the effects of these variables on significant relationships identified in Table 22 (see Table 23 and Table 24 below).

Table 23
Exploratory Ordinal Regression Model of the Likelihood of Open Valence with Closed Paradigm Predictor and Moderating Variables Education, Relation, Religion and Political Orientation Included in the Model with Gender Controlled (N=202)

Predictors for Open Valence	Model 1: (Odds Ratio)	Model 2: (Odds Ratio)	Model 3: (Odds Ratio)	Model 4: (Odds Ratio)	Model 5: (Odds Ratio)
Paradigm					
Closed Centered	0.9213**	0.9268**	0.9296**	0.9418	0.9277***
Random Centered	0.9541*				
C × R	1.0070**				
Demographics					
Gender	2.0751**	1.6064	1.6586*	1.6323*	1.7402**
Education		1.1096			
Closed_×_Educ		1.0608			
Relation			1.0629		
Closed_×_Relation			1.0640		
Religion				0.6434	
Closed_×_Religion				0.9871	
Politic					1.2337
Closed_×_Politic					0.9763

**.05<P≤10 **P≤0.05 ***P≤0.01*

Results from this analysis showed a main effect for gender on open positive affect when political orientation was included in the model. This finding indicates that, when compared to males, the expected odds for female participants to score in the next higher category of positive emotions in response to open-type situations increased by a factor of 1.74. Additionally, findings also revealed a near-significant main effect for gender on open positive emotions when relation or religion was included in the model. Interestingly, when education was included in the model the effect of gender was not significant. This raises the question about whether higher levels of education cancel the effect of gender on open positive valence. No additional main effects or interaction effects were revealed in this analysis.

Table 24
Exploratory Ordinal Regression Model of the Likelihood of Synchronous Valence with Closed Paradigm Predictor and Moderating Variables Education, Relation, Religion and Political Orientation Included in the Model with Gender Controlled (N=202)

Predictors for Open Valence	Model 1: (Odds Ratio)	Model 2: (Odds Ratio)	Model 3: (Odds Ratio)	Model 4: (Odds Ratio)	Model 5: (Odds Ratio)
Paradigm					
Closed Centered	0.9503**	0.9474**	0.9656	0.9352	0.9608*
Random Centered	0.9871				
Cl_×_Ran	0.9990				
Demographics					
Gender	0.6637	0.6163*	0.6730	0.6650	0.6998
Education		1.0576			
Closed_×_Educ		1.0704			
Relation			1.2080		
Closed_×_Relation			0.9570		
Religion				0.6730	
Closed_×_Religion				1.0284	
Politic					1.0597
Closed_×_Politic					0.9920

**.05<P≤10 **P≤0.05 ***P≤0.01*

With the moderating variable education included in the model, results from this analysis showed a near-significant main effect for gender on synchronous positive valence. In other words, when compared to males, there was a trend among female participants to score higher on positive valence in response to synchronous-type situations. No other main effects or interaction effects were identified in this analysis.

Based upon the exploratory design of this study, additional ordinal regression analysis was conducted in order to include open paradigm and synchronous paradigm as predictors in the model (see Table 25). Note that closed paradigm is excluded from this model in order to avoid collinearity. Closed paradigm is included in a separate model described in Table 30.

Table 25

Exploratory Multiple Regression of the Likelihood of Closed Valence, Random Valence, Open Valence, Synchronous Valence, Closed Arousal, Random Arousal, Open Arousal and Synchronous Arousal Responses with Random Paradigm, Open Paradigm and Synchronous Paradigm Predictors Included in the Models and Gender Controlled (N=202)

Predictors	Model 1: Closed Val (Odds Ratio)	Model 2: Rand Val (Odds Ratio)	Model 3: Open Val (Odds Ratio)	Model 4: Synch Val (Odds Ratio)	Model 5: Closed Arousal (Odds Ratio)	Model 6: Rand Arousal (Odds Ratio)	Model 7: Open Arousal (Odds Ratio)	Model 8: Synch Arousal (Odds Ratio)
Paradigm								
Closed Centered								
Random Centered	1.0121	1.1129***	1.0294	1.0450*	1.0121	1.0513**	1.0010	0.9980
Open Centered	0.9646	1.1119**	1.0747***	1.0356	1.0121	1.0243	1.0419	1.0111
Synch Centered	0.9675	1.0315	1.0608*	1.0757**	0.9930*	0.9900	0.9714	1.0141
R_×_O	0.9970	1.0030	0.9960	0.9990	0.9940**	0.9980	0.9960	0.9990
R_×_S	1.0040	1.0050	0.9980	1.0010	0.9990	0.9980	0.9980	1
O_×_S	0.9990	1.0050*	1.0131***	0.9970	0.9970	1	0.9960	0.9980
Demo-graphics								
Gender	0.9474	0.7641	1.433	1.3785	0.9503	1.1019	0.8869	1.3165

*.05<P≤10 **P≤0.05 ***P≤0.01

With random paradigm, open paradigm and synchronous paradigms included as predictors in the model, findings revealed numerous effects. Results showed a significant main effect for random paradigm on random valence. Findings indicated that for each .01 unit increase in random paradigm, the expected odds of scoring in the next higher category of pleasure emotions in response to random-type situations increased by a factor of 1.11. These results supported similar findings described in Table 21 that showed each .01 unit increase in random paradigm increased the expected odds of random pleasure by a factor of 1.06 when closed paradigm and random paradigm were assigned as predictors.

Findings also showed a significant main effect for synchronous paradigm on synchronous valence. Results indicated that for each .01 increase in synchronous paradigm, the expected odds of scoring in the next higher category for positive emotions in response to synchronous-type situations increased by a factor of 1.08.

Interestingly, results also revealed a main effect for open paradigm on random valence. Results showed that for each .01 unit increase in open paradigm, the expected odds of scoring in the next higher category of pleasure emotions in response to random-type situations increased by a factor of 1.11.

Results further revealed a main effect for open paradigm on open valence. Specifically, findings showed that for each .01 unit increase in open paradigm, the expected odds of scoring in the next higher category of positive valence in response to open-type situations increased by a factor of 1.07.

Similarly, findings also showed a significant main effect for random paradigm on random arousal. This means that for each .01 unit increase in random paradigm, the expected odds of scoring in the next highest category of arousal in response to random-type situations increased by a factor of 1.05.

Findings also showed a near-significant main effect for synchronous paradigm on open valence. This indicates a trend among participants who scored high on synchronous paradigm to also score high on positive emotions in response to open-type situations. Similarly, results revealed a near-significant effect of random paradigm on synchronous positive valence. This finding suggests a trend among participants who scored high on random paradigm to also score high on positive emotions in response to synchronous-type situations.

In contrast, findings revealed a near-significant negative effect for synchronous paradigm on closed arousal. In other words, results showed that participants who scored high on synchronous paradigm tended to score low on arousal in response to closed-type situations. This was the only negative effect in the model that approached significance.

For interaction effects, results showed a near-significant effect for open paradigm × synchronous paradigm on random valence. This means that participant scores on open paradigm tended to affect the relationship between scores on synchronous paradigm and random positive valence. For participants who scored low on open paradigm, the relationship between synchronous paradigm and random positive affect did not appear to change. However, for participants who scored high on open paradigm, results showed a tendency for low synchronous scores to be associated with low levels of positive emotions in response to random-type situations and high synchronous scores to be associated with high levels of positive emotions in response to random-type situations.

Results further revealed a significant interaction effect for random paradigm × open paradigm on closed arousal (see Figure 10). This means the relationship between random paradigm and closed arousal depended on respondents' scores on open paradigm. Specifically, for participants who scored low on open paradigm, high scores on random paradigm were associated with high scores on arousal in response to closed-type situations. However, for participants who scored high on open paradigm, low scores on random were also associated with high scores on closed arousal. Interestingly, moderate scores on both random paradigm and open paradigm seemed to cancel out the interaction effect. This combination of scores produced a nearly neutral effect on arousal in response to closed-type situations.

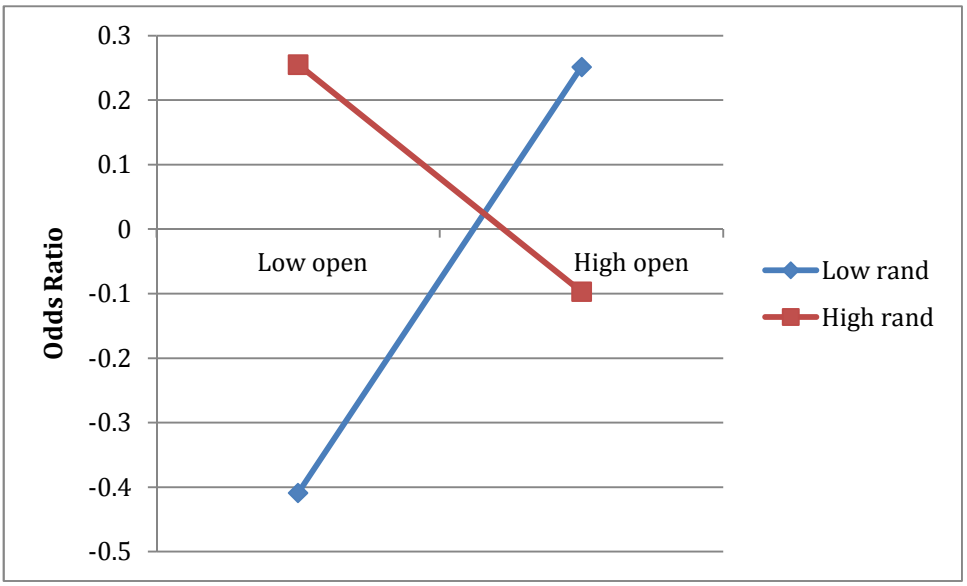


Figure 10
Interaction Effect of Random Paradigm × Open Paradigm on Closed Arousal with Gender Controlled

In addition, findings also revealed a significant interaction effect for open paradigm × synchronous paradigm on open valence (see Figure 11). This finding indicates that the effect of open paradigm on open positive valence depended on respondents' scores for synchronous paradigm. Specifically, while open paradigm was associated with a moderate increase on open positive valence for participants who scored low on synchronous paradigm, results showed a much stronger association between open paradigm and open positive valence for participants who scored high on synchronous paradigm.

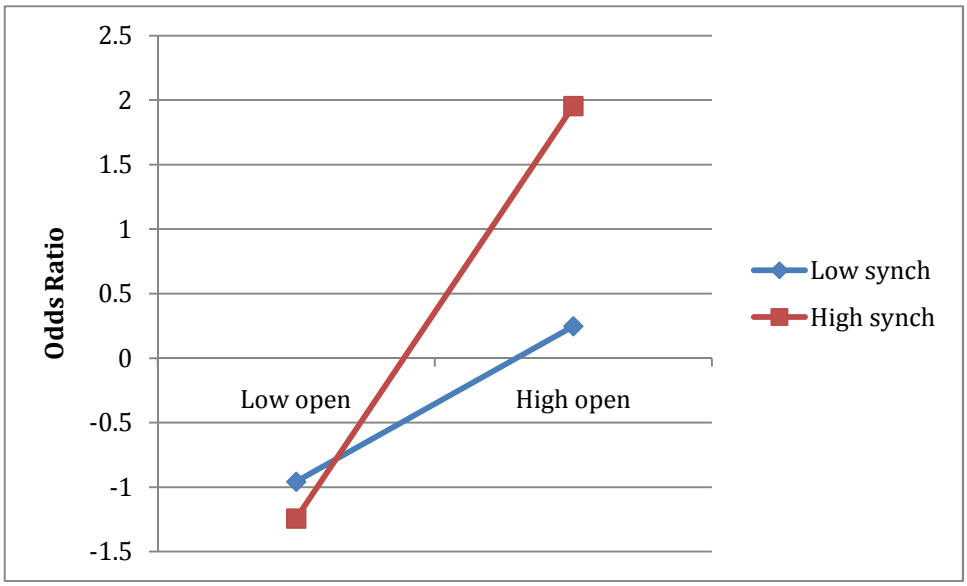


Figure 11
Interaction Effect of Open Paradigm × Synchronous Paradigm on Open Valence with Gender Controlled

In order to test for moderating effects of education, relation, religion and political orientation, additional analyses were conducted on significant relationships identified in Table 25 (see Table 26, Table 27, Table 28 and Table 29 below).

Table 26
Exploratory Ordinal Regression Model of the Likelihood of Random Valence with Open Paradigm Predictor and Moderating Variables Education, Relation, Religion and Political Orientation Included in the Model with Gender Controlled (N=202)

Predictors for Random Valence	Model 1: (Odds Ratio)	Model 2: (Odds Ratio)	Model 3: (Odds Ratio)	Model 4: (Odds Ratio)	Model 5: (Odds Ratio)
Paradigm					
Closed Centered					
Random Centered	1.1129***				
Open Centered	1.1119**	1.0243	1.0253	0.9418	1.0243
Synch Centered	1.0315				
R × O	1.0030				
R × S	1.0050				
O × S	1.0050*				
Demographics					
Gender	0.7641	0.9231	1.0263	0.8278	0.9920
Education		0.6991			
Open_×_Educ		0.9940			
Relation			1.8701*		
Open_×_Relation			0.9861		
Religion				1.0481	
Open_×_Religion				1.0640**	
Politic					0.9436
Open_×_Politic					1.0202

**.05<P≤10 **P≤0.05 ***P≤0.01*

With open paradigm included as a predictor in the model, findings revealed a near-significant main effect for relation on random valence. This means that, on average, participants who were married or living with a significant other tended to score in a higher category of positive emotions in response to random-type situations compared to participants who were single.

In addition, findings also revealed a significant interaction effect for open paradigm × religion on random valence (see Figure 12). This finding indicates that the effect of open paradigm on random positive valence depended on respondents' status regarding religious affiliation. Specifically, while open paradigm was associated with a moderate increase in random

positive valence for participants who had no affiliation with a religious group, results showed a large increase in random positive valence for participants who reported affiliation with a religious group.

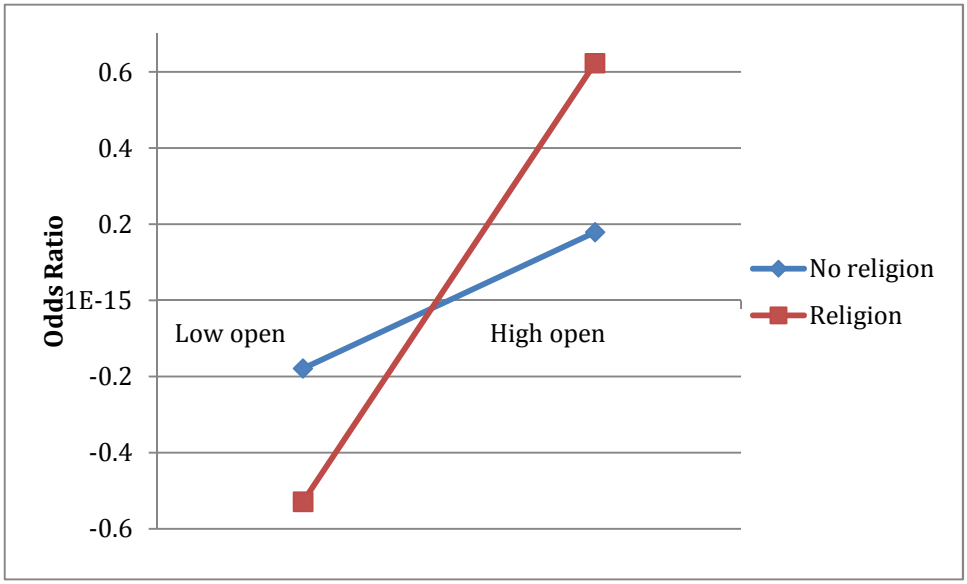


Figure 12
Interaction effect of Open Paradigm × Religion on Random Valence with Gender Controlled

Table 27

Exploratory Ordinal Regression Model of the Likelihood of Open Valence with Open Paradigm Predictor and Moderating Variables Education, Relation, Religion and Political Orientation Included in the Model with Gender Controlled (N=202)

Predictors for Open Valence	Model 1: (Odds Ratio)	Model 2: (Odds Ratio)	Model 3: (Odds Ratio)	Model 4: (Odds Ratio)	Model 5: (Odds Ratio)
Paradigm					
Closed Centered					
Random Centered	1.0294				
Open Centered	1.0747***	1.1354***	1.1503***	1.1309***	1.1264
Synch Centered	1.0608*				
R × O	0.9960				
R × S	0.9980				
O × S	1.0131***				
Demographics					
Gender	1.433	1.4477	1.3840	1.3675	1.5296
Education		1.1653			
Open_×_Educ		0.9743			
Relation			1.0536		
Open_×_Relation			0.9003*		
Religion				0.6970	
Open_×_Religion				1.0233	
Politic					0.9418
Open_×_Politic					0.9990

**.05<P≤10 **P≤0.05 ***P≤0.01*

With the moderating variable relation included in the model, results showed a near-significant interaction effect for open paradigm × relation on open valence. In other words, the relationship between open paradigm and open valence depended on whether the participant was married (or living with a significant other) or single. Findings showed a trend among participants who scored high on open paradigm and were married or living with a significant other to respond to open-type situations with more positive emotions compared to participants who scored high on open paradigm and were single. No additional main effects or interaction effects were identified from this analysis.

Table 28

Exploratory Ordinal Regression Model of the Likelihood of Synchronous Valence with Synchronous Paradigm Predictor and Moderating Variables Education, Relation, Religion and Political Orientation Included in the Model with Gender Controlled (N=202)

Predictors for Synchronous Valence	Model 1: (Odds Ratio)	Model 2: (Odds Ratio)	Model 3: (Odds Ratio)	Model 4: (Odds Ratio)	Model 5: (Odds Ratio)
Paradigm					
Closed Centered					
Random Centered	1.0450*				
Open Centered	1.0356				
Synch Centered	1.0757**	1.0346	1.0263	0.9900	1.0212
R × O	0.9990				
R × S	1.0010				
O × S	0.9970				
Demographics					
Gender	1.3785	0.8049	0.8270	0.8336	1.5296
Education		1.0768			
Synch_×_Educ		0.9570			
Relation			1.2411		
Synch_×_Relation			0.9970		
Religion				0.7619	
Synch_×_Religion				1.0398	
Politic					0.9418
Synch_×_Politic					1.0315

**.05<P≤10 **P≤0.05 ***P≤0.01*

With synchronous paradigm included as predictor in the model and synchronous valence as the outcome, education, relation, religion and political orientation were tested for moderating effects. Results from this analysis showed no significant main effects or interaction effects for the moderator variables.

