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*DUPLICATION THEOREM OF SOCIAL RELATIONSHIPS:*

DOES INTERPERSONAL COMPLEMENTARITY MEDIATE  
THE RELATIONSHIP BETWEEN BIRTH ORDER COMPLEMENTARITY  
AND MARITAL ADJUSTMENT?

A Dissertation in

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by

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## ABSTRACT

This study tested whether interpersonal complementarity would mediate the relationship between birth rank complementarity (i.e., spouses have different birth ranks in their family of origin) and marital adjustment, which was originally proposed by Toman's (1993) *duplication theorem of social relationships*. Birth rank complementarity was indexed by categorizing couples based on the birth rank of each spouse. Interpersonal complementarity was operationalized by creating composite scores from spouse ratings of him/herself on the SASB Intrex scales, which measure interpersonal behavior in both the active and response roles of an interaction. Marital adjustment was operationalized by creating composite scores from spouse ratings on two subscales of the Marital Satisfaction Inventory- Revised (Snyder, 1997): Global Distress, which measures general satisfaction with the marital relationship; and Problem-Solving Communication, which measures a couple's ability to effectively resolve conflict. The sample was comprised of 60 heterosexual couples who were married between January and December of 2001, 2002, or 2003. The main hypothesis for the study, that interpersonal complementarity would mediate the relationship between birth rank complementarity and marital adjustment, was not supported: the direct relationship between birth rank complementarity and marital adjustment was not significant. However, findings indicated that spouse composite ratings of interpersonal complementarity predicted spouse marital adjustment, and birth rank complementarity was found to be associated with interpersonal complementarity. Directions for future research, study limitations, and implications for practice are discussed.

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## Chapter 1: INTRODUCTION

A plethora of research exploring the nature of marital relationships exists, and it is proposed that the oldest question in the history of the study of marriage is how to distinguish “happy” from “unhappy” marriages (Gottman & Krokoff, 1989). The importance of this question is thought to lie in the central role that marriage plays in the development and overall well-being of individuals and families (Bradbury, Fincham, & Beach, 2000; Whitehead, 2004) and, consequently, in the need to develop empirically supported interventions for couples that prevent or alleviate marital distress and divorce (Bradbury et al, 2000). Marriage researchers have focused mostly on marital outcomes (e.g., marital satisfaction or dissatisfaction, conflict, and divorce) but this approach has been criticized as it provides no clarification about how couples arrive at such outcomes; it is suggested that marital research instead emphasize the prediction of outcomes (Karney & Bradbury, 1995). The purpose of this study is to test a specific theory of marital adjustment that predicts marital outcomes based on the complementarity of birth positions of spouses.

### *Toman's Duplication Theorem of Social Relationships*

Toman (1993) was the first theorist to purport that individuals seek out and are most satisfied in marital relationships in which sibling rank is replicated (e.g., an individual who is the oldest sibling in his/her family seeks out and is more compatible with an individual who is a younger sibling), and he termed this the *duplication theorem of social relationships*. Relationships such as these are proposed to be successful because they are *interactive*: each partner desires to perform tasks that the other does not, and both partners have slightly different interests and preferences (Toman, 1993). This proposition reflects the idea of *complementarity*.

Toman's notion of complementarity is operationalized according to birth rank and sibling gender. *Birth rank* refers to the order in which an individual was born into a family, which results in varying levels of individual power among siblings (i.e., due to differences in age and/or size) and responsibility imparted by parents (Leman, 1998). Both Toman (1993) and Adler (1956) asserted that each birth position has its own set of learned behaviors (i.e., roles), but Toman extended this idea and proposed that these behaviors create a system of cooperation (i.e., complementarity) among siblings. Sulloway (1996) examined the impact of sibling position on personality development through an evolutionary lens. According to Darwinian Evolutionary principles, he proposed that siblings develop adaptive strategies to differentiate themselves from their sibling(s), as they are sensitive to parental favoritism, and are also said to cultivate different skills in order to minimize direct competition with siblings. Siblings of different positions are assumed to use different tactics to create a unique niche in the family in order to gain maximum "parental investment" (e.g., attention, monetary resources such as an inheritance). It is thought that each child's development and cultivation of different skills reduces the parents' ability to compare their children to one another. For example, oldest children may align with the parents by helping and obeying them, or they may use their advantage of size and/or physical power to dominate their rivals (i.e., younger siblings) to prevent them from directly obtaining their parents' favor. Conversely, younger children are proposed to develop "countermeasures" such as appeasement, rebellion, or a combination of these tactics.