Table 29
Exploratory Ordinal Regression Model of the Likelihood of Random Arousal with Random Paradigm Predictor and Moderating Variables Education, Relation, Religion and Political Orientation Included in the Model with Gender Controlled (N=202)

Predictors for Random Arousal	Model 1: (Odds Ratio)	Model 2: (Odds Ratio)	Model 3: (Odds Ratio)	Model 4: (Odds Ratio)	Model 5: (Odds Ratio)
Paradigm					
Closed Centered					
Random Centered	1.0513**	1.0534**	1.0608**	1.0020	1.0618**
Open Centered	1.0243				
Synch Centered	0.9900				
R × O	0.9980				
R × S	0.9980				
O × S	1				
Demographics					
Gender	1.1019	1.3060	1.2056	1.1595	1.2386
Education		1.1230			
Random_×_Educ		1.0141			
Relation			0.5252*		
Random_×_Relation			0.9734		
Religion				1.5434	
Random_×_Religion				1.0736	
Politic					0.9980
Random_×_Politic					1

**.05<P≤10 **P≤0.05 ***P≤0.01*

With the moderating variable relation included in the model, results showed a near-significant interaction effect for random paradigm × relation on random arousal. In other words, the relationship between random paradigm and random arousal depended on whether the participant was married (or living with a significant other) or single. Findings showed a trend among participants who scored high on random paradigm and were married or living with a significant other to respond to random-type situations with higher levels of arousal compared to participants who scored high on random paradigm and were single. No additional main effects or interaction effects were identified from this analysis.

Additional ordinal regression analysis was conducted to include closed paradigm, open paradigm and synchronous paradigm as predictors in the model with random paradigm excluded in order to avoid collinearity. All other outcome variables remained the same for this exploratory analysis.

Table 30

Exploratory Ordinal Regression Model of the Likelihood of Closed Valence, Random Valence, Open Valence, Synchronous Valence, Closed Arousal, Random Arousal, Open Arousal and Synchronous Arousal Responses with Closed Paradigm, Open Paradigm and Synchronous Paradigm Predictors Included in the Models and Gender Controlled (N=202)

Predictors	Model 1: Closed Val (Odds Ratio)	Model 2: Rand Val (Odds Ratio)	Model 3: Open Val (Odds Ratio)	Model 4: Synch Val (Odds Ratio)	Model 5: Closed Arousal (Odds Ratio)	Model 6: Rand Arousal (Odds Ratio)	Model 7: Open Arousal (Odds Ratio)	Model 8: Synch Arousal (Odds Ratio)
Paradigm								
Closed Centered	0.9861	0.9076**	0.9608	0.9589*	0.9714	0.9531*	0.9980	0.9940
Random Centered								
Open Centered	0.9512*	0.9579	1.1411***	0.9960	0.9881	0.9743	1.0481*	0.9910
Synch Centered	0.9589	0.9361**	1.0192	1.0336	0.9743	0.9455**	0.9714	1.0080
C_×_O	0.9990	0.9990	1.0010	1.0010	0.9970	0.9990	1.0513	0.9930**
C_×_S	0.9950	0.9990	0.9980	1.0020	0.9960	1.0070*	1.0030	0.9980
O_×_S	0.9990	1.0030	1.0131***	0.9980	0.9990	1.0030	0.9980	0.9980
Demo-graphics								
Gender	1.0131	0.7765	1.4362	0.7334	1.0284	1.2080	0.8642	1.3910

**.05<P≤10 **P≤0.05 ***P≤0.01*

With closed paradigm, open paradigm and synchronous paradigms included as predictors in the model and gender statistically controlled, findings revealed numerous effects. Results showed a significant main effect for closed paradigm on random valence. Findings indicated that for each .01 unit increase in closed paradigm, the expected odds of scoring in the next lower category of pleasure emotions in response to random-type situations increased by a factor of 0.91.

Findings also showed a significant main effect for synchronous paradigm on random valence. Results indicated that for each .01 increase in synchronous paradigm, the expected odds

of scoring in the next lower category for positive emotions in response to random-type situations increased by a factor of 0.94.

Results further revealed a main effect for open paradigm on open valence. Results showed that for each .01 unit increase in open paradigm, the expected odds of scoring in the next higher category of pleasure emotions in response to open-type situations increased by a factor of 1.14. These results supported similar findings described in Table 26 with random paradigm included as a predictor in the model. Findings from that analysis showed that for each .01 unit increase in open paradigm the expected odds of scoring in the next higher category of pleasure emotions in response to open-type situations increased by a factor of 1.07.

In addition, findings also showed a main effect for synchronous paradigm on random arousal. Specifically, findings showed that for each .01 unit increase in synchronous paradigm, the expected odds of scoring in the next lower category of arousal in response to random-type situations increased by a factor of 0.95.

Results also revealed a near-significant main effect for open paradigm on closed valence. This indicates a trend among participants who scored high on open paradigm to also score in a lower category of positive emotions in response to closed-type situations. In contrast, results revealed a near-significant main effect for open paradigm on open arousal. This finding suggests a trend among participants who scored high on open paradigm to also score in a higher category of arousal in response to open-type situations when compared to participants who scored low on open paradigm.

For interaction effects, results showed a significant interaction effect for open paradigm × synchronous paradigm on open valence. This means the relationship between open paradigm and open valence depended on respondents' scores on synchronous paradigm. This supports similar

findings for these variables described in Table 26 with random paradigm included as a predictor instead of closed paradigm (see Figure 13).

Finally, results also showed a significant interaction effect for closed paradigm × open paradigm on synchronous arousal. In other words, the relationship between closed paradigm and synchronous arousal depended on participants' scores on open paradigm. For participants who scored low on open paradigm, high scores on closed paradigm were associated with high scores on emotional arousal in response to synchronous-type situations. However, for participants who scored high on open paradigm, high scores on closed paradigm were associated with low scores on emotional arousal in response to synchronous-type situations (see Figure 13).

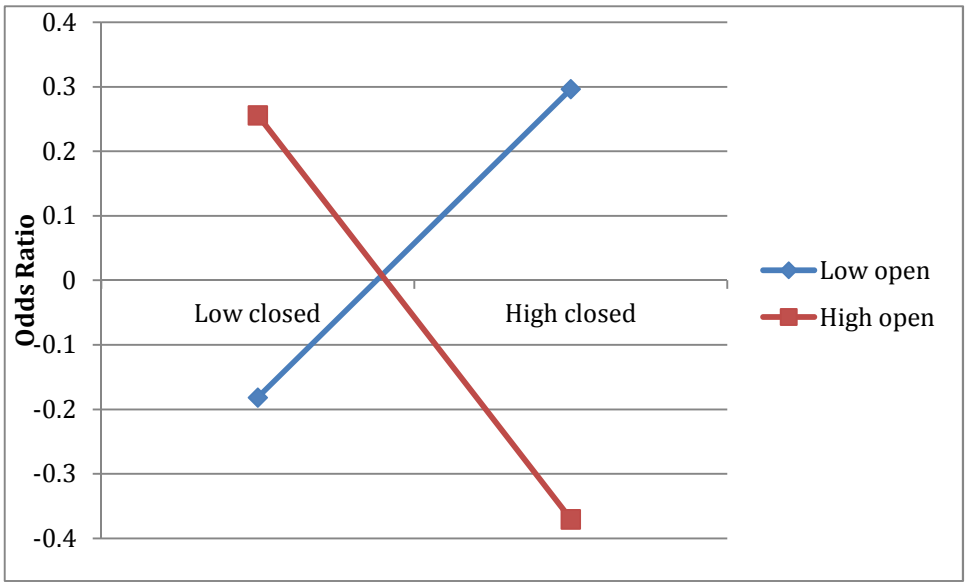


Figure 13
Interaction Effect of Closed Paradigm × Open Paradigm on Synchronous Arousal with Gender Controlled

Following completion of Phase IV ordinary least squares regression analysis and Phase III/IV combined ordinal regression analysis, results were summarized to facilitate interpretation. Summaries of findings are presented in Table 31 and Table 32 below.

Table 31
Summary of Findings from Ordinary Least Squares (OLS) Regression Analysis of Phase IV Data

Signif. Main Effects Phase IV		
Variable 1	Variable 2	Unit Change
Gender	Synchronous positive	Females 1.79 higher w/education; 1.45 higher w/relation; 1.54 units higher w/religion; 1.84 higher w/random and education
Education	Synchronous positive	4 yr deg^{+} 2.24 higher
Religion	Open positive	Religion 2.41 higher (Table 10), 2.36 higher (Table 16)
Closed paradigm	Random positive	.199 decrease
Random paradigm	Open positive	.194 decrease
Random paradigm	Synchronous positive	.134 decrease
Open paradigm	Open positive	.210 increase
Synchronous paradigm	Random positive (but effect is cancelled with education, relation, religion or political orientation included in model)	.192 increase
Synchronous paradigm	Synchronous positive	.234 increase (Table 12); .251 increase (Table 15)

Table 31 (cont'd)

Near-Signif. Main Effects Phase IV

Variable 1	Variable 2	Unit Change
Gender	Closed positive	Females higher
Gender	Synchronous positive	Females lower without other moderating variables included. Females higher w/political.
Education	Random positive	4 yr deg^{+} higher
Relation	Random positive	Married/SO lower
Closed paradigm	Open positive	High closed lower
Synchronous paradigm	Closed positive	High synch higher
Synchronous paradigm	Open positive	High synch higher

Table 31 (cont'd)

Signif. Interaction Effects Phase IV		
Interacting Variables	Dependent Variable	Change +/-
Education x random paradigm	Synchronous positive	High random w/ less than 4 yr degree: little change. High random w/4 yr deg^{+}: lower
Relation x random paradigm	Open positive	High random/married lower
Relation x synchronous paradigm	Synchronous positive	High synchronous/married (or SO)-slightly lower, high synchronous/single-higher
Random paradigm x open paradigm	Random positive	Low random/high open-lower. High random/low open-little change. High random/low open, high random/high open-both showed little change
Near-Signif Interaction Effects Phase IV		
Interacting Variables	Dependent Variable	Change +/-
Relation x closed paradigm	Random positive	High closed/married lower
Random paradigm x open paradigm	Synchronous positive	Low random/low open-lower, high random/high open-higher. Low random/high open, high random/low open – lower

Table 32
Summary of Findings from Ordinal Regression Analysis of Phase III/IV Combined Data

Signif. Main Effects Phase III/IV Combined		
Variable 1	Variable 2	Units
Gender	Open valence	2.08 increase for females w/no moderating variables; 1.74 increase for females w/political
Closed paradigm	Random valence	.91 decrease
Closed paradigm	Open valence	.92 decrease
Closed paradigm	Synchronous valence	.95 decrease
Random paradigm	Random valence	1.06 increase (Table 20) 1.11 increase (Table 25)
Random paradigm	Random arousal	1.05 increase
Open paradigm	Random valence	1.11 increase
Open paradigm	Open valence	1.07 increase (Table 25) 1.14 increase (Table 30)
Synchronous paradigm	Random valence	.94 decrease
Synchronous paradigm	Random arousal	.95 decrease
Synchronous paradigm	Synchronous valence	1.08 increase

Table 32 (cont'd)

Near-Signif. Main Effects Phase III/IV Combined

Variable 1	Variable 2	Units
Gender	Open valence	Females higher w/relation or religion
Gender	Synchronous valence	Females higher w/education
Relation	Random valence	Married higher
Random paradigm	Closed valence	Increase
Random paradigm	Random arousal	Increase
Random paradigm	Open valence	Decrease
Random paradigm	Synchronous valence	Increase
Open paradigm	Closed valence	Decrease
Open paradigm	Open arousal	Increase
Synchronous paradigm	Closed arousal	Decrease
Synchronous paradigm	Open valence	Increase

Table 32 (cont'd)

Signif. Interaction Effects Phase III/IV Combined		
InteractingVariables	Dependent Variable	Change +/-
Religion x open paradigm	Random valence	Low closed/low random-higher. High closed/high random-lower.
Closed paradigm x random paradigm	Open valence	Open paradigm/no religion moderately higher. Open paradigm/religion much higher
Random paradigm x open paradigm	Closed arousal	High random/low open, low random/high open higher. Mod scores on both cancelled effect.
Open paradigm x synchronous paradigm	Open valence	High open/low synchronous moderately higher. High open/high synchronous muc higher (Table 25 and Table 30)
Closed paradigm x open paradigm	Synchronous arousal	High closed/low open higher. High closed/high open lower

Near-Signif. Interaction Effects Phase III/IV Combined		
Interacting Variables	Dependent Variable	Change +/-
Relation x random paradigm	Random arousal	High random/married highe
		High open/married higher
Relation x open paradigm	Open valence	Low open/low synch, low
Open paradigm x synchronous paradigm		open high synch-no change.
	Random positive	High open/low synch-lower High open/high synch-highe

Summary

Analysis of data showed several significant and near-significant findings. Results are summarized for each phase of analysis in order to facilitate interpretation.

Phase IV Bivariate Correlation

Findings from bivariate correlation of Phase IV data indicated significant negative correlations between closed paradigm and random paradigm, open paradigm and synchronous paradigm, and open paradigm and random paradigm. Results did not show significant correlation between paradigms and political orientation.

Phase IV Ordinary Least Squares Analyses

Results from OLS regression analyses of Phase IV data showed significant main effects for gender on synchronous positive emotions with random paradigm and education, relation or religion included in the model. Additional main effects included education on synchronous positive emotions and religion on open positive emotions. Main effects between paradigms included closed paradigm on random positive emotions (decrease), random paradigm on open positive emotions (decrease), random paradigm on synchronous positive emotions (decrease), open paradigm on open positive emotions (increase), synchronous paradigm on random positive emotions (increase), and synchronous paradigm on synchronous positive emotions (increase). Of note was the finding that the inclusion of education, relation, religion or political orientation in the model canceled the effects of synchronous paradigm on random paradigm; this effect was no longer significant with the inclusion of any moderating variable.

Findings also showed near-significant main effects for gender on closed positive emotions (higher for females) and gender on synchronous positive emotions (lower for females

without political orientation included in the model and higher with political orientation included).

In addition to main effects revealed, several significant and near-significant interaction effects were also identified. Significant interaction effects included education x random paradigm on synchronous positive emotions (lower for high random with high education), relation x random paradigm on open positive emotions (lower for high random and married or significant other), random paradigm x open paradigm on random positive emotions (lower for low random with high open), and relation x synchronous on synchronous positive emotions (higher for high synchronous and single). Near-significant interaction effects for Phase IV analyses included random paradigm x open paradigm on synchronous positive emotions (higher for high random with high open) and relation x closed paradigm on random positive emotions (lower for high closed and married).

Phase III/IV Combined Bivariate Correlation

Findings from bivariate correlation of combined Phase III/IV data revealed significant negative correlations between closed paradigm and random paradigm, closed paradigm and open paradigm, random paradigm and synchronous paradigm, and open paradigm and synchronous paradigm. Similar to Phase IV analysis, results did not show significant correlation between paradigms and political orientation.

Phase III/IV Combined Ordinal Regression Analysis

Results from ordinal regression analysis of Phase III/IV combined data showed significant main effects for gender on open valence with political orientation included in the model and also without any moderating variables included in the model. Main effects between paradigms included closed paradigm on random valence (decrease), closed paradigm on open

valence (decrease), closed paradigm on synchronous valence (decrease), random paradigm on random valence (increase), random paradigm on random arousal (increase), open paradigm on random valence (increase), open paradigm on open valence (increase), synchronous paradigm on random valence (decrease) synchronous paradigm on random arousal (decrease) and synchronous paradigm on synchronous valence (increase).

Findings also showed near-significant main effects for gender on open valence (higher for females with relation or religion included in the model) and gender on synchronous valence (higher for females with education included in the model). Near-significant main effects between paradigms included random paradigm on closed valence (increase), random paradigm on random arousal (increase), random paradigm on open valence (decrease), random paradigm on synchronous valence (increase), open paradigm on closed valence (decrease), open paradigm on open arousal (increase) synchronous paradigm on closed arousal (decrease) and synchronous paradigm on open valence (increase).

Several significant and near-significant interaction effects were also identified during Phase III/IV combined analyses. Significant interaction effects included religion x open paradigm on random valence (higher for high open with religious affiliation), closed paradigm x random paradigm on open valence (higher for low closed with low random and lower for high closed with high random), random paradigm x open paradigm on closed arousal (higher for high random with low open or low random with high open), open paradigm x synchronous paradigm on open valence (higher for high open with high synchronous) and closed paradigm x open paradigm on synchronous arousal (higher for high closed with low open and lower for high closed with high open).

Near-significant interaction effects for Phase III/IV combined analyses included relation x open paradigm on open valence (higher for high open and married or significant other), relation x random paradigm on random arousal (higher for high random and married or significant other) and open paradigm x synchronous paradigm on random valence (higher for high open with high synchronous and lower for high open with low synchronous).

CHAPTER 5

DISCUSSION

The discussion is presented in five parts with a focus on results, applications toward paradigmatic transition, study limitations, implications for future research and the conclusion. The research collected information about family paradigms and human emotions from students in a University setting who were primarily single and in the 20 – 22-year-old age group. Although variation in age was somewhat limited among the participants, differences in paradigms were apparent and education, relationship status and religion influenced the emotions they expressed in response to alternate paradigms. Surprisingly, political orientation among participants did not correlate with specific paradigms or influence the emotions they expressed in response to alternative paradigms. This was an unexpected finding and may reflect a narrow range of political perspectives among the participants due to minimal variation in their ages.

Also worth noting is the overall high number of relationships revealed throughout the analyses. In order to maintain focus on the relationships that were significant, discussion in this section will exclude near-significant relationships and focus only on relationships that attained significance at $p <= 0.05$.

Before delving deeper into discussion, attention needs to focus on the two dimensions of affect described by Posner, et al. (2009). As stated previously, Posner et al. determined through research using fMRI that valence (pleasure and displeasure) and arousal (activated and deactivated) are two distinct dimensions of affect. This principle was applied to the current study during coding to enable combining of data from Phase III (N = 143) with data from Phase IV (N = 59) in order to achieve a more robust study. As indicated by the results, most significant

findings for the data reflected differences in valence as opposed to differences in arousal. In fact, only two significant main effects related to arousal: decreased arousal in response to random-type situations among individuals who scored high on synchronous paradigm and increased arousal in response to random-type situations among individuals who scored high on random paradigm. All other significant findings from Phase III/IV combined analyses related to valence (pleasure vs. displeasure).

The question at hand in response to this finding is, *how does this finding affect the interpretation of results for the research?* The answer to this query is not a simple answer, but more likely, a suggestion that the distinction between valence and arousal as independent dimensions provides a valuable mechanism for combining emotions data (thereby increasing the N) but does not contribute significantly toward their understanding. Based upon the low number (two) of findings related to arousal in this study, findings for valence and arousal are combined throughout discussion. Positive valence and higher arousal are considered "positive emotions" and negative valence and lower arousal are considered "negative emotions". Additionally, for the purposes of discussion, the word "emotions" and the word "affect" are used interchangeably.

Results

Results from the study revealed numerous relationships between paradigms and emotions. One pattern in the relationships that stood out more than any other in the results was a dialectic-type pattern between paradigms that reflected Kantor and Lehr's distance regulation model (cohesion vs. distance) (1975). This pattern in the relationships was so pronounced in the results that it warrants special focus and serves as the lens through which findings are interpreted.

According to dialectical logic, the closed paradigm (thesis) and the random paradigm (antithesis) represent opposite worldviews. The closed paradigm is characterized by cohesiveness among family members with group orientation and the random paradigm is characterized by personal freedom with focus on the individual. Dialectical logic further characterizes the open paradigm (synthesis of closed paradigm and random paradigm) as a system that values different perspectives and respects the voice of each individual. The synchronous paradigm (antisynthesis of the open paradigm) reflects "oneness" and is characterized by a sense of unity (Constantine, 1986, pp. 19-21).

This study explored dialectical logic as it applies to everyday family systems. Previous research has cited the value of family paradigms in assessing family values and preferences for families seeking intervention to assist with problem solving (Constantine, 1986; Imig, 2005; Kantor & Lehr, 1975). In this light, the primary goal of this study was to gain a better understanding about the emotions that accompany paradigmatic transition for families undergoing change. A secondary goal of the study was to apply the information toward promoting or restoring interpersonal harmony through successful paradigmatic transition.

At the foundation of this study is acceptance that each family system is unique; what works for one family system may not work for another family system. One system is neither more valid nor more desirable than another; it is just different from the others. Based on information Kantor and Lehr collected within the family's natural setting, they described family life as a goal-seeking system, or *process,* that revolves around actual and metaphorical space. "How does a family set up and maintain its territory? How does it regulate distance among its own members?" (Kantor & Lehr, 1975, p. 7). Kantor and Lehr explained that family type determines the family's response to everyday events and also provides a specific reference frame

for enabling change that supports its homeostatic ideals (p. 119). Thus, the type of family system determines how the system uses access dimensions (space, energy, time and materials) to achieve target dimensions (affect, control, content and meaning) while maintaining homeostatic ideals.

Findings from this study support the idea of dialectical logic among family systems. Closed-type systems reflect negative correlation (opposite image, opposite structure and opposite behavior) compared to random-type systems, and open-type systems share negative correlation with synchronous-type systems. However, beyond this dialectic relationship, results of this study also validate Kantor and Lehr's perspective on distance regulation as a useful model for understanding dialectical logic among family systems. This relationship is significant because it provides a framework for studying emotions that are inherent in family change. The focus for discussion will now turn toward distance regulation among family systems in order to explore emotions that accompany paradigmatic transition.

Discussion first addresses the research question, *is there a relationship between family paradigms and human emotions?* Findings in this section focus on the null hypothesis, *among participants who complete the revised RPAS, there is no relationship between the participants' relational paradigmatic orientation and the positive emotions vs. negative emotions they express in response to each paradigm statement.* Discussion then addresses additional hypotheses that focus on the moderating variables: education, relationship, religion and political orientation.

Distance Regulation and Emotions

To review, Kantor and Lehr (1975) identified three paradigms in their model: closed, random and open. Constantine (1986) later introduced a fourth paradigm: synchronous. According to the distance regulation model, the closed paradigm and the synchronous paradigm

are characterized by cohesiveness between family members and the random paradigm and the open paradigm are characterized by distance between family members. Findings from this research suggest correlation between the distance regulation model and self-reported emotions based upon family paradigms.

Bivariate correlations from both Phase IV (PANAS) and combined (Phase III and Phase IV) analyses as well as ordinal regression (Phase III/Phase IV combined) and ordinary least squares (OLS) (Phase IV) analyses all supported the distance-regulation perspective. Both analyses revealed significant negative correlation between closed paradigm vs. random paradigm and open paradigm vs. synchronous paradigm. Additionally, findings from Phase III/Phase IV combined bivariate correlation analyses showed significant negative correlation between closed paradigm vs. open paradigm and random paradigm vs. synchronous paradigm. Finally, Phase IV bivariate correlation analyses showed significant negative correlation between open paradigm vs. random paradigm; this was an unexpected finding.

In terms of Kantor and Lehr's model of distance regulation, these findings represent distance vs. cohesiveness among family members. The results indicate negative correlation between closed paradigm (cohesive) vs. random paradigm (distant), open paradigm (distant) vs. synchronous paradigm (cohesive), closed paradigm (cohesive) vs. open paradigm (distant) and random paradigm (distant) vs. synchronous paradigm (cohesive). The only bivariate correlation finding that did not support Kantor and Lehr's model of distance regulation was the negative correlation between open paradigm (distant) vs. random paradigm (distant).

Findings from OLS (Phase IV) analyses and ordinal regression (Phase III/Phase IV combined) analyses explored the relationship between family paradigms and emotion responses. These results are further characterized according to the distance regulation model to assess for

consistency. The logic behind this approach is to determine whether the distance regulation model provides a useful framework for assisting families during paradigmatic transition, and furthermore, to determine whether the distance regulation model adequately represents human emotions that accompany transition.

Addressing the H_{01} Null Hypothesis: Main Effects

Both Phase IV and Phase III/Phase IV combined analyses supported Kantor and Lehr's distance regulation model. These analyses revealed that individuals who scored high on closed paradigm responded with lower levels of positive emotions when they were presented with random-type situations compared to individuals who scored low on closed paradigm. Additionally, both analyses also revealed that individuals who scored high on open paradigm (distant) responded with more positive affect when presented with open-type (distant) situations compared to individuals who scored low on open paradigm. Similarly, these analyses also revealed that individuals who scored high on synchronous paradigm (cohesive) responded with more positive affect when presented with synchronous-type (cohesive) situations compared to individuals who scored low on synchronous paradigm. These were the most significant findings commonly revealed through the analyses as they addressed and refuted the null hypothesis, *among participants who complete the revised RPAS, there is no relationship between the participants' relational paradigmatic orientation and the positive emotions vs. negative emotions they express in response to each paradigm statement.*

Additional findings from Phase IV and Phase III/Phase IV combined analyses further supported Kantor & Lehr's distance regulation model. Phase IV analyses revealed that individuals who scored high on random paradigm (distant) responded with less positive affect when presented with synchronous-type (cohesive) situations compared to individuals who scored

low on random paradigm. Similarly, Phase III/Phase IV analyses showed that individuals who scored high on closed paradigm (cohesive) responded with less positive emotions (recorded as lower valence) when they were presented with open-type (distant) situations compared to individuals who scored low on closed paradigm. Results from Phase III/Phase IV combined analyses also showed that individuals who scored high on synchronous paradigm (cohesive) scored lower on emotional valence and lower on emotional arousal when they were presented with random-type (distant) situations compared to individuals who scored low on synchronous paradigm (see Figure 15).

Results from Phase III/Phase IV combined analyses further showed that individuals who scored high on open paradigm (distant) also scored higher for positive emotions (valence) in response to random-type (distant) situations compared to individuals who scored low on open paradigm (see Figure 15). Results from this phase of analysis also revealed that individuals who scored high on random paradigm (distant) responded with higher levels of positive emotions (higher valence and higher arousal) when they were presented with random-type (distant) situations compared to individuals who scored low on random paradigm.

Neither Phase IV analyses nor Phase III/Phase IV combined analyses revealed a significant relationship between the closed paradigm and positive emotions in response to closed-type situations. In other words, individuals who scored high on closed paradigm did not respond with higher levels of positive emotions in response to closed-type situations compared to individuals who scored low on closed paradigm. This was an unexpected finding based on other results that showed individuals who scored high on random paradigm, open paradigm and synchronous paradigm all reported higher levels of positive emotions when they were presented with situations that supported their primary paradigms. Kantor and Lehr offered possible insight

into this finding as they described expectations in the closed family - “process your most intense emotional needs indirectly, through faith in the family’s meaning and goals. We do not have time for whiners or malcontents” (Kantor & Lehr, 1975, pp. 126-127).

In addition to the above finding, two other findings from Phase IV analyses and Phase III/Phase IV combined analyses also failed to support distance regulation – the first finding supports the negative correlation previously identified between open paradigm and random paradigm. Phase IV analyses showed that individuals who scored high on random paradigm (distant) also scored lower on positive emotions when presented with open-type (distant) situations compared to individuals who scored low on random paradigm (see Figure 14). Similarly, Phase III/Phase IV combined analyses also revealed that individuals who scored high on closed paradigm (cohesive) also scored lower for positive emotions (valence) when presented with synchronous-type (cohesive) situations compared to individuals who scored low on closed paradigm.

Although findings from this study offer strong support for using the distance regulation model as a framework for family change, the latter three findings above suggest that this model does not fully consider emotional responses that accompany interaction with supporting paradigms (closed paradigm responses to closed-type situations) or alternate paradigms (random paradigm responses to open-type situations).

One finding from Phase III/Phase IV combined analyses worth noting was the level of emotions activity associated with the random paradigm. This paradigm elicited the highest level of positive and negative emotional responses overall. Not surprisingly, the responses related to random-type situations supported Kantor and Lehr’s distance regulation model; random paradigm (distant) and open paradigm (distant) responded with more positive emotions when

presented with random-type situations while closed paradigm (cohesive) and synchronous paradigm (cohesive) responded with less positive emotions when presented with random-type situations (less valence and less arousal) (see Figure 15). This raises the question of whether individuals who score high on closed paradigm or synchronous paradigm are generally more reactive to random-type situations compared to individuals who score high on random paradigm or open paradigm.

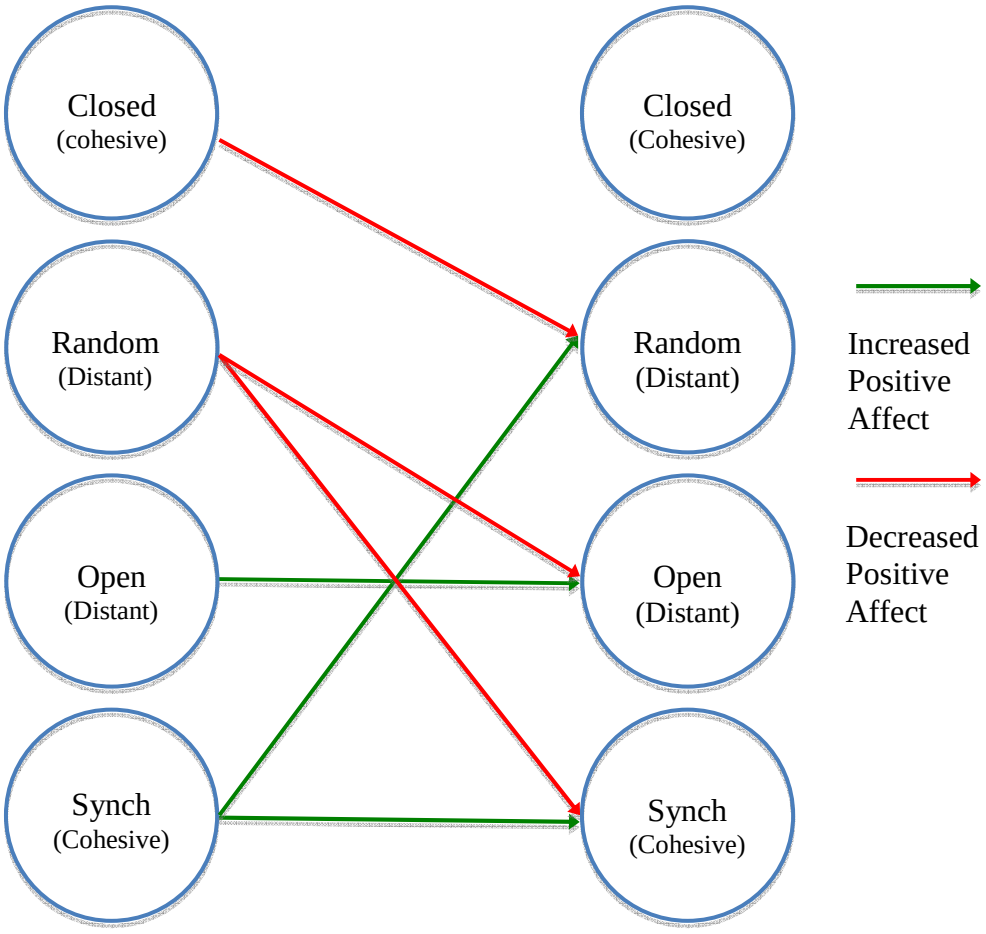


Figure 14
Main Effects for Phase IV (PANAS) Analyses

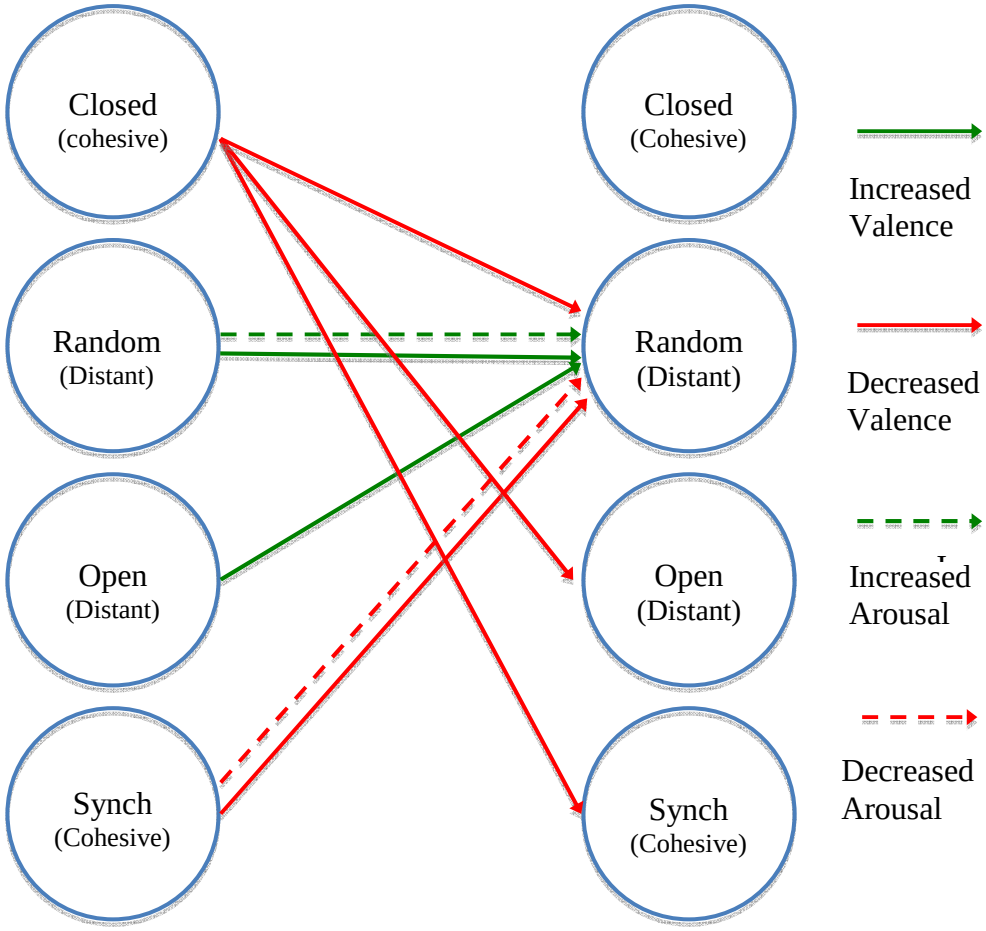


Figure 15
Main Effects for Phase III/Phase IV (Combined) Analysis

Addressing the H_{01} Null Hypothesis: Interaction Effects

The findings reported thus far focused on main effects between paradigms. In addition to these findings, several significant interaction effects among paradigms were also revealed during analyses.

- Low closed scores combined with low random scores responded to open-type situations with higher levels of positive affect *and* high closed scores combined with high random scores responded to open-type situations with lower levels of positive affect
- Low random scores combined with high open scores responded to random-type situations with lower levels of positive emotions
- High open scores combined with high synchronous scores responded to random-type situations with higher levels of positive affect *and* high open scores combined with low synchronous scores responded to random-type situations with lower levels of positive affect
- High open scores combined with high synchronous scores responded to open-type situations with higher levels of positive affect
- Low open scores combined with high random scores *or* high open scores combined with low random scores responded to closed-type situations with higher levels of emotional arousal
- Low open scores combined with low closed scores responded to synchronous-type situations with higher levels of emotional arousal *and* high open scores combined with high closed scores responded to synchronous-type situations with lower levels of emotional arousal

These findings provide additional insight about relationships between paradigms and emotions. While the first finding supports the negative relationship between closed paradigm and open paradigm (supporting the distance regulation model), it also reinforces the negative relationship between random paradigm and open paradigm (refuting the distance regulation model but supporting findings discussed above). Individuals who reported high scores on random paradigm *and* low scores on closed paradigm responded to open-type situations with *even less* positive emotions compared to individuals who scored high on random paradigm and high on closed paradigm. The presence of random paradigm for these individuals seemed to reduce their tolerance for open-type situations.

Similarly, the second finding suggests that individuals who scored low on random paradigm and high on open paradigm responded to random-type situations with less positive emotions compared to individuals who scored high on random paradigm and high on open paradigm. Again, the score on random paradigm for these individuals seemed to drive their responses. Low random paradigm scores apparently reduced tolerance for random-type situations for individuals who scored high on open paradigm.

The third finding shows that high scores on synchronous paradigm enhanced the relationship between open paradigm and random paradigm (open paradigm responded more positively to random-type situations when synchronous paradigm scores were high). The fourth finding further supports this result and shows high scores on synchronous paradigm also enhanced the relationship between open paradigm and positive responses to open-type situations. In other words, individuals who reported high scores on open paradigm *and* high scores on synchronous paradigm responded to open-type situations *or* random-type situations with more positive emotions. Interestingly, individuals who scored high on open paradigm and low on

synchronous paradigm still scored moderately higher for positive emotions when presented with open-type situations, but higher scores on synchronous paradigm increased the positive emotional responses to open-type situations.

The fifth finding suggests that individuals who reported *both* random paradigm and open paradigm responded more favorably to closed-type situations. However, this pattern was only seen when one of the paradigm scores was high and the other paradigm score was low (e. g. high random paradigm score combined with low open paradigm score responded more favorably to closed-type situations). When random paradigm scores and open paradigm scores were both high, then this effect was cancelled.

Finally, the sixth finding shows that high open paradigm scores combined with high closed paradigm scores resulted in less emotional arousal in response to synchronous-type situations. In other words, individuals who scored high on both open paradigm and closed paradigm responded to synchronous-type situations with lower levels of emotional arousal compared to individuals who scored low on open paradigm and high on closed paradigm; the latter group scored higher for emotional arousal in response to synchronous-type situations.

Main Effects for the Control Variable: Gender

Although gender served as a control variable for this research, Phase IV analyses and Phase III/Phase IV combined analyses each identified a main effect that included this variable. Results from Phase IV analyses revealed significant main effects for gender on synchronous paradigm. This means that females, in general, responded with more positive affect when presented with synchronous-type situations compared to males (see Figure 16). This finding raised questions about whether results reflected emotions related to specific characteristics of the

synchronous paradigm - perhaps communication. Is it possible that females responded more favorably to nonverbal communication compared to males?