Generally speaking, oldest siblings assume the roles of leader, director, and caretaker, while younger siblings look to be led, directed, and cared for, and it is assumed that both oldest and younger siblings are comfortable in such positions. Middle siblings are purported to be the most flexible in their roles because they have been both older siblings and younger siblings;



therefore, it is proposed that they are more able to adjust their roles according to each individual with whom they interact based on that person's birth rank (Adler, 1956; Leman, 1998; Toman, 1993). Information concerning "only" children will be discussed later in this chapter.

A small body of research has explored differences in sibling roles based on birth rank. Mize and Pinjala (2002) qualitatively researched relationships between adult sisters and found that a majority of eldest sisters reported feeling responsible for younger sisters during childhood and adolescence. Conversely, younger sisters perceived older sisters to be both dominant and controlling during the same time periods. Stoneman, Brody, and MacKinnon (1986) observed same and opposite-sex sibling dyads and found that older female siblings assumed the "manager" role (e.g., commanding or requesting that the other do some task) more often with her younger siblings than males or females of other sibling ranks. Results of these studies support the notion of power differences and varying levels of responsibility in the sibling group as a result of birth rank.

When both spouses hold the same birth rank in their respective families a *rank conflict* occurs wherein each partner may attempt to perform the same roles in the relationship. For example, conflict and lower levels of satisfaction may occur in a marriage if a husband and wife who are both oldest children in their families attempt to lead in the relationship and expect the other to follow. Equally, a husband and wife who are younger siblings in their family may look to each other to lead and make decisions in the relationship, which in turn may result in tasks not being addressed or resolved (Toman, 1993). These two examples, albeit a bit extreme, demonstrate rank conflict in its simplest form.

Toman believed that individuals learn about intimacy and cooperation within the sibling relationship, and the second component of complementarity considers sibling sex. Toman

proposed that individuals with opposite-sex siblings learn to live closely with members of the opposite sex (i.e., brothers learn about females through interactions with their sisters and sisters learn about males from their interactions with male siblings). A *sex conflict* occurs when at least one spouse in a marriage was reared in a monosexual sibling group (e.g., a woman who only had sisters or a man who only had brothers). Toman asserted that individuals from monosexual sibling configurations are the least prepared to live closely with an opposite-sex spouse and may initially have trouble adjusting to the new relationship, but if the other spouse has at least one opposite-sex sibling, he/she is able to help ease the adjustment of living closely with an individual of the opposite sex (Toman, 1993).

*“Only” children.* The situation for “only” children differs from that of individuals who had siblings as they lack experience with close intrafamilial peer relationships. Toman (1993) proposed that “only” children model the role of the sibling position of their same-sex parent and carry those learned roles into close relationships in the future. For example, an only-child male whose father was an oldest in his family would be capable of taking on a leading role in a relationship more so than would an only-child male whose father was the youngest in his family, and the same would true for an only-child woman based on her mother’s birth rank. Toman also proposed that an only child would benefit from a relationship with an individual who was reared with opposite-sex siblings. In such a relationship, the spouse who has opposite-sex siblings would be able to aid the only-child spouse in adjusting to living closely with a peer and an individual of the opposite sex. In general, a relationship in which both spouses are only children would be considered non-complementary when not taking into account the birth rank of their same-sex parents (Toman, 1993).

In sum, according to Toman's *duplication theorem of social relationships*, romantic relationships are considered *complementary* when neither a rank nor a sex conflict exists. Relationships are *partially complementary* when either a rank or a sex conflict occurs in the relationship, but not both. Finally, *non-complementary* relationships occur when both a rank and a sex conflict in the relationship. Rank conflicts always involve both individuals while sex conflicts can involve one or both spouse(s) (Toman, 1993).

While Toman never differentiated the importance of rank or sex conflict in marital satisfaction, the author of this study believes that rank conflict is more detrimental to relationships than sex conflicts due to the power differentials proposed to be inherent in birth rank (Adler, 1956; Kerr & Bowen, 1988; Toman, 1993). This notion is supported by a small body of research exploring differences in behaviors among siblings of different birth ranks (e.g., Mize & Pinjala, 2002; Stoneman et al., 1986). Power differentials in a relationship may result in conflict and consequently, lower relationship adjustment. Additionally, the bulk of the research that has tested Toman's theory, including research conducted by Toman himself, has only explored birth rank complementarity among individuals. Thus, the current study will explore the impact of rank complementarity on marital adjustment among spouses in the test of Toman's *duplication theorem of social relationships*.

As previously stated, Toman proposed that couples in which each spouse has a different birth rank are proposed to have higher levels of marital adjustment due to their role complementarity (Toman, 1993). But, birth rank alone does not ensure that specific roles will be manifested (e.g., that an oldest child will be more dominant and a youngest child will be more submissive). In fact, Toman discussed various factors that impact birth order roles apart from rank. For example, Toman proposed that the gender of each child of a particular birth rank may

impact his/her role in a family: oldest girls may be given more responsibility for younger siblings than would oldest males, which may result in a woman who is the oldest in a family exhibiting more directing or caregiving behaviors in a marriage relationship than would a man who is the oldest (Toman, 1993).

In addition to the gender of an individual of a particular birth rank, Toman also proposed that spacing (in terms of years) between siblings has an impact interpersonal role development. Toman proposed that personality (i.e., interpersonal role) is set by five years of age and that when the spacing between children is five or more years, birth rank characteristics “reset.” Thus, a second child who is 6 years younger than his/her sibling may actually resemble a firstborn in terms of interpersonal role more than would a second child only 2 years younger than his/her sibling. A final concept that has been proposed to impact interpersonal role development is the result of illness or other forms of impairment (i.e., disability) among siblings, such that sibling roles in a family may shift or occur in uncharacteristic ways (Toman, 1993; Bowen, 1978; Kerr & Bowen, 1988). For example, a second child born into a family in which the oldest is unable to perform the roles characteristic of an oldest child may be encouraged to take on the behaviors and/or responsibilities the oldest child can not fulfill; therefore, the second child’s “functional birth order” would be considered that of a firstborn (Miller et al., 2004).

Intrafamilial experiences such as these are expected to introduce variation in the interpersonal roles of siblings, and consequently, impact the extent of cooperation among spouses who have different birth ranks. Therefore, simply exploring birth order complementarity among spouses may not provide a full representation of the underlying interpersonal mechanisms that operate in a relationship. Thus, the purpose of this study is to test whether the extent of interpersonal complementarity (i.e., extent of reciprocity on dominance and submission among

individuals in a relationship) provides an explanation for (i.e., mediates) the proposed relationship between birth rank complementarity and marital adjustment. The hope is that this research will provide further insight into the interpersonal mechanisms that underlie marriage relationships and account for intrafamilial experiences that impact personality development.

### *Interpersonal Complementarity*

While Toman never explicitly discussed interpersonal concepts, his theory is inherently interpersonal in nature. Sullivan was the first to explicate a systematic theory of interpersonal behavior; he proposed that “personality” consists of enduring patterns of interpersonal behaviors and situations (Kiesler, 1982). Kiesler stated, “even when we are alone we carry other persons with us and engage these others symbolically (1982, p. 5).” Therefore all behavior is grounded in past relationships; humans interact with others in a manner consistent with past behavioral patterns, and the formation and manifestation of these behaviors exists within a system (e.g., a family or sibling group). Toman’s conception of personality closely aligns with this idea, in that sibling relationships serve as the backdrop for interpersonal role development. Thus, according to Toman’s theory, interpersonal role development is a function of the relationship schemas learned as a child concerning roles to which each sibling conforms based on birth rank (Toman, 1993).

Sullivan also proposed that all interpersonal transactions consist of continuous negotiation between the participants for the fulfillment of complementary needs. According to interpersonal theory, all interpersonal behaviors include messages about one’s emotional state and the reciprocal responses that are desired and expected from others (Kiesler, 1982). Each behavior is assumed to be laden with information about how the other is to respond, and behaviors are proposed to either elicit or constrain successive behavior from others (Tracey,

1994). The recurrent patterns of interactions represent distinct combinations of two of the three basic dimensions of interpersonal behavior, first presented by Leary (1957): **control** and **affiliation**. For example, an individual may seek to control another person (i.e., be dominant) during an interaction, and he/she will seek to obtain control through tactics that reflect either love or hate towards the other. Additionally, an individual may send bids for dominance from his/her partner (i.e., he/she may be submissive) and may do so in a manner that reflects love or hate towards the other.