Results for Phase III/Phase IV analyses also revealed a main effect for gender on open paradigm. In other words, females scored higher for positive emotions (higher valence) when presented with open-type situations compared to males (see Figure 17). Again, this raised the question about possible differences in emotions related to communication for females vs. males. Interestingly, the open paradigm is characterized by consensus through communication, so these results suggest females also responded more favorably to verbal communication.

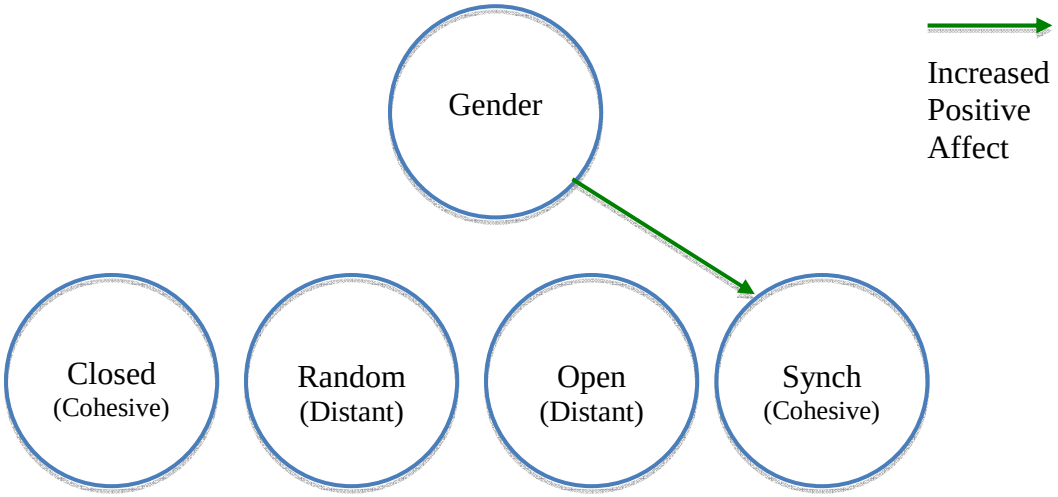


Figure 16
Main Effects for Gender in Phase IV Analyses

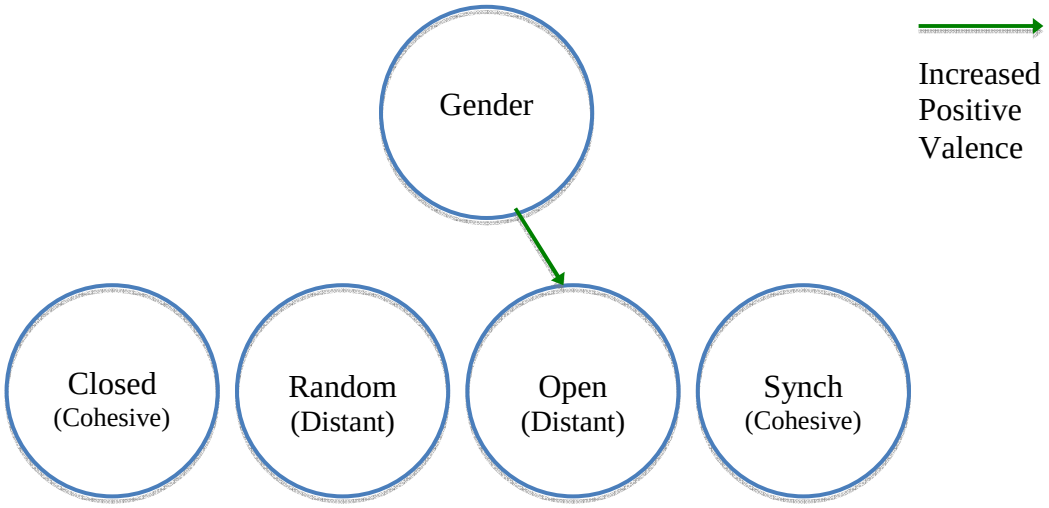


Figure 17
Main Effects for Gender in Phase III/Phase IV Combined Analyses

Addressing Secondary Hypotheses

Phase IV analyses and Phase III/Phase IV combined analyses also revealed main effects related to modifying variables that addressed the secondary hypotheses:

H_{02} *Among participants who complete the revised RPAS, the participants' level of education does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{03} *Among participants who complete the revised RPAS, the participants' relationship status does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{04} *Among participants who complete the revised RPAS, the participants' religious status does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

H_{05} *Among participants who complete the revised RPAS, the participants' political orientation does not affect the relationship between their relational paradigmatic orientation and the emotions they express in response to each paradigm statement*

Education

Results from Phase IV analyses revealed significant main effects for education on synchronous paradigm. This means that in general, individuals with a four-year degree or higher

also responded with higher levels of positive affect when presented with synchronous-type situations compared to individuals with less than a four-year college education (see Figure 18). This finding again questions whether results might have reflected abilities related to communication; were individuals with higher education more versed in understanding nonverbal communication compared to individuals with less education? Phase III/Phase IV combined analyses did not show significant main effects for education.

Relation

Results from Phase III/Phase IV combined analyses showed a main effect for relation on random paradigm. In other words, individuals who were married or had a relationship with a Significant Other responded to random-type situations with higher levels of positive emotions (higher valence) compared to individuals who were single. Phase IV analyses did not show significant main effects for relation.

Religion

Phase IV analyses revealed a main effect for religion on open paradigm. Specifically, these results showed that with random paradigm included in the model, individuals with religious affiliation scored higher for positive affect when presented with open-type situations compared to individuals without religious affiliation (see Figure 18). This was an interesting finding because strong religious affiliation is more often associated with the closed paradigm. The results that were anticipated included a main effect for religious affiliation on *closed* paradigm, as opposed to open paradigm. This finding might reflect more liberal religious doctrine among participants in the study. Phase III/Phase IV combined analyses did not show significant main effects for religion.

Political Orientation

Results from Phase IV analyses and Phase III/Phase IV combined analyses did not show significant main effects for political orientation.

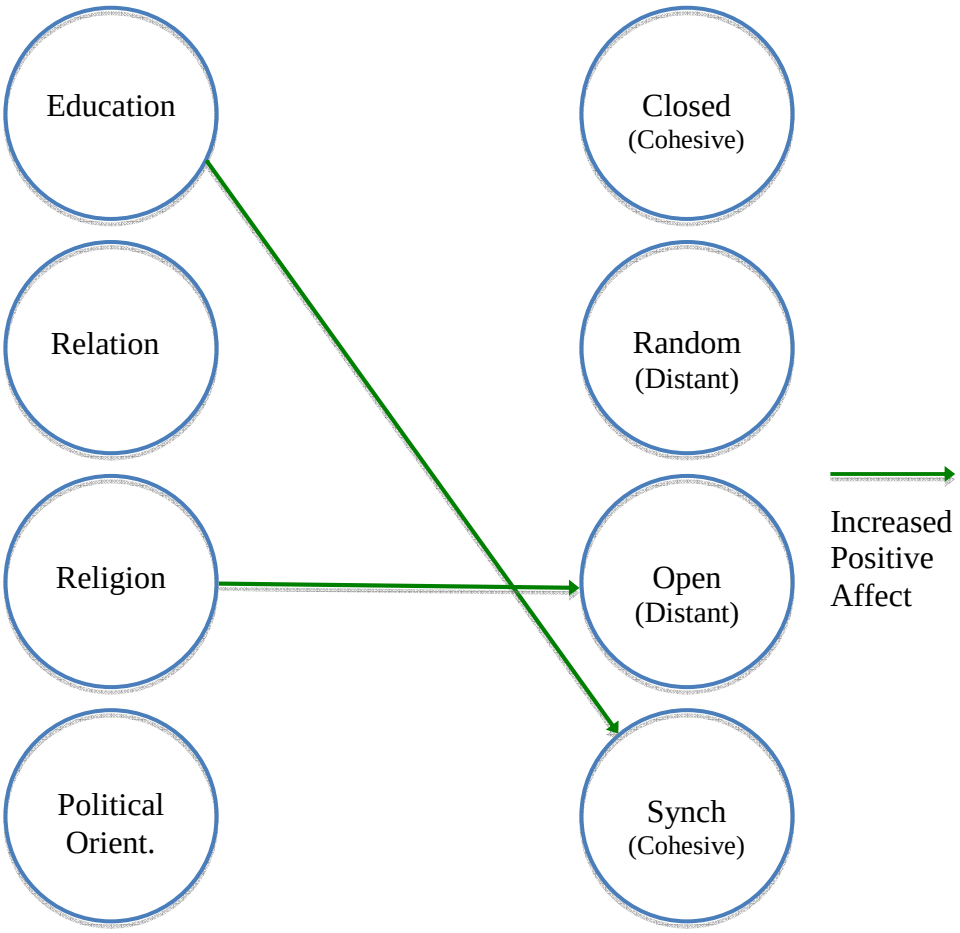


Figure 18
Main Effects for Moderating Variables in Phase IV Analyses

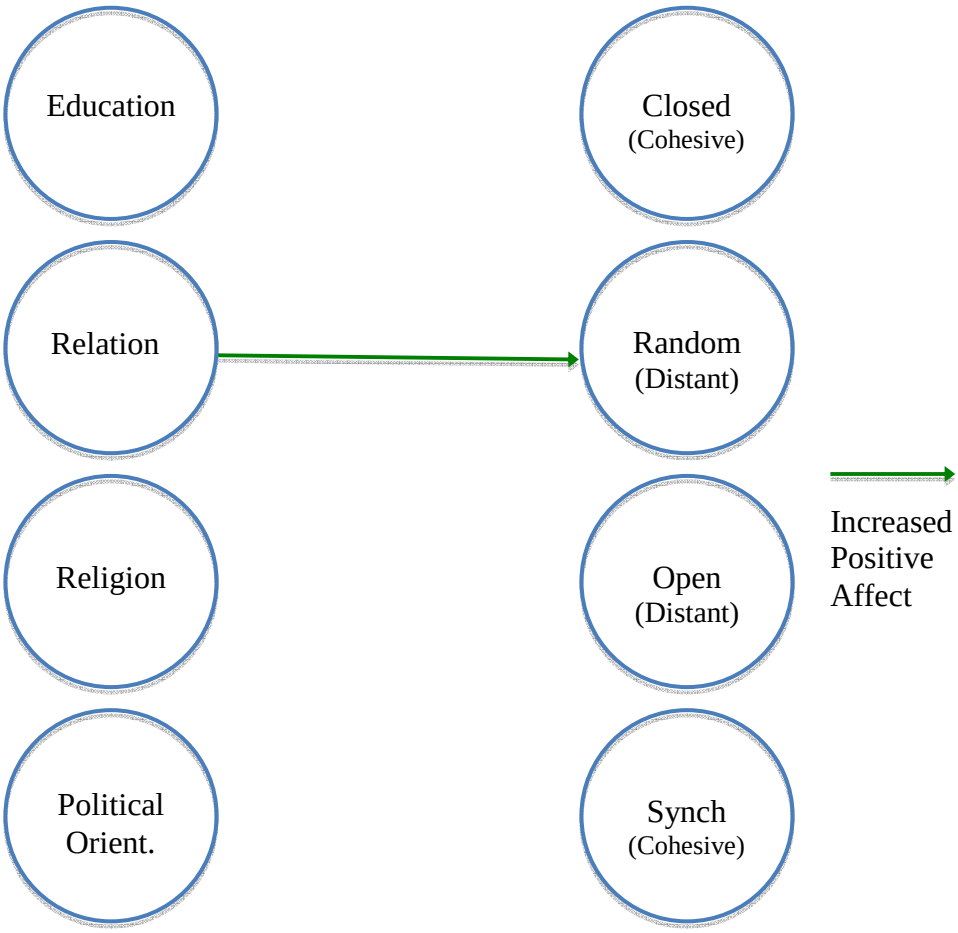


Figure 19
Main Effects For Moderating Variables in Phase III/Phase IV Combined Analyses

Interaction Effects

In addition to the main effects described above, Phase IV analyses and Phase III/Phase IV combined analyses also revealed several significant interaction effects that included moderating variables. These findings further support Kantor and Lehr's distance regulation model.

Phase IV analyses revealed significant interaction between random paradigm and relation on open paradigm. In other words, individuals who scored high on random and were also married or had a Significant Other scored lower on positive affect when presented with open-type situations compared to individuals who scored low on random and were married or had a Significant Other. This pattern was shown for single individuals as well, but to a lesser degree. Individuals who scored high on random and were single responded with slightly lower positive affect in response to open-type situations compared to individuals who scored low on random paradigm and were single. In both cases, higher scores on random paradigm decreased positive responses to open-type situations.

Phase IV analyses also showed significant interaction between synchronous paradigm and relation on synchronous paradigm. This means that individuals who scored high on synchronous paradigm and were single responded with more positive affect in response to synchronous-type situations compared to individuals who scored high on synchronous paradigm and were married or had a relationship with a Significant Other.

Additionally, Phase IV analyses also revealed significant interaction between random paradigm and education on synchronous paradigm. This means that individuals who scored low on random paradigm and had four years of college education or higher responded to synchronous-type situations with higher levels of positive affect compared to individuals who scored high on random paradigm and had four years of college or higher. These results suggest

that higher scores on random paradigm reduce tolerance for synchronous-type situations for individuals who hold four year college degrees or higher.

Finally, findings from Phase III/Phase IV combined analyses revealed a significant interaction effect for open paradigm and religious affiliation on random paradigm. In other words, individuals who scored high on open paradigm and also reported a religious affiliation responded to random-type situations with much higher positive emotions (higher valence) compared to individuals who scored low on open paradigm and reported a religious affiliation. Similarly, individuals who scored high on open paradigm but did not report a religious affiliation scored moderately higher for positive emotions in response to random-type situations compared to individuals who scored low on open paradigm and did not report a religious affiliation. In this example, religious affiliation appeared to increase the intensity of positive responses to random-type situations for individuals who scored high on open paradigm.

Applications Toward Paradigmatic Transition

Results of this study indicate that the revised RPAS is a useful tool for assessing paradigmatic orientation and human emotions among family systems. When considered together with Kantor and Lehr's (1975) distance regulation model, RPAS results provide useful guidelines for helping distressed families successfully transition into alternate paradigms.

In general, the results from this study support Kantor and Lehr's Distance Regulation Model: paradigms that reflect cohesive interpersonal relations among family members (closed paradigm and synchronous paradigm) showed negative correlation with paradigms that reflect distant interpersonal relations among family members (random paradigm and open paradigm). Results further indicate that paradigms that reflect cohesive interpersonal relations among family members (closed paradigm and synchronous paradigm) generally *do not* share negative

correlation with one another. In other words, closed paradigm results do not reflect negative correlation with synchronous paradigm results, and vice-versa. The exception to this finding occurred in the relationship between open paradigm (distant) and random paradigm (distant); findings indicated a negative correlation between these paradigms.

Given these relationships, how does this information translate into useful guidelines for distressed families in need of paradigmatic transition? The answer to this query lies in the emotions family members express in response to alternate paradigms. This research measured participants' positive vs. negative emotional responses to situations that supported their primary paradigm and also situations that reflected alternate paradigms. In general, results of this study showed that individuals responded favorably (with positive emotions) when they experienced situations that supported their primary paradigm. The exception to this occurred with closed paradigm; these individuals did not respond with higher levels of positive emotions in response to closed-type situations.

Individuals' emotional responses varied between positive vs. negative when they experienced alternate paradigms. However, their responses showed distinct relationships with the situation they experienced depending on their primary paradigm:

- Individuals who scored high on closed paradigm reported less positive emotions in response to random-type situations, open-type situations and synchronous-type situations compared to closed-type situations
- Individuals who scored high on random paradigm reported less positive emotions in response to open-type situations or synchronous-type situations compared to closed-type situations.

- Individuals who scored high on open paradigm did not report less positive emotions in response to closed type situations or synchronous-type situations and reported *more* positive emotions in response to random-type situations
- Individuals who scored high on synchronous paradigm reported less positive emotions in response to random-type situations compared to closed-type situations or open-type situations.

If we consider these findings from the perspective of families in transition, then the information above suggests the following:

- Individuals who scored high for closed paradigm reported lower positive emotions in response to all other paradigms. Thus, these individuals have limited opportunity for successful transition into an alternate family paradigm. However, the random paradigm should be considered as the least desirable option based upon previous findings that showed higher overall negative responses to random-type situations for individuals who score high on closed paradigm.
- Individuals who scored high for random paradigm responded most favorably to closed-type situations when presented with alternate paradigms.
- Individuals who scored high for open paradigm responded most favorably to random-type situations and somewhat less favorably to closed-type situations and synchronous-type situations when presented with alternate paradigms.
- Individuals who scored high for synchronous paradigm responded most favorably to closed-type situations and open-type situations when presented with alternate paradigms

The information presented above offers useful guidelines for assessing families that are experiencing stress and helps to identify the best options for alternative paradigms. However, along with this information the effects of gender, education, relation, religion and political orientation should also be considered:

- Females responded to open-type situations and synchronous-type situations with more positive affect compared to males
- Individuals with higher education responded more favorably to synchronous-type situations compared to individuals with lower education
- Individuals who were married or had a Significant Other responded more favorably to random-type situations compared to individuals who were single
- Individuals who reported a religious affiliation responded more favorably to open-type situations compared to individuals who did not report religious affiliation

Additionally, interactive effects must be considered when assessing families for paradigmatic transition with the main focus on their primary paradigm:

Closed Paradigm

- Individuals who scored high on closed paradigm and high on random paradigm responded less favorably to open-type situations
- Individuals who scored high on closed paradigm and high on open paradigm responded less favorably to synchronous-type situations

Random Paradigm

- Individuals who scored high on random paradigm and high on closed paradigm responded less favorably to open-type situations

- Individuals who scored high on random paradigm and low on open paradigm responded more favorably (higher emotional arousal) to closed-type situations
- Individuals who scored high on random paradigm and were married or had a Significant Other responded less favorably to open-type situations
- Individuals who scored high on random paradigm and had higher education responded less favorably to synchronous-type situations

Open Paradigm

- Individuals who scored high on open paradigm and high on closed paradigm responded less favorably to synchronous-type situations
- Individuals who scored high on open paradigm and low on random paradigm responded less favorably to random-type situations (valence) and more favorably to closed-type situations (arousal)
- Individuals who scored high on open paradigm and low on synchronous paradigm responded less favorably to random-type situations
- Individuals who scored high on open paradigm and high on synchronous paradigm responded more favorably to open-type situations and random-type situations
- Individuals who scored high on open paradigm and reported religious affiliation responded more favorably to random-type situations

Synchronous Paradigm

- Individuals who scored high on synchronous paradigm and high on open paradigm responded more favorably to random-type situations or open-type situations
- Individuals who scored high on synchronous paradigm and were married or had a Significant Other respond less favorably to synchronous-type situations

The results above are presented according to dialectical logic in the context of distance regulation and take into account the emotions that accompany paradigmatic shift. The idea behind this approach is to avoid "triggers" for further conflict. Families typically do "more of the same" during times of stress (Constantine, 1986, pp. 202-205; Imig, 2005, p. 43). Closed families often tighten their boundaries and implement authoritarian leadership resulting in exaggerated cohesion among family members. Random families frequently over-emphasize the individual as well as the distance between family members leaving them in a chaotic, disconnected state. Open families often increase discussion among family members to a point of exhaustion in an attempt to reach consensus through agreement. This state also results in exaggeration of distance between family members. Synchronous families typically lose sight of their boundaries and fall into a state of ambiguity with overemphasized cohesion among family members (Constantine, 1986; Imig, 2005). Principles of family paradigms are useful for restoring harmony in these situations. If situations that result in more negative, or less positive emotions are identified, then in theory, these situations can be avoided. The key to this model is to identify and avoid transition into paradigms that are known to promote negative emotions and introduce paradigms that are known to promote positive emotions instead.