Leary (1957) created the interpersonal circle to pictorially represent the combinations of interactions that may occur. **Dominance** and **submission** are located on opposite ends of the y-axis and **love** and **hate** are situated on opposite ends of the x-axis, and a total of 16 interpersonal behavior combinations lie around the circle (Kiesler, 1982). Leary's interpersonal circle has been updated/reconceptualized since its initial development (Kiesler, 1982), and the Structural Analysis of Social Behavior (SASB; Benjamin, 1974, 1996), which will be used in the current study, is one example of such an updated interpersonal model.

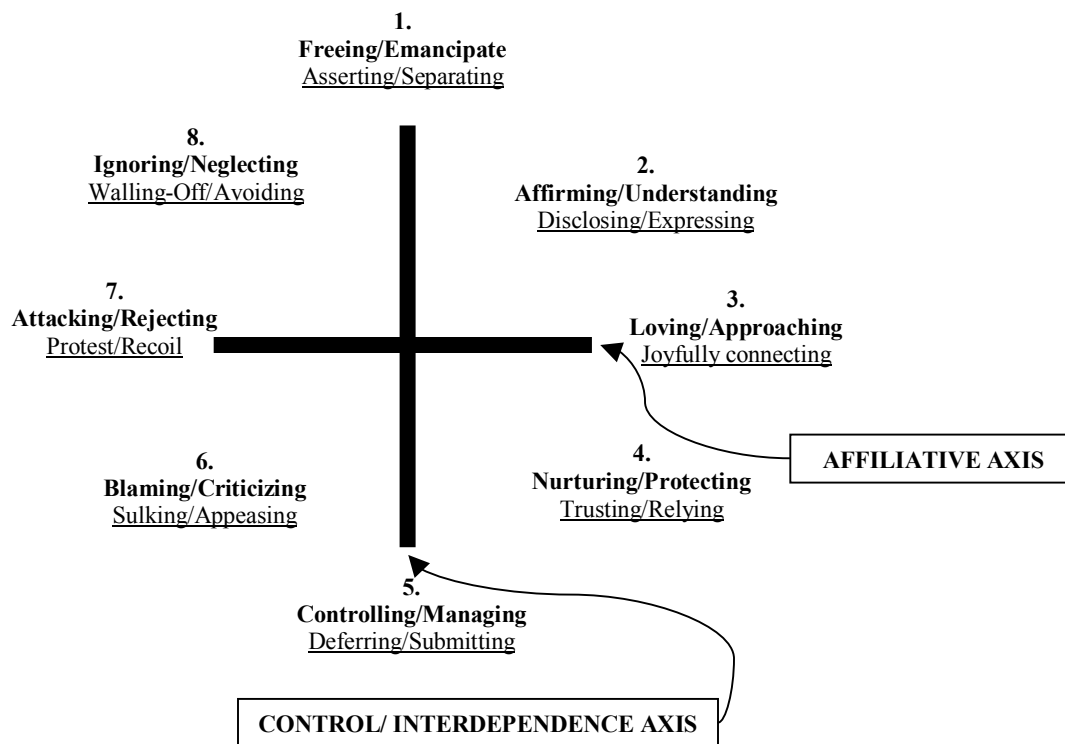
The SASB model updated Leary's Interpersonal Circle in several ways. First, the SASB allows for variations in interpersonal focus (e.g., "myself with my spouse", "my mother with me") and by situation (e.g., "at best", "at worst", "at age 5"), thereby making it a "trait by situation by state" measure. Second, the SASB includes variations in interdependence (i.e., autonomy) by explicating different levels of autonomy seeking and granting behaviors across both transitive and intransitive surfaces from high to low (e.g., **Emancipate/Separate** vs. **Control/Submit**). Third, the SASB includes a broad range of friendly and hostile behaviors. Fourth, the SASB can be used to dissect the complex components that underlie communication patterns, and also allows for parallel coding (e.g., observer and self), which provides information

about public and private behaviors. Finally, the SASB is able to distinguish normal (e.g., flexible) and pathological (e.g., rigid) patterns of behavior (Benjamin, 1996).

The SASB is composed of three layers that represent three levels of the self-in-relation-to-others. The first layer, the *transitive* surface, measures the messages that individuals send to others; **Emancipate