While these findings offer guidelines for change based upon family paradigm theory, they do not provide solid strategies. This information serves as a useful starting point for initiating necessary change for families in distress. The ultimate goal of this information is to assist families toward successful paradigmatic transition. While professional advice and family therapy are outside the scope of this study, these findings should assist in assessing the family in order to capitalize on its strengths and identify its weaknesses. The primary value in this approach is the inclusion of emotions in family assessment and intervention.

Study Limitations

This study had limitations related to the sample group, geographical location and data collection technique. Participants in this study were all university students and most (84.7%) were in the age range of 20-22 years. In addition, the study was limited to a single-site location in the Midwest and included only college students who could read and write in the English language. These factors limited generalizabilty of results to locations comprised of similar demographics.

Another limitation of the study relates to the number of modifications that occurred with the RPAS throughout data acquisition. As explained in the Methods section, emotion data from Phase III and Phase IV were combined and transformed according to the Circumplex Model of Affect (Posner et al., 2009, Russell, 1980). Based upon the Emotions Survey used to categorize emotion words into these categories (see Appendix L), some of the emotion words fell into more than one category (e.g. – *lovestruck* was recorded as both pleasure activated and pleasure deactivated). In these instances, the category in which the word occurred in highest frequency was the category assigned to the emotion word during coding.

A third limitation of the study relates to study design and data analysis for the revised RPAS. During initial data collection, participants also recorded their "ideal" paradigmatic orientations and assigned values using the same (0-10) rating method they used to rate their current relationship. Due to the complexity of the current research and the massive amount of data collected (over 200,000 data points), Investigators for the study decided to limit data analyses to information representing current relationships. Given that findings from the current study provide useful information about the most desirable paradigms for families undergoing transition, information related to ideal relationships would enhance assessment for these families

and provide a comparison for recommended alternative paradigms. Future research should include these data to provide additional insight for interpreting results from the current study.

Implications for Future Research

Findings from this study offer valuable insight about emotions during family change from a social science perspective. Interestingly, parallel research within the discipline of neuroscience has contributed equally toward understanding human emotions over the past two decades, although from a different perspective. While each discipline contributes valuable information toward understanding human emotions within families, integrated research that includes both sciences would likely increase validity for these findings and promote greater overall understanding of emotions during family transition. Bateson described the importance of dialectical logic and the role of emotions in the family long before technology was prepared to support his theory through research. Bateson's interpersonal theory of emotion with emphasis on "social construction of emotion categories" that relied upon "dialectical conflict and its dynamic principles" revealed this (Nuckolls, 1995, pp. 370-371). Today we have the technology to "connect the dots" between social science and neuroscience through integrated research.

This study introduces two important goals: the first is to summarize the development of methodology used in the current research and the second is to propose a research design that applies this methodology within a cognitive social science study - a study that integrates neuroscience and social science into common research. Functional Magnetic Resonance Imaging (fMRI) offers an ideal imaging framework for conducting research that meets these goals.

fMRI as a Research Tool Toward Cognitive Social Science

It is generally understood and accepted that certain areas of the human brain are active during specific activities and thought processes. The introduction of modern imaging modalities

such as fMRI has enabled researchers to record brain activity in response to specific stimuli. For example, with fMRI, areas of the brain that are active during “happy” emotions have been distinguished from areas that are active during “sad” emotions. Identification of brain activity that reflects “opposite” thoughts has occurred in various other contexts as well including music (Barrett, Pike & Paus, 2004), aggression (Boes & Anderson, 2008) and personality (Reuter et al., 2004). While findings such as these open the door for additional research that considers other opposing emotions and thought processes, dialectical logic offers an ideal model for conducting such research.

Family Paradigm Theory provides an ideal framework for fMRI research because it is based upon dialectical logic, or a system of opposites. More specifically, family paradigm theory includes two opposing worldviews: a closed worldview that follows an authoritarian father model vs. a random worldview that represents individualistic, autonomous values. Results from this study show that individuals who encounter views that oppose their own values more often respond with negative emotions, or negative affect. Likewise, individuals who encounter similar views that support their own values more often respond with positive emotions, or positive affect. The dichotomy of emotions suggested in this example occurs as opposites - positive affect vs. negative affect - and coincides with specific brain activity during fMRI.

fMRI and Human Emotions

Functional Magnetic Resonance Imaging (fMRI) is now recognized as a useful tool for demonstrating brain activity that relates to human emotions. This study proposes use of fMRI to increase understanding about the relationship between positive affect vs. negative affect and closed paradigm vs. random paradigm.

Based on previous fMRI research, the areas of the brain that are most active during emotional responses include the prefrontal cortex, the anterior cingulate gyrus, the insula and the amygdala (Canli et al., 2001). Habel et al. (2005) performed emotions research using positive vs. negative pictures to induce corresponding brain activity. These researchers reported in their study that sad and happy moods both activated the amygdala–hippocampal area extending into the parahippocampal gyrus as well as the prefrontal and temporal cortex, the anterior cingulate, and the precuneus. However, more activation was demonstrated in the ventrolateral prefrontal cortex (VLPFC), the anterior cingulate cortex (ACC), the transverse temporal gyrus, and the superior temporal gyrus during negative affect. Happiness, on the other hand, produced stronger activations in the dorsolateral prefrontal cortex (DLPFC), the cingulate gyrus, the inferior temporal gyrus, and the cerebellum. "Hence, negative and positive moods reveal distinct cortical activation foci within a common neural network…" (Habel et al., 2005, p. 206). Given the fMRI research model currently proposed, one would expect to see activity that corresponds to areas referenced above.

Proposed fMRI Research

The study of family paradigm theory and human emotions offers a useful design for fMRI investigation of opposing worldviews. Given the dichotomy provided through dialectical logic, if we allow the closed family structure to represent the thesis, then present a more random-type, opposing (antithetical) idea to the family, then, in theory, the family should either resist the idea (express more negative emotions and less positive emotions) or support the idea (express more positive emotions and less negative emotions). On the other hand, if we expose an individual or a group to a situation that we know it will resist, then we should be able to observe certain emotional responses from the individual or group that reflect this resistance.

This idea is directly applicable to the study of family paradigm theory and human emotions. To begin, let's assume that we have access to a large group of individuals who are willing to participate in a research study, an fMRI scanner, the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) and a Relational Paradigmatic Assessment Scale (RPAS) (Imig, 2000b). Let's also assume that we know from previous research using fMRI precisely which areas of the brain are active when an individual experiences positive affect and which areas are active when an individual experiences negative affect. If we instruct the individuals in the group to describe their relational paradigmatic orientations using the revised RPAS, then we can group the individuals according to their primary orientations. Furthermore, if we ask these same individuals to rate their emotions (positive vs. negative) for each question on the revised RPAS, then we can determine their emotional valence and emotional arousal levels as they apply to each paradigm.

For the purpose of this study, let's say we are able to identify two distinct groups of individuals based on the information we collected. Individuals in the first group score extremely high for closed paradigmatic orientation on the revised RPAS and demonstrate negative affect (as our results suggest) toward the random paradigm on the PANAS - we'll call this group the *closed* group. Individuals in the second group score high for random paradigmatic orientation on the revised RPAS and demonstrate positive affect toward the random paradigm and neutral affect (as suggested by Phase III/Phase IV combined results) toward the closed paradigm on the PANAS - we'll call this group the random group.

Next, we'll ask each individual in these two groups to undergo fMRI scanning so we can record activity in their brains while they read narratives on a special monitor positioned in the fMRI scanner. Each narrative will consist of a question from the revised RPAS that strongly

reflects either the closed paradigm or the random paradigm (e.g. - authoritarian control in the closed family vs. independent decision-making). Then, immediately after they read the narrative we'll instruct them to record the emotion they feel according to the PANAS using a finger pad that we strap to their hand. During this entire process we will record the activity in their brain using fMRI.

When the experiment is complete, we'll analyze the data from the RPAS, PANAS and fMRI for correlations between their paradigmatic orientation, their recorded affect and the activity in their brain. Based upon results of the current research, we anticipate that individuals who score high on random paradigm will respond with positive affect to random-type narratives and we will record activity in the positive-affect areas of their brain. For individuals who score high on closed paradigm, we anticipate that they will respond with negative emotions to random-type narratives and we will record activity in the negative-affect areas of their brain.

Since findings from the current research did not reveal significant relationships between closed paradigm and closed-type situations, we do not anticipate that individuals who score high on closed paradigm will respond with positive affect to closed-type narratives or that we will record activity in the positive-affect areas of their brain. Furthermore, based upon current research findings, we do not anticipate that individuals who score high on random paradigm will respond with negative affect to closed-type narratives or that we will record activity in the negative-affect areas of their brain.

The proposed research is offered as a step toward integrating social science and neuroscience into common research with a goal to gain a better understanding about interpersonal interaction and emotions during family transition. While this is a small step toward this goal, it is nonetheless a step in the right direction. If scientists are to achieve the full

potential of integrated research for these two disciplines, then efforts must be combined on a much greater scale than indicated by the suggested research study. However, as efforts continue, the potential benefits of integrated research will undoubtedly become reality.

Conclusions

Sociologist David Franks articulated the need for combined efforts among neuroscientists and social scientists to integrate research from their fields into common research focused on human emotions:

> A more than cursory look at the evidence from neuroscience is [therefore] needed to change long-held tenets and understand the potential contribution of neuroscience to the sociology of emotions. …Sociology's general reputation in academic circles will depend on being willing to do so (2006, Chapter 2, p. 39).

In answer to emerging research based upon alliances between social science and neuroscience, the Social Science Research Network (SSRN) formed the Cognitive Science Network (CSN) in April of 2009 (http://www.ssrn.com). This worldwide network provides an online community for research in all areas of cognitive science including cognitive social science, and publishes an eJournal for each area. CSN addresses research questions posed by sociologists, economists, political scientists, anthropologists and others and generally discusses the origin of mental events and how such events network within social systems and social cognition. The diversity in topics presented in this journal reflects increasing amalgamation and application of social science and cognitive science within common research. The formal recognition of Cognitive Social Science by the SSRN represents a significant advancement in cognitive social science research.

Until recently, the assimilation of social science and cognitive science into common research was nothing more than a fascination, something that might occur some day in the future. Technology did not exist to support such integrated research. However, even as technology advanced and enabled researchers to measure mental events, social scientists and neuroscientists were slow to recognize the potential for these breakthroughs. Sociologist Turner commented on the imbalance between technical ability and reality as early as 2001, "given this convergence of cognitive science and the social sciences at their intellectual cores, under the general umbrella of the nature of thought and meaning, it would be natural to conclude that they must converge as disciplines. They have not done so (p. 153). However, as noted above, the SSRN formed the Cognitive Science Network in 2009. While this is a positive move toward advancement of cognitive social science, this field is still in its infancy, it is just now gaining recognition as a legitimate discipline.

The research presented in this study explored the relationship between family paradigms and human emotions with a goal to understand emotions that accompany paradigmatic transition more clearly. Results from this study provided valuable findings that contributed toward this understanding. Information gained through this research can serve as a starting point for assessing families who are experiencing stress and identifying alternative paradigms that offer potential to reduce conflict and restore harmony. However, if research aimed toward understanding the role of emotions in family systems is to achieve its full potential, then additional studies must occur in the future to expand upon the ideas introduced in this study. This study is but a small step toward a greater understanding of family paradigms and human emotions, but it is nonetheless, a step in the right direction.

APPENDICES

APPENDIX A

CONCEPTUAL AND OPERATIONAL DEFINITIONS

Table 33
Conceptual and Operational Definitions

Variable	Conceptual Definition	Operational Definition
Gender	The sex of an individual based upon reproductive anatomy	Measured by respondent on Demographic Survey (see Appendix E) and coded as either "0" *Male* or "1" *Female*.
Age	Number of years since birth	Measured by respondent during research session on Demographic Survey (see Appendix E)
Highest Education	Highest level of education achieved by the respondent	Measured by respondent on demographic survey (see Appendix E) and coded as "1" *Grade School or Less*, "2" - *General Educational Development*, "3" - *High School*, "4" – *Attended College*, "5" – *College 2-Year Degree*, "6" – *College 4-Year Degree*, "7" – *Graduate/Professional Degree*, or "8" – *Other (Please Describe).* Highest Education is coded with indicator variables for analysis.
Significant Relationship	Significant relationship between respondent and another individual	Measured by respondent on Demographic Survey (see Appendix E) and coded as "0" *No* or "1" *Yes*.
	Gender of Significant Other based on reproductive anatomy	Measured by respondent on Demographic Survey (see Appendix E) and coded as either "0" -*Male* or "1" -*Female*.

Table 33 (cont'd)

	Closeness of relationship with Significant Other	Measured by respondent on Demographic Survey (see Appendix E) and coded as "0"-*Not Close at All,* "1" *Just a Little Close* "2" – *Somewhat Close,* "3" – *Closer than Most* or "4" – *Extremely Close*. Significant Other is coded with indicator variables for analysis.
Religious Group	Organized religious group to which respondent belongs	Measured by respondent on the Demographic Survey (see Appendix E) and recorded as "0" – *Christian,* "1" – *Islamic,* "2" – *Hindu,* "3" – *Jewish,* "4" – *Buddhist,* "5" – *Chinese Traditional* or "6" – *Other (Please Describe).* Religious group is coded with indicator variables for analysis.
Political Orientation	Respondent's primary orientation related to the United States political system	Measured by respondent on the Demographic Survey (see Appendix E) and recorded as "0" – *Extremely liberal,* "1" - *Moderately liberal,* "2" - *Neither Liberal nor Conservative,* "3" - *Moderately Conservative,* or "4" - *Extremely Conservative.* Political Orientation is coded with indicator variables for analysis.

Table 33 (cont'd)

Paradigmatic Orientation	The orientation of respondent's relationship (*Closed, Random, Open, Synchronous*) as defined by Family Paradigm Theory	Measured by respondent on the Relational Paradigmatic Assessment Scale (RPAS) (see Appendices H and I) and recorded as values of "0" – *Not at all like my Relationship* through "10" – *Very Much Like my Relationship.* Paradigms are calculated from participant's responses to five different questions representing the relational elements of *control, affect, space and material.* Values from responses in each category – *closed, random, open* and *synchronous* - are summed and appropriately weighted for data analysis.
Emotions	Respondent's perceived emotions in response to *closed, random, open* and *synchronous* statements on RPAS	*Phase III* - Measured by respondent on the Relational Paradigmatic Assessment Scale (RPAS) (see Appendix H) and recorded as "Descriptive Words" from *Emotions Words* list (see Table 3) *Phase IV* - Measured by respondent on the Relational Paradigmatic Assessment Scale (RPAS) (see Appendix I) and recorded as responses to 20 Emotions Words (see Appendix J) as "1" – *Very Slightly or Not at All,* "2" – *A Little*, "3" – *Moderately*, "4" – *Quite a Bit or* "5" – *Extremely.*

APPENDIX B

INSTRUMENT REVIEW

RELATIONAL PARADIGMATIC ASSESSMENT SCALE (RPAS)

Title:	Relational Paradigm Assessment Scale (RPAS)
Author:	David Imig
Population:	College Students and Adults.
Score:	2 Scores: Current and Ideal Paradigmatic Orientation
Time:	Approximately 60 Minutes
Original Publisher:	Michigan State University
Date:	2000
Concept or Variable:	*Closed Paradigm* - Conceptual definition – A family system based upon stability through tradition and time-tested ideas. The family commonly focuses on the past. Family members are cohesive and maintain very private relationships. The family frequently operates under authoritative rule with the father generally in charge. Members of this system are loyal and experience a strong sense of belonging. The family is group-oriented (Constantine, 1986; Imig, 200r; Kantor & Lehr, 1975). *Random Paradigm* - Conceptual definition – A family that values freedom and independence. The needs of the individual come before the needs of the family. The family is discontinuity-oriented and often appears chaotic and unorganized. The family seeks change and new ideas and supports curiosity and innovation but the family does not support hierarchy. Competition is the norm as it sparks innovation (Constantine, 1986; Imig, 2005; Kantor & Lehr, 1975). *Open Paradigm* - Conceptual definition – A family system that is oriented to the past, present and future with semi-permeable boundaries. The family is consequence-oriented with a healthy balance between continuity and change. The system stresses practical consensus through open communication and encourages multiple perspectives in an environment of flattened hierarchy. The family values both the individual and the group and encourages participation toward collective goals. The family reaches consensus through communication and values diversity and different perspectives as it respects the voice of each individual (Constantine, 1986; Imig, 2005; Kantor & Lehr, 1975). *Synchronous Paradigm* - Conceptual definition – a general harmonious system that reflects natural alignment and deeply held beliefs. The system is timeless; it does not operate in the past, present or future. Members share consensus without communication through a special way of knowing. The system promotes learning through observation and listening with no visible hierarchy, but still contains

	structure and patterns. Members learn by being a part of the environmental context that contains the structure*;* members maintain cohesion through unspoken shared understandings. These family values individuality and, at the same time, provides stability with rigid system boundaries (Constantine, 1986; Imig, 2005). Description of Items: The Relational Paradigm Assessment Scale (RPAS) is a self-report assessment that determines both the current and ideal paradigmatic orientation and player part for resource elements (time, energy, space and material) and goal elements (control, affect, content and meaning) in the respondent's relationship (see Appendices H and I). (Note: the focus of this study was limited to current paradigmatic orientation of control, affect, space and material – ideal paradigmatic orientation and player part information was not considered in the analysis.) Participants rated their relationship in terms of closed, random, open and synchronous paradigmatic orientations on a scale of 0-10 for each element. Instructions for the RPAS vary according to the different time periods assessed (current [real] relationship vs. ideal relationship). Scores on the scale indicate the extent to which each RPAS statement (closed, random, open and synchronous) reflects the participant's understanding of their current and ideal relationship. Higher scores on RPAS indicate greater similarity between the respondent's relationship and the paradigm described by each statement.
Adequacy of Sample Tested:	Samples used to test the RPAS are adequate.
Normative Data:	Normative data are not available for RPAS
Level of Measurement:	Interval level of measurement.
Discriminability:	The Relational Paradigm Assessment Scale (RPAS) uses an interval (0-10) scale.
Reliability:	*Test-Retest Reliability* – Test-Retest reliability has not yet been established for RPAS
Validity:	*Content Validity:* Content validity on the RPAS has been established through research (Imig, 1993a, 2000a; Imig et al., 1996; Imig & Phillips, 1992; Pate, 1994; Pegorarro, 1999; Villarruel et al., 1995; Ward, 1997).

	Variations of RPAS have been used to assess paradigmatic orientation in a variety of situations related to divorce (Pate, 1994); behavior under stress (Imig, 1993a, 2000a); home schooling (Pegorraro, 1999), men's groups (Imig et al., 1996), family businesses (Imig et al., 1996) and older child adoption (Ward, 1997). It is felt that these studies have established adequate content validity for RPAS. *Contruct Validity:* Although construct validity has not been formally established for RPAS, all versions of RPAS were developed specifically to measure family structure and behavior as defined by Family Paradigm theory (Constantine, 1986). Therefore, construct validity is assumed for this instrument. *Ease and Brevity:* The test was designed with 20 questions (ten for current relationship and ten for ideal relationship) that require four responses each (one response for each paradigm). Although the test is relatively long, it presents questions in a logical, orderly fashion and is easy to follow. The original RPAS requires approximately 60 minutes to complete.
Administration and Scoring:	The RPAS is a self-administered paradigmatic assessment. Scores require transformation (see Appendix K) but provide direct interpretation: raw scores and transformed scores both indicate the similarity of participant's perceived paradigmatic orientation with the orientation represented by each question/statement. In addition, transformed scores also consider the overall importance of each paradigm to the relationship. High scores indicate more similarity and low scores indicate less similarity. Scoring yields separate scores for closed paradigm, random paradigm, open paradigm and synchronous paradigm (see Appendix K).
Desirable Features:	The RPAS is efficient and cost-effective and easy to administer. This instrument is also portable, allowing for administration in various settings. The availability of the inventory enables use in both clinical and research settings. Additionally, the RPAS can be administered individually or in a group setting.
Undesirable Features:	RPAS requires complex transformation of data prior to interpretation of results

APPENDIX C

INSTRUMENT REVIEW

POSITIVE AND NEGATIVE AFFECT SCHEDULE (PANAS)

Title:	Positive and Negative Affect Schedule (PANAS)
Authors:	David Watson, Lee A Clark, and Auke Tellegen.
Population:	Adults.
Score:	2 Scores: Positive Affect and Negative Affect
Time:	Approximately 5 Minutes
Original Publisher:	Journal of Personality and Social Psychology
Date:	1988
Concept or Variable:	*Positive Affect (PA)* - Conceptual definition – "reflects the extent to which a person feels enthusiastic, active and alert. High PA is a state of high energy, full concentration, and pleasurable engagement, whereas low PA is characterized by sadness and lethargy" (Watson et al., 1988, p. 1063). *Negative Affect (NA)* - Conceptual definition – "a general dimension of subjective distress and unpleasurable engagement that subsumes a variety of aversive mood states, including anger, contempt, disgust, guilt, fear and nervousness, with low NA being a state of calmness and serenity" (Watson et al., 1988, p. 1063). Description of Items: The Positive and Negative Affect Schedule (PANAS) is a self-report assessment that consists of two separate mood scales that contain 10 questions each. These two subscales use a five-point Likert-type scale by which the respondent indicates the intensity of the emotional response. The instrument measures two affective state and trait dimensions: *positive affect* and *negative affect*. Instructions for the PANAS vary according to the different time periods assessed. The authors tested PANAS using seven time periods: *moment, today, past few days, past few weeks, year* and *general*. The essential qualities evaluated by the scale are feelings of enthusiasm, activeness and alertness (PA) and anger, contempt, disgust, guilt, fear and nervousness (NA). Scores on the scale reflect the extent to which participants experience each mood state.
Adequacy of Sample Tested:	Samples used to test the PANAS are adequate.
Normative Data:	Normative data are provided for 101 undergraduate university students and164 adult university employees. Mean scores for PA using *at this moment* time frame were 29.7 (*SD=7.9*) for PA, and 14.8 (*SD=5.4*) for NA. PA scores are

	generally higher than NA scores and tend to rise as the time interval increases.
Level of Measurement:	Ordinal level of measurement.
Discriminability:	The Positive and Negative Affect Schedule uses a Likert-type scale with five categories.
Reliability:	Reliability of the instrument has been widely reported (Crawford & Henry, 2004; Watson & Clark, 1994;Weiner et al., 2003). *Test-Retest Reliability* - PANAS stability was assessed on college students and non-college students for test-retest intervals ranging from the *moment* to the *general* (greater than one year). The magnitude of the reliability coefficients increased as a function of interval length. For the PA subscale the coefficients ranged from .47 (moment) - .68 (general), whereas coefficients for the NA scale ranged from .39 (moment) - .71 (general). As the interval of time increased, participants seemingly averaged their responses over time that covered more occasions and resulted in implicit aggregations (Watson et al., 1988, p. 1065). The stability coefficients for the *general* rating are sufficiently high to suggest they represent the participant's *trait* affect. *Internal Consistency*: Internal consistency of the two subscales based on temporal dimensions *moment, today, past few days, past few weeks, year* and *general* was as follows: Positive Affect*: 0*.86 - 0.90, Negative Affect*: 0*.84 – 0.87.
Validity:	Validity of the instrument has been widely reported (Crawford & Henry, 2004; Watson & Clark, 1994; Weiner et al., 2003). *Scale Validity:* Scale validity on the PANAS was determined by subjecting ratings on 60 Zevon and Tellegen (1982) mood descriptors in each of the six data sets to principal factor analysis with squared multiple correlations as the communality estimates. Two dominant factors emerged that explained approximately 2/3 of the common variance. After computing regression estimates with the factor scores, factor scores were correlated with PANAS PA and NA scales. This comparison demonstrated high correlation for both scales with corresponding regression-based factor scores. *Item Validity:* The item validity of the individual PANAS items was determined by factoring participant's ratings on the 20 PANAS descriptors in each of the six data sets with Zevon and Tellegen's (1982) 60 mood descriptors using a principal factor

	analysis with squared multiple correlations as the initial communality estimates. Two dominant factors emerged in each solution. Together, they accounted for nearly all of the common variance in these solutions, ranging from 87.4% in the moment solution to 96.1% in the general ratings. *PANAS Intercorrelation:* The correlation between the Positive Affect and Negative Affect scales is low, ranging from -.12 to -.23. The two scales share approximately1 % to 5% of their variance. These values indicate quasi-independence, a desirable feature for many purposes, and are substantially lower than those of many other short PA and NA scales (Watson et al., 1988). *Ease and Brevity:* The test was designed with only two, ten point scales that can easily be answered in approximately five minutes.
Administration and Scoring:	The PANAS is a self-administered mood assessment. Scores have a direct interpretation: high scores indicate the intensity of the emotional response for two affective state dimensions: *positive affect* (feelings of enthusiasm, activeness and alertness) and *negative affect* (feelings of anger, contempt, disgust, guilt, fear and nervousness). Scores are determined by summing responses from each scale: PA items (interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, and active) and NA items (distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery and afraid). Scoring yields separate scores for PA and NA that range from 10-50.
Desirable Features:	The PANAS is efficient and cost-effective and very easy to administer and score. This instrument is also portable, allowing for administration in various settings. The availability of the inventory enables use in both clinical and research settings. Additionally, the PANAS can be administered individually or in group settings.
Undesirable Features:	Harmon et al. (2009) reported that PANAS PA is increased by anger-inducing situations, not because anger is experienced positively, but because many of the PA items reflect approach motivation, which can be negative in valence.

APPENDIX D

DEMOGRAPHIC SURVEY # I

A1 Participant Number _ _ _

We would like you to tell us about you and your family to help us understand more about emotions and different family types. Please circle the best answer for each question or fill in the blanks with your answer.

A2 What is your gender?

1 Male
2 Female

A3 What is your age in years?

1 _____

A4 What is the highest level of education you've completed?

1 High School
2 Freshman year of college
3 Sophomore year of college
4 Junior year of college
5 Bachelor degree
6 Graduate/Professional degree
7 Other (please describe)_____

A5 How do you describe your marital status?

1 Single (never married)
2 Living with a significant other, not married
3 Married
4 Married but Separated
5 Divorced
6 Remarried
7 Widowed

A6 Do you live alone?

1 No
2 Yes

A7 If you do not live alone, how many individuals live in your home besides you?

Number		Relationship
1	one	_____
2	two	_____
3	three	_____
4	four	_____
5	five or more	_____

A8 Based on most political and social issues, how do you describe your political orientation?

1.Extremely liberal

2 Moderate

3 Extremely Conservative

Thank you for participating in this study; we appreciate your input.

APPENDIX E

DEMOGRAPHIC SURVEY #2

A1 Case ID Number _ _ _

We would like you to tell us a little bit about yourself. Please circle the best answer for each question or fill in the blanks with your answer.

B1 What is your gender?

0 Male
1 Female

B2 What is your age in years?

0 _____

B3 Are you a student?

0 No
1 Yes

B4 What is the highest level of education you've completed?

1 Grade School or less
2 General Educational Development (GED)
3 High School
4 Attended College
5 College 2-year degree
6 College 4-year degree
7 Graduate/Professional degree
8 Other (please describe)_____

Next, we would like you to tell us about your family to help us understand how different family structures relate to risk-taking. Please circle the best answer for each question or fill in the blanks with your answer.

C1 Do you live alone?

0 No
1 Yes

C2 If you do not live alone, how many individuals live in your home besides you? (Please circle the number and describe their relationship to you)

Number		Relationship
1	one	_____
2	two	_____
3	three	_____
4	four	_____
5	five or more	_____

C3 Do you share a significant relationship with another individual?

0 No
1 Yes

C4 If you do share a significant relationship with another individual, is the individual male or female?

0 Male
1 Female

C5 Please describe the closeness of your relationship with this individual

0 Not very close at all
1 Just a little close
2 Somewhat close
3 Closer than most
4 Extremely close

Lastly, we would like you to describe your culture. Please circle the best answer for each question or fill in the blanks with your answer.

D1 Please list your home country.

0 _____

D2 What is your native language?

0 English
1 French
2 Spanish
3 German
4 Italian
5 Russian
6 Arabic
7 Chinese
8 Other (please describe)_____

D3 Are you a member of a religious group?

0 No
1 Yes

D4 If yes, please describe the religious group

0 Christian
1 Islamic
2 Hindu
3 Jewish

4 Buddhist
5 Chinese traditional
6 Other (please describe)___
_____

D5 Please describe the Government organization in your home country.

0 Anarchy (no government)
1 Capitalist (free market)
2 Communist
3 Democracy (people elect the government)
4 Dictatorship (single leader)
5 Federal government (elected leader) USA
6 Monarchy (King or Queen)
7 Other (please describe) _____

D6 Based on most political and social issues, how do you describe your political orientation?

0 Extremely liberal
1 Moderately liberal
2 Neither Liberal nor Conservative
3 Moderately Conservative
4 Extremely Conservative

Thank you for participating in this study; we appreciate

APPENDIX F

RPAS-1 – PHASE I

FAMILY RELATIONSHIPS

We would like to learn more about the way your family functions in everyday life. Please respond to the following questions by telling us how true each statement is for your family now (real) and how much you *would like* it to be true (ideal).

- Please rate each statement on a scale of 0 (not true at all for my family) through 10 (most true for my family). Please use the value of "10" only once in the real category and once in the ideal category for each group of statements. You may use values of 0-9 as needed to rate the remaining statements for real and ideal.
- In addition, please indicate whether you feel each statement applies to your family in a positive way (+), a negative way (-), both a positive and a negative way (+/-), or neither a positive nor a negative way (0) based on the way your family functions now (real) and the way you *would like*

1). *What is the approach your family most typically uses to achieve and accomplish what they want?*			
a). Unstated agreements and just knowing what to do	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			
b). Authority, rules, and discipline	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			
c). Personal freedom, individual competence, and choice	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			
d). Cooperation, discussion, and mutual agreement	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			

2). In what manner do your family members express their caring and support for each other? In what manner do your family members express their caring and support for each other?			
a). Expressive, responsive, and given willingly	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			
b). Private, formal, and regulated	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			
c). Spontaneous, public, and enthusiastic	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			
d). Limited, reserved, and rarely expressed because we know we care deeply for each other	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			

3). How does your family deal with ideas and information?			
a). Discussions have few limits, no ideas are too silly or extreme, individual perceptions are expected	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			
b). Certain topics are rarely discussed, controversy is avoided, different ideas are suspect	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			
c). Different ideas are okay, friendly conflict is expected, but should be resolved through communication	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			
d). We are very rational and think alike without a great deal of discussion and communication	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			

4). How does your family relate to material possessions and belongings?			
a). Material things are functional and valued because the family works hard for them and deserves the benefits of life	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			
b). Material possessions are viewed as being both confining and limiting to achieving personal meaning	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			
c). Belongings are a means of convenience, and serve to assist in family interaction and in achieving personal goals	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			
d). Possessions are valued because of their aesthetic quality, and should be kept as perfect as possible	Real	Ideal	+ - +/- 0
➢ **Oral Interview:** What feelings made you respond to that statement the way you did? Why do you think you feel that way? How does this make you feel about your family?			

APPENDIX G

REVISED RPAS-2 – PHASE II

FEELINGS, EMOTIONS AND FAMILY RELATIONSHIPS

We would like to learn more about the feelings and emotions that you have regarding how your family functions in everyday life. Please respond to the following questions below by assigning certain numbers to each statement (A-D) describing how your family is *now* (real) and how you *would like it to be* (ideal).

First, please rate each statement (A - D) on a scale of 0 – 10 with 0 being not true at all for my family through 10 being most true for my family. Please use the value of "10" **only once** in the real category and **only once** in the ideal category for each group of statements. You may use the values of 0-9 as needed to rate the remaining statements for real and ideal. Each cell must have a number assigned. The distribution of numbers for choices A – D should describe what your family is most like and least like (real) and what you would most and least like it to be (ideal).

Second, please indicate for choices A - D for both real and ideal, how you feel about each statement as it applies to your family. Use only one symbol for each choice.

1. in a positive way (+) or
2. in a negative way (-) or
3. in both a positive and a negative way (+/-) or
4. in neither a positive nor a negative way (0)

Third, using a scale of 1 – 5 with 1 representing lowest intensity and 5 representing highest intensity, please rate how intense your feelings are for each statement (A – D).

Fourth, please list 1 or 2 words that describe your feelings for the choices A – D. Do not use the words that have already been identified previously (positive, negative, etc.). The words may also reflect your level of intensity.

1). *What is the approach your family most typically uses to achieve and accomplish what they want that is, to get done the important things that need to get done, get done?*				
	Real	+ - +/- 0	Emotional Intensity 1 - 5	Descriptive Words
a). Unstated agreements and just knowing what to do				
b). Authority, rules, and discipline				
c). Personal freedom, individual competence, and choice				
d). Cooperation, discussion, and mutual agreement				
	Ideal	+ - +/- 0	Emotional Intensity 1 - 5	Descriptive Words
a). Unstated agreements and just knowing what to do				
b). Authority, rules, and discipline				
c). Personal freedom, individual competence, and choice				
d). Cooperation, discussion, and mutual agreement				

2). *In what manner do your family members express their caring and support for each other?*				
	Real	+ - +/- 0	Emotional Intensity 1 - 5	Descriptive Words
a). Expressive, responsive, and given willingly				
b). Private, formal, and regulated				
c). Spontaneous, public, and enthusiastic				
d). Limited, reserved, and rarely expressed because we know we care deeply for each other				
	Ideal	+ - +/- 0	Emotional Intensity 1 - 5	Descriptive Words
a). Expressive, responsive, and given willingly				
b). Private, formal, and regulated				
c). Spontaneous, public, and enthusiastic				
d). Limited, reserved, and rarely expressed because we know we care deeply for each other				

3). *How does your family deal with ideas and information?*				
	Real	+ - +/- 0	Emotional Intensity 1 - 5	Descriptive Words
a). Discussions have few limits, no ideas are too silly or extreme, individual ideas are expected				
b). Certain topics are rarely discussed, controversy is avoided, different ideas are suspect				
c). Different ideas and conflict is OK, but differences should be resolved				
d). We are very rational, and think alike without a great deal of discussion and communication				
	Ideal	+ - +/- 0	Emotional Intensity 1 - 5	Descriptive Words
a). Discussions have few limits, no ideas are too silly or extreme, individual perceptions are expected				
b). Certain topics are rarely discussed, controversy is avoided, different ideas are suspect				
c). Different ideas are okay, friendly conflict is expected, but should be resolve through communication				
d). We are very rational, and think alike without a great deal of discussion and communication				

4). *How does your family relate to material possessions and belongings?*				
	Real	+ - +/- 0	motional Intensity 1 - 5	Descriptive Words
a). Material things are functional and valued because the family works hard for them and deserves the benefits of life				
b). Material possessions are viewed as being both confining and limiting to achieving personal meaning				
c). Belongings are a means of convenience, and serve to assist in family interaction and in achieving personal goals				
d). Possessions are valued because of their aesthetic quality, and should be kept as perfect as possible				
	Ideal	+ - +/- 0	motional Intensity 1 - 5	Descriptive Words
a). Material things are functional and valued because the family works hard for them and deserves the benefits of life				
b). Material possessions are viewed as being both confining and limiting to achieving personal meaning				
c). Belongings are a means of convenience, and serve to assist in family interaction and in achieving personal goals				
d). Possessions are valued because of their aesthetic quality, and should be kept as perfect as possible				

APPENDIX H

REVISED RPAS-3 – PHASE III

FEELINGS, EMOTIONS AND FAMILY RELATIONSHIPS

We would like to learn more about the feelings and emotions that you have regarding how your family functions in everyday life. Please respond to the following questions below by assigning certain numbers to each statement (A-D) describing how your family is *now* (real) and how you *would like it to be* (ideal).

First, please rate each statement (A - D) on a scale of 0 – 10 with 0 being not true at all for my family through 10 being most true for my family. Please use the value of "10" **only once** in the real category and **only once** in the ideal category for each group of statements. You may use the values of 0-9 as needed to rate the remaining statements for real and ideal. Each cell must have a number assigned. The distribution of numbers for choices A – D should describe what your family is most like and least like (real) and what you would most and least like it to be (ideal).

Second, please indicate for choices A - D for both real and ideal, how you feel about each statement as it applies to your family. Use only one symbol for each choice.

5. in a positive way (+) or
6. in a negative way (-) or
7. in both a positive and a negative way (+/-) or
8. in neither a positive nor a negative way (0)

Third, using a scale of 1 – 5 with 1 representing lowest intensity and 5 representing highest intensity, please rate how intense your feelings are for each statement (A – D).

Fourth, please list **a single word** from the ***Emotions*** list provided that best describes your feelings for choices A – D for each statement. You may then add additional descriptive words or comments about each statement. The words may also reflect your level of intensity.

1). *What is the approach your family most typically uses to achieve and accomplish what they want that is, to get done the important things that need to get done, get done.?*				
	Real	+ - +/- 0	motional Intensity 1 - 5	Descriptive Words
a). Unstated agreements and just knowing what to do				
b). Authority, rules, and discipline				
c). Personal freedom, individual competence, and choice				
d). Cooperation, discussion, and mutual agreement				
	Ideal	+ - +/- 0	motional Intensity 1 - 5	Descriptive Words
a). Unstated agreements and just knowing what to do				
b). Authority, rules, and discipline				
c). Personal freedom, individual competence, and choice				
d). Cooperation, discussion, and mutual agreement				

2). *In what manner do your family members express their caring and support for each other?*				
	Real	+ - +/- 0	Emotional Intensity 1 - 5	Descriptive Words
a). Expressive, responsive, and given willingly				
b). Private, formal, and regulated				
c). Spontaneous, public, and enthusiastic				
d). Limited, reserved, and rarely expressed because we know we care deeply for each other				
	Ideal	+ - +/- 0	Emotional Intensity 1 - 5	Descriptive Words
a). Expressive, responsive, and given willingly				
b). Private, formal, and regulated				
c). Spontaneous, public, and enthusiastic				
d). Limited, reserved, and rarely expressed because we know we care deeply for each other				

3). *How does your family deal with ideas and information?*				
	Real	+ - +/- 0	Emotional Intensity 1 - 5	Descriptive Words
a). Discussions have few limits, no ideas are too silly or extreme, individual ideas are expected				
b). Certain topics are rarely discussed, controversy is avoided, different ideas are suspect				
c). Different ideas and conflict is OK, but differences should be resolved				
d). We are very rational, and think alike without a great deal of discussion and communication				
	Ideal	+ - +/- 0	Emotional Intensity 1 - 5	Descriptive Words
a). Discussions have few limits, no ideas are too silly or extreme, individual perceptions are expected				
b). Certain topics are rarely discussed, controversy is avoided, different ideas are suspect				
c). Different ideas are okay, friendly conflict is expected, but should be resolve through communication				
d). We are very rational, and think alike without a great deal of discussion and communication				

4). *How does your family relate to material possessions and belongings?*				
	Real	+ - +/- 0	Emotional Intensity 1 - 5	Descriptive Words
a). Material things are functional and valued because the family works hard for them and deserves the benefits of life				
b). Material possessions are viewed as being both confining and limiting to achieving personal meaning				
c). Belongings are a means of convenience, and serve to assist in family interaction and in achieving personal goals				
d). Possessions are valued because of their aesthetic quality, and should be kept as perfect as possible				
	Ideal	+ - +/- 0	Emotional Intensity 1 - 5	Descriptive Words
a). Material things are functional and valued because the family works hard for them and deserves the benefits of life				
b). Material possessions are viewed as being both confining and limiting to achieving personal meaning				
c). Belongings are a means of convenience, and serve to assist in family interaction and in achieving personal goals				
d). Possessions are valued because of their aesthetic quality, and should be kept as perfect as possible				

5). From a relational point-of-view, what emphasis do you feel is being placed on the following areas?				
	Real	+ - +/- 0	Emotional Intensity 1 - 5	Descriptive Words
a). The importance of ideas, questions & information				
b The importance of possessions and belongings				
c). That in our relationship we provide each other with the amount & kind of affection, caring, love & support wanted & needed				
d). That the important & necessary things that need to get done - in order to have a quality relationship - get done				

	Ideal	+ - +/- 0	Emotional Intensity 1 - 5	Descriptive Words
a). The importance of ideas, questions & information				
b The importance of possessions and belongings				
c). That in our relationship we provide each other with the amount & kind of affection, caring, love & support wanted & needed				
d). That the important & necessary things that need to get done - in order to have a quality relationship - get done				

APPENDIX I

REVISED RPAS-– PHASE IV4 – SAMPLE QUESTION #1

FEELINGS, EMOTIONS AND FAMILY RELATIONSHIPS

We would like to learn more about the feelings and emotions that you have regarding how your family functions in everyday life. Please respond to the following questions below by assigning certain numbers to each statement (A-D) describing how your family is *now* (real) and how you *would like it to be* (ideal).

First, please rate each statement (A - D) on a scale of 0 – 10 with 0 being not true at all for my family through 10 being most true for my family. Please use the value of "10" **only once** in the real category and **only once** in the ideal category for each group of statements. You may use the values of 0-9 as needed to rate the remaining statements for real and ideal. Each cell must have a number assigned. The distribution of numbers for choices A – D should describe what your family is most like and least like (real) and what you would most and least like it to be (ideal).

Second, please complete the scale that follows each statement for questions 1-5.

1). *In your relationship, how do the important things that must get done, get done?* (Question #1 on your RPAS from class)

1a). We just know what needs to get done & how to do it

Score for 1a: (0-10) How much does the statement above describe your relationship with your partner?

(Remember to use "10" only once for 1a -1d)

REAL

Directions: This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way about the statement above during the past week. Use the following scale to record your answers.

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Distressed	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

1). *In your relationship, how do the important things that must get done, get done?* (Question #1 on your RPAS from class)

1b). By being well organized, using successful & structured routines, and perhaps most importantly having a plan we can count on.

Score for 1b: (0-10) How much does the statement above describe your relationship with your partner?

(Remember to use "10" only once for 1a -1d)

REAL

Directions: This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way about the statement above during the past week. Use the following scale to record your answers.

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Distressed	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

1). *In your relationship, how do the important things that must get done, get done?* (Question #1 on your RPAS from class)

1c). Each person does what they think needs to get done and how to do it

Score for 1c: (0-10) How much does the statement above describe your relationship with your partner?

(Remember to use "10" only once for 1a -1d)

REAL

Directions: This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way about the statement above during the past week. Use the following scale to record your answers.

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Distressed	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

1). *In your relationship, how do the important things that must get done, get done?* (Question #1 on your RPAS from class)

1d). By regularly discussing and agreeing with each other what needs to get done and how "best" to work together to get things done

Score for 1d: (0-10) How much does the statement above describe your relationship with your partner?

(Remember to use "10" only once for 1a -1d)

REAL

Directions: This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way about the statement above during the past week. Use the following scale to record your answers.

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Distressed	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

1). *In your relationship, how do the important things that must get done, get done?* (Question #1 on your RPAS from class)

1a). We just know what needs to get done & how to do it

Score for 1a: (0-10) How much does the statement above describe your relationship with your partner?

☐

(Remember to use "10" only once for 1a -1d)

IDEAL

Directions: This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way about the statement above during the past week. Use the following scale to record your answers.

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Distressed	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

1). *In your relationship, how do the important things that must get done, get done?* (Question #1 on your RPAS from class)

1b). By being well organized, using successful & structured routines, and perhaps most importantly having a plan we can count on.

Score for 1b: (0-10) How much does the statement above describe your relationship with your partner?

(Remember to use "10" only once for 1a -1d)

IDEAL

Directions: This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way about the statement above during the past week. Use the following scale to record your answers.

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Distressed	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

1). *In your relationship, how do the important things that must get done, get done?* (Question #1 on your RPAS from class)*?*

1c). Each person does what they think needs to get done and how to do it.

Score for 1c: (0-10) How much does the statement above describe your relationship with your partner?

(Remember to use "10" only once for 1a -1d)

IDEAL

Directions: This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way about the statement above during the past week. Use the following scale to record your answers.

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Distressed	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

1). *In your relationship, how do the important things that must get done, get done?* (Question #1 on your RPAS from class)

1d). By regularly discussing and agreeing with each other what needs to get done and how "best" to work together to get things done

Score for 1d: (0-10) How much does the statement above describe your relationship with your partner?

(Remember to use "10" only once for 1a -1d)

IDEAL

Directions: This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way about the statement above during the past week. Use the following scale to record your answers.

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Distressed	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

APPENDIX J

POSITIVE AND NEGATIVE AFFECT SCHEDULE

PANAS

Directions

This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way during the past week.

Use the following scale to record your answers.

(1.)=Very slightly or not at all (2)=A little (3)=Moderately (4)= Quite a bit (5)=Extremely

	Very Slightly or not at all	A Little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Distressed	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

APPENDIX K

REVISED RPAS CALCULATIONS

Resource Elements			Goal Elements	
Space			**Control**	
Question			*Question*	
3A	Random		**1A**	Synchronous
3B	Closed		**1B**	Closed
3C	Open		**1C**	Random
3D	Synchronous		**1D**	Open
Material			**Affect**	
Question			*Question*	
4A	Closed		**2A**	Open
4B	Random		**2B**	Closed
4C	Open		**2C**	Random
4D	Synchronous		**2D**	Synchronous

The table above defines the elements (control, affect, space and material) and paradigms (closed, random, open and synchronous) reflected through question 1, question 2, question 3, question 4 and questions 5 on the Revised Relational Paradigm Assessment Scale (R-RPAS). Questions 1-4 describe the paradigmatic orientation for each element (control, affect, space and material) in the relationship or family system and question 5 describes the overall importance of each element in the relationship or family system. Participants assigned a 0-10 score for each statement (A, B, C and D) in Q1, Q2, Q3, Q4 and Q5 according to their understanding of the relationship or family system. Participants assign the value of 10 only one time, but they

assigned values 0-9 as many times as necessary in order to indicate their understanding of the relationship.

During coding, simple coefficients were computed for each item response in questions Q1, Q2, Q3, Q4 and Q5 by summing the responses to each question (ex. 1A + 1B + 1C + 1D) and then dividing each response by the sum (ex: 1A / sum [1A + 1B + 1C + 1D]).

Question	
5A	Space
5B	Material
5C	Affect
5D	Control

Question 5 coefficients were then applied to corresponding coefficients in Q1, Q2, Q3 and Q4 in order to reflect appropriate weighting for each element. For example, Q5A reflects the importance of *space* in the relationship so the simple coefficient for Q5A was multiplied with the simple coefficients for each response in Q3 to produce *complex coefficients* (Q3A * Q5A, Q3B * Q5A, Q3C * Q5A and Q3D * Q5A) that factor in the overall importance of *space* in the relationship. This computation was repeated for item responses in Q1 (using the 5D coefficient), Q2 (using the 5C coefficient) and Q4 (using the 5B coefficient).

Finally, overall paradigm scores were computed by summing complex coefficients from Q1, Q2, Q3 and Q4 for each paradigm. Closed paradigm scores were computed by summing complex coefficient values for Q1B + Q2B + Q3B + Q4A; random paradigm scores were computed by summing values from Q1C + Q2C + Q3A + Q4B, open paradigm scores were

computed by summing values from Q1D + Q2A + Q3C + Q4C, and synchronous paradigm scores were computed by summing values from Q1A + Q2D + Q3D + Q4D.

APPENDIX L

EMOTIONS SURVEY FOR CATEGORIZING

PHASE III/IV COMBINED EMOTIONS

EMOTIONS SURVEY

I am requesting your assistance in a critical task for my Dissertation. Your participation is optional and will not affect your grade either positively or negatively. Dr. Villarruel suggested that I appeal to you for participation based on your commitment to reflect accurate information at the graduate level. Your participation will require 5-10 minutes of your time. I have disabled all tracking, so there is no way for me to identify who completes this task, and I have blocked Dr. V. from seeing this so he also has no ability to see who participates in this survey or not.

I am asking for your help as a partial requirement for my dissertation, in which I am trying to understand how different types of family systems (family paradigms, or *worldviews*) relate to human emotions. I propose that this research will provide information that will help families adapt to changes brought about by stressful life events (divorce, job loss, death, etc.).

This exercise involves categorizing 48 emotions words based upon the dimensions of valence and arousal:

Valence - Degree to which an emotion is pleasant or unpleasant - may also be thought of as the positive or negative felt quality that is inherent to all emotional experiences.

Arousal - Preparedness of an organism for action - may also be thought of as the degree to which an emotion is behaviorally activating.

To participate in this exercise, please rate each of the following words according to your perception of its overall valence and arousal. The four categories are Pleasure Activated, Pleasure Deactivated, Displeasure Activated and Displeasure Deactivated.

As an example, the word "calm" is pleasant (valence) and inactive (arousal) so the appropriate category to check for this word is "Pleasure - Deactivated". See http://sites.google.com/site/circumplexmodelofaffect/circumplex-model-of-affect for an illustration of the model.

EMOTIONS SURVEY

1. Active

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

2. Afraid

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

3. Alert

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

4. Angry

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

5. Anxious

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

6. Ashamed

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

7. Attentive

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

8. Bored

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

9. Cautious

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

10. Confident

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

11. Confused

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

12. Depressed

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

13. Determined

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

14. Distressed

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

15. Disgusted

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

16. Ecstatic

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

17. Embarrassed

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

18. Enraged

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

19. Enthusiastic

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

20. Excited

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

21. Exhausted

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

22. Frightened

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

23. Frustrated

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

24. Guilty

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

25. Happy

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

26. Hopeful

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

27. Hostile

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

28. Hysterical

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

29. Inspired

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

30. Interested

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

31. Irritable

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

32. Jealous

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

33. Jittery

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

34. Lonely

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

35. Love-struck

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

36. Mischievous

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

37. Nervous

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

38. Overwhelmed

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

39. Proud

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

40. Sad

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

41. Scared

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

42. Shocked

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

43. Shy

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

44. Smug

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

45. Strong

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

46. Surprised

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

47. Suspicious

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

48. Upset

- A. Pleasure - Activated
- B. Pleasure – Deactivated
- C. Displeasure – Activated
- D. Displeasure - Deactivated

APPENDIX M

GUIDELINES FOR CATEGORIZING EMOTIONS

FOR PHASE III/IV COMBINED

Phase III Emotions (30 Words)			Phase IV Emotions (PANAS)	
Pleasure Activated (PA)				
Ecstatic			Active	
Surprised			Alert	
Happy			Determined	
			Enthusiastic	
			Excited	
			Inspired	
			Interested	
			Strong	
Pleasure Deactivated (DD)				
Confident			Attentive	
Content			Proud	
Hopeful				
Love-struck				
Secure				

Displeasure Activated (DA)					
Angry				Afraid	
Anxious				Hostile	
Cautious				Irritable	
Confused				Distressed	
Disgusted				Jittery	
Embarrassed				Nervous	
Enraged				Scared	
Frightened				Upset	
Frustrated					
Hysterical					
Jealous					
Overwhelmed					
Suspicious					
Upset					

Displeasure Deactivated (DD)					
Ashamed*				Ashamed*	
Bored				Guilty*	
Depressed					
Disgusted					
Embarrassed					
Exhausted					
Guilty*					
Sad					
Shocked					
Shy					

The table above defines categories (pleasure activated “PA”, pleasure deactivated “PD”, displeasure activated “DA” and displeasure deactivated “DD”) for each emotion word included in Phase III and Phase IV of the study. In preparation for data analysis, each response was coded according to valence (pleasure vs. displeasure) and arousal (activated vs. deactivated) using indicator variables (0, 1).

Phase III - During Phase III of the study, participants provided a single emotion word from a 30-word list (see Table 3 on page 39) in response to each item (ex. 1A) in order to describe the emotions they felt in response to each paradigmatic statement:

Q1. In your relationship, how do the important things that must get done, get done?

A. *We just know what needs to get done & how to do it*

Emotion response – *enthusiastic* ("PA" according to table above)

For Phase III data, indicator variables were assigned for each item according to the table above:

Emotion response – *Enthusiastic* (PA)

Coded as: Pleasure, displeasure = 1,0

Activated, deactivated = 1,0

Phase IV - For Phase IV (PANAS) data, *pleasure* vs. *displeasure* and *activated* vs. *deactivated* scores were determined using the following calculations:

- *Pleasure* vs. *displeasure* - For each item (ex. 1A) raw scores for pleasure words (1, 3, 5, 9, 10, 12, 14, 16, 17, 19) on PANAS were summed, and then an average "pleasure" score was determined by dividing the sum by the number of items (10). This was repeated for all items in Q1, Q2, Q3 and Q4. To determine average "displeasure" scores, raw scores for displeasure items (2, 4, 6, 7, 8, 11, 13, 15, 18, 20) were summed and then divided by the number of items (10). These calculations were repeated for all items in Q1, Q2, Q3 and Q4.
- *Activated* vs. *deactivated* – The average "activated" score for each item was determined by summing the raw scores for activated items (1, 2, 3, 4, 5, 7, 8, 9, 11, 12, 14, 15, 16, 17, 18, 19, 20) and then dividing the sum by the number of items (16). This was repeated for all items in Q1, Q2, Q3 and Q4. The average "deactivated" score for each item was calculated by summing the raw scores for deactivated items (6, 10, 13, 17) and then dividing the sum by the number of items (4).

- *Assigning Indicator Variables* - For each item (ex. 1A) the pleasure score was compared with the displeasure score. The score with the highest value was coded as "1" and the score with the lowest value was coded as "0". This was repeated for all items in Q1, Q2, Q3 and Q4. Next, the activated score for each item (ex. 1A) was compared with the deactivated score for each item. The score with the highest value was coded as "1" and the score with the lowest value was coded as "0". This was repeated for all items in Q1, Q2, Q3 and Q4.
    - *Missing Data and Ties* – For cases with missing data or with equal values assigned to pleasure vs. displeasure or activated vs. deactivated, the values were assigned according to the most frequent response among corresponding paradigm statements for the other three questions.

        Q1B "Closed" response = (missing)

        Q2B "Closed" response = "pleasure"

        Q3B "Closed" response = "displeasure"

        Q4A "Closed" response = "pleasure"

        In the example above, the response "pleasure" would be assigned to Q1B (missing data) because a pleasure response occurs twice in the corresponding paradigm statements (Q2B, Q4A) whereas a displeasure response occurs only once (Q3B).

        If two items in a paradigm category were missing emotions data and the other two questions revealed split responses (ex. the response for one question was "pleasure" and the response for the other question was "displeasure") then the missing data were assigned values according to Q5 ranking of elements.

Q1B “Closed” response = (missing) (control question)

Q2B “Closed” response = “pleasure” (affect question)

Q3B “Closed” response = “displeasure” (space question)

Q4A “Closed” response = (missing) (material question)

Q5A (space) = 4

Q5B (material) = 9

Q5C (affect) = 10

Q5D (control) = 3

In the example above, the response “pleasure” would be assigned to Q1B and Q4A (missing data) because Q5 shows the highest emphasis on the element “affect” (10) compared to the other elements (material = 9, space = 4, control = 3). Question 2 focuses on affect and reveals a “pleasure” response.

Emotions Scores by Paradigm - Lastly, overall emotions scores were computed for each paradigm by summing the corresponding *pleasure* vs. *displeasure* and *activated* vs. *deactivated* indicator scores from Q1, Q2, Q3 and Q4.

Valence

- *Pleasure* closed paradigm scores were computed by summing pleasure indicator scores from Q1B + Q2B + Q3B + Q4A
- *Displeasure* closed paradigm scores were computed by summing displeasure indicator scores from Q1B + Q2B + Q3B + Q4A

- *Pleasure* random paradigm scores were computed by summing pleasure indicator scores from Q1C + Q2C + Q3A + Q4B
- *Displeasure* random paradigm scores were computed by summing pleasure indicator scores from Q1C + Q2C + Q3A + Q4B
- *Pleasure* open paradigm scores were computed by summing pleasure indicator scores from Q1D + Q2A + Q3C + Q4C
- *Displeasure* open paradigm scores were computed by summing displeasure indicator scores from Q1D + Q2A + Q3C + Q4C
- *Pleasure* synchronous paradigm scores were computed by summing pleasure indicator scores from Q1A + Q2D + Q3D + Q4D.
- *Displeasure* synchronous paradigm scores were computed by summing displeasure indicator scores from Q1A + Q2D + Q3D + Q4D.

Arousal

- *Activated* closed paradigm scores were computed by summing activated indicator scores from Q1B + Q2B + Q3B + Q4A
- *Deactivated* closed paradigm scores were computed by summing deactivated indicator scores from Q1B + Q2B + Q3B + Q4A
- *Activated* random paradigm scores were computed by summing activated indicator scores from Q1C + Q2C + Q3A + Q4B
- *Deactivated* random paradigm scores were computed by summing deactivated indicator scores from Q1C + Q2C + Q3A + Q4B
- *Activated* open paradigm scores were computed by summing activated indicator scores from Q1D + Q2A + Q3C + Q4C

- *Deactivated* open paradigm scores were computed by summing deactivated indicator scores from Q1D + Q2A + Q3C + Q4C
- *Activated* synchronous paradigm scores were computed by summing activated indicator scores from Q1A + Q2D + Q3D + Q4D.
- *Deactivated* synchronous paradigm scores were computed by summing deactivated indicator scores from Q1A + Q2D + Q3D + Q4D.

APPENDIX N

GUIDELINES FOR CATEGORIZING EMOTIONS

FOR PHASE IV (PANAS)

Phase IV Emotions (PANAS)			
Positive Affect			Negative Affect
Active			Afraid
Alert			Hostile
Determined			Irritable
Enthusiastic			Distressed
Excited			Jittery
Inspired			Nervous
Interested			Scared
Strong			Upset
Attentive			Ashamed*
Proud			Guilty*

The table above defines categories (positive affect "PA" and negative affect "NA") for each emotion word included in Phase IV of the study. *Positive affect vs. Negative affect* scores were determined using the following calculations:

- *Positive affect* vs. *negative affect* – For each item (ex. 1A) raw scores for positive affect words (1, 3, 5, 9, 10, 12, 14, 16, 17, 19) on PANAS were summed, and then an average "PA" score was determined by dividing the sum by the number of items (10). This was repeated for all items in Q1, Q2, Q3 and Q4. To determine average "negative affect" scores, raw scores for negative affect items (2, 4, 6, 7, 8, 11, 13, 15, 18, 20) were summed and then divided by the number of items (10). These calculations were repeated for all items in Q1, Q2, Q3 and Q4.

- *Missing Data* – Since each PA and NA sum above was divided by the number of actual responses for each question, the coding process compensated for missing data by substituting the average value from the responses provided.

Emotions Scores by Paradigm – Lastly, overall emotions scores were computed for each paradigm by summing the corresponding *positive affect* vs. *negative affect* scores from Q1, Q2, Q3 and Q4.

- *Positive affect* closed paradigm scores were computed by summing PA scores from Q1B + Q2B + Q3B + Q4A
- *Negative affect* closed paradigm scores were computed by summing NA scores from Q1B + Q2B + Q3B + Q4A
- *Positive affect* random paradigm scores were computed by summing PA scores from Q1C + Q2C + Q3A + Q4B
- *Negative affect* random paradigm scores were computed by summing NA scores from Q1C + Q2C + Q3A + Q4B
- *Positive affect* open paradigm scores were computed by summing PA scores from Q1D + Q2A + Q3C + Q4C
- *Negative affect* open paradigm scores were computed by summing NA scores from Q1D + Q2A + Q3C + Q4C
- *Positive affect* synchronous paradigm scores were computed by summing PA scores from Q1A + Q2D + Q3D + Q4D.
- *Negative affect* synchronous paradigm scores were computed by summing NA scores from Q1A + Q2D + Q3D + Q4D.

APPENDIX O

THE HUMAN BRAIN

The Human Brain

The brain is the most complex structure in the human body. Weighing just three pounds, the brain is a gelatinous structure that connects with virtually every point in the body and processes all thoughts, feelings and emotions. The brain, along with the spinal cord, comprises the central nervous system. This system compares input from the external environment with memories from past experiences and directs the body to respond appropriately. The most unique feature of the brain is its complex neural circuitry. The brain contains approximately ten billion nerve cells, or *neurons* that form an electrical-chemical conduction system that facilitates communication between its own regions and other parts of the body. The brain also connects with the body through a system of hormones and peptides that travel through the bloodstream. This hormone, or endocrine system functions together with the brain during emotional responses.

The brain emits action signals and restraining signals to the rest of the body. Each neuron contains short fingerlike dendrites that receive signal from other neurons, and a longer axon that carries signal to other neurons. The transmission of signal between neurons begins as a small electrical charge, or action potential in the nerve cell body. This action potential sends a signal down the axon and causes the axon to release a small chemical neurotransmitter pool that activates the short receiving fibers, or dendrites of the next neuron. The process repeats itself until the signal reaches its final destination.

Structurally, the brain is divided into three primary components: the cerebrum, the brainstem and the cerebellum (see Figure 20).

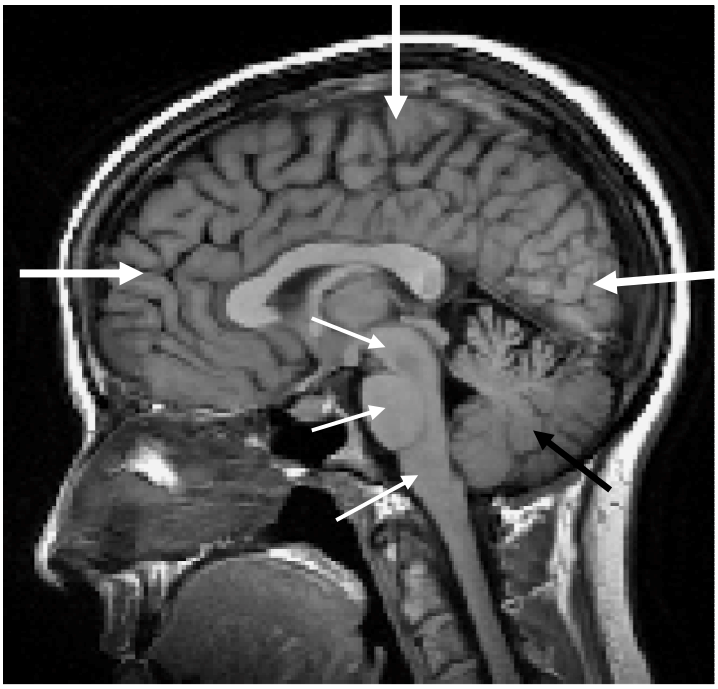


Figure 20: Magnetic Resonance Image of the Brain Depicting Cerebrum, Brainstem and Cerebellum (large white arrows depict cerebrum; small white arrows depict brainstem [upper midbrain, middle pons and lower medulla] and black arrows depict cerebellum. Adapted from "Magnetic Resonance Imaging Cross-Sectional Anatomy Technologist Educational Program" by L. Hoisington and S. Fedewa, 2007, p. 16.

The cerebrum, which forms the largest, top part of the brain, is comprised of two halves, the left and right hemispheres that are connected through a thick bundle of horizontal fibers known as the corpus callosum. These fibers serve as the major communication channel between the two hemispheres. The outer surface of the brain is called the cerebral cortex, or neocortex. The cortex consists of six layers of neurons that cover the entire surface of the cerebrum, about sixteen square feet (Franks, 2006, p. 45). This 2-4mm thick covering on the cortex comprises the grey matter of the brain. The cortex analyzes incoming signal, forms perceptions and decodes meaning in preparation for each emotional response (Heilman, 2000).

The cerebral cortex is divided into motor, sensory and association areas. The motor areas of the brain include the primary motor area, the premotor area, the frontal eye field and the

language center. The sensory area is located behind the central sulcus in the postcentral gyrus. In the general sensory area each point receives sensation from specific body parts; the entire body is spatially represented. The sensory areas of the brain include the primary visual area, the visual association area, the primary auditory area, the auditory association area, the primary gustatory area, the primary olfactory area and the gnostic area. The remaining area of the cortex consists of the somesthetic association area.

The cerebellum, like the cerebrum, also contains thin layers of neurons on its surface. This blanket of neural layers in the cerebellum is known as the cerebellar cortex. Directly under the cortex of the cerebrum and cerebellum is a larger area of white matter comprised of long string-like axons that serve as connectors for the neurons. White matter derives its name from the fatty myelin that forms a sheath around the axons.

Some neurons form clusters, or nuclei beneath the surface of the brain. Nuclei of this type are said to be subcortical. This variety of nuclei includes the caudate nucleus, the putamen and the globus pallidus located in each cerebral hemisphere, the amygdala in each temporal lobe, the thalamus on either side of the third ventricle, and the substantia nigra and nucleus ceruleus in the brainstem (Damasio, 1994, p. 27). The brain's emotions system involves interaction between both cortical and subcortical nuclei.

The limbic system also contains both cortical and subcortical nuclei. This system was identified as the location for emotions in the brain in the late 1940s. Scholars such as MacLean identified the limbic system as containing many of the older structures of the brain between the neocortex and the brainstem. MacLean included the cingulated gyrus, the amygdala and the basal forebrain in the limbic system (Damasio, 1994, p. 28). Other scholars later included the diencephalon, comprised of the thalamus and hypothalamus. Today we know that emotions

result from complex interactions between many more regions of the brain. For the most part, today's neuroscientists scoff at the idea of the limbic system but from a reference perspective the use of this nomenclature is still valuable.

The cortical surface of the cerebrum consists of a pattern of upfolds, or gyri, and downfolds, or sulci that increase the overall brain surface. Deeper sulci, known as fissures separate different areas, or lobes of the cerebrum. Each cerebral hemisphere contains a frontal lobe in the anterior, or front part of the brain, a parietal lobe directly posterior to, or behind the frontal lobe, an occipital lobe in the posterior, or back part of the brain and a temporal lobe just inferior to, or below the frontal and parietal lobes and anterior to, or in front of the occipital lobe (see Figure 21 and Figure 22).

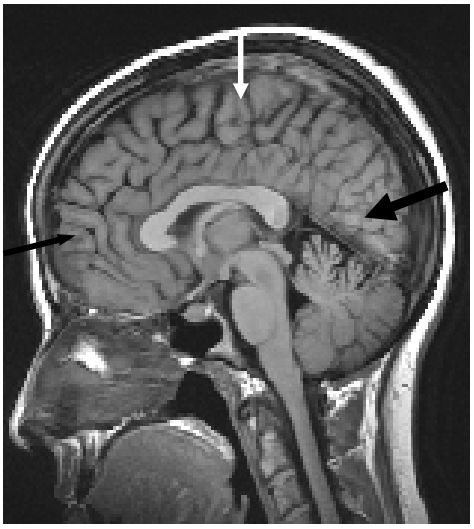


Figure 21. Magnetic Resonance Image Showing the Frontal Lobe, Parietal Lobe and Occipital Lobe (Small Black Arrow Depicts Frontal Lobe, Large Black Arrow Depicts Occipital Lobe and Large White Arrow Depicts Parietal Lobe). Adapted from "Magnetic Resonance Imaging Cross-Sectional Anatomy Technologist Educational Program" by L. Hoisington and S. Fedewa, 2007, p. 23.

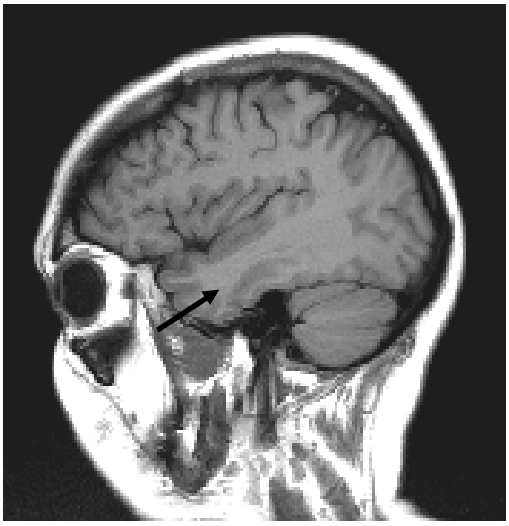


Figure 22. Magnetic Resonance Image Showing the Temporal Lobe (see Arrow). Adapted from "Magnetic Resonance Imaging Cross-Sectional Anatomy Technologist Educational Program" by L. Hoisington and S. Fedewa, 2007, p. 22.

The primary functions of the frontal lobe include motor control for specific muscles, control for complex, sequential motor activities**,** visual scanning, language generation, interpretation of words and sounds, and verbal translation of thoughts. The area responsible for the latter function is Broca's area - usually located in the left hemisphere. The frontal lobe also integrates sensory information from different systems and consciously processes emotions through input from lower systems of the brain.

Based on past research we also know that the frontal lobe is responsible for the ability to recognize future consequences from current behavior. Damasio (1994) presented the famous case study of Phineas Gage, the railroad foreman who's tapping iron penetrated his frontal lobes during an explosion, to illustrate frontal lobe function. Before Gage's accident he performed in a rational, socially acceptable manner. However, after he recovered from the injuries sustained in the explosion he no longer had the ability to consider future consequences for his behavior but his language and motor skills remained intact. The area damaged in Phineas Gage's brain came to be known as the prefrontal cortex. This is the anterior-most area of the cortex near the eyes.

The parietal lobe is the main somatosensory (sensory) area of the brain; it receives signal related to touch, or tactile signal and position of different body parts in space, or proprioception. The cortex in this area constitutes the sensory cortex, a blanket-like area that covers the brain from left to right. Each point on this cortex receives sensory messages from a distinct sensory organ in the body. The parietal lobe is also responsible for visuospatial processing and spatial manipulation of objects.

The occipital lobe contains the visual cortex. This lobe is positioned posterior to the parietal lobe and above the cerebellum. The occipital lobe receives sensory information from the

retina in the eye. Primary functions of this lobe include processing information related to color and relating past visual experiences with information it receives in the present.

The temporal lobe is located beneath the frontal and parietal lobes. This structure maintains a close relationship with memory via the amygdaloid body and hippocampus formation. The auditory cortex of the temporal lobe processes input related to hearing. Other functions of the temporal lobe include processing of olfactory input related to smell and input related to speech.

The cerebellum is located below the cerebrum in the posterior portion of the brain. Communication bridges between the cerebellum and other motor and sensory areas of the cerebrum, brainstem and spinal cord allow the cerebellum to control fine-motor movements throughout the body. Like the cerebrum, the cerebellum also contains subcortical nuclei.

At the center of the brain is the brainstem comprised of the midbrain, pons and medulla (see Figure 20). The brainstem is considered to be the most primitive part of the brain (Damasio, 1994; Lewis, 2000). This structure contains most of the cranial nerve clusters that support life-sustaining functions such as heart rate and respiration.

Emotional Structures

Human emotions involve many different structures in the brain. As stated previously, both cortical and subcortical nuclei are involved in emotional processing. The primary structures associated with emotions include the amygdala, hippocampus, cingulate gyrus, thalamus, hypothalamus and nucleus.

The thalamus is located just above the brainstem. This structure receives sensory input from all systems in the body except the olfactory (system for smell). The thalamus acts as a gatekeeper that sends incoming information to other parts of the brain. If the thalamus receives

threatening input through the visual channel, for example, it will forward the information to the visual cortex and the amygdala simultaneously. Since the route to the amygdala is shorter than the route to the cortex, the amygdala triggers a fear reaction throughout the body before the cerebral cortex

Located just below and anterior to the thalamus is the hypothalamus. The thalamus and hypothalamus together comprise the diencephalons. The hypothalamus is a small structure that controls the autonomic nervous system (body's visceral reactions) and the endocrine system. The hypothalamus works together with the adjacent pituitary gland to release hormones into the bloodstream that produce characteristic reactions in the body.

The amygdala is one of the most active parts of the brain during emotional processing. This structure, which is comprised of subcortical nuclei, is located in the temporal lobe. A unique feature about the amygdala is its "short-circuit" connections that allow it to receive and process environmental input without first consulting the more rational parts of the cerebral cortex. The amygdala often bypasses cognitive reasoning and is associated with the fight or flight reaction as well as the rage reaction for this reason. However, at other times, the amygdala allows input from the more rational cognitive areas of the cortex, which influences its response to sensory input (Franks, 2006, p. 50).

The hippocampus is located just posterior to the amygdala in the temporal lobe. This structure is mostly known for its function in long-term memory. The hippocampus often retrieves explicit past memories during emotional responses as well as context-dependent information. This structure contributes toward the amygdala's "alarm" response. Additionally, the hippocampus coordinates activity between the central nervous system and the endocrine system during emotional processing.

The prefrontal cortex is another area that is instrumental in emotional processing. The prefrontal cortex is located in the anterior-middle area of the frontal lobe. As previously stated in the Gage example, the prefrontal cortex is responsible for rational behavior. This area enables humans to understand future consequences of current behavior, and thus, allows them to consider the consequences when choosing behavior. Individuals, like Gage, who have injury to this area of the brain, are unable to behave in a socially acceptable manner.

The somatosensory cortex is equally active during emotional processing. This area decodes information from the thalamus and other parts of the central nervous system and forwards the information to other regions in the brain for further processing. The cingulate cortex overlaps the somatosensory cortex. This structure comprises a long strip that runs from front to back above the corpus callosum. The front part of the cingulate is most associated with processing of emotions. This area is generally active in cases of depression and transient sadness (Franks, 2006, p. 46). The posterior part of the cingulate is part of the somatosensory cortex. This area functions in cognitive processing and contributes toward the body's arousal in response to music, etc (Franks, 2006, p. 47).

Another area that is active during emotional response is the insula. The insula is tucked away deep inside the temporal lobe. This structure receives sensory signal directly from the thalamus and acts as a relay station to sort the signal before sending it along to neural centers in the prefrontal area and anterior cingulate gyrus. Hallucinatory drugs produce their effects through activation of the insula.

One additional area that contributes toward emotional processing is the brainstem. This structure contains small nuclei that serve as connections between the thalamus and the spinal cord. The brainstem acts as a conduit between the brain and the rest of the body (Franks, 2006, p.

49). This structure maintains a state of homeostasis in the body through regulation of the heart rate and respiratory pattern. Nuclei in the brainstem work together with the cingulate cortex and the prefrontal cortex to produce the state of consciousness and enable emotions. Damage to the brainstem often results in extended loss of consciousness, if not death.

As revealed through this primer, the brain is a complex organ that receives, interprets and responds to incoming signal from the surrounding environment. The brain determines emotional and physical responses to external stimuli based upon personal value systems and societal norms. The brain further allows individuals to communicate and establish their paradigmatic orientations that define their worldviews.

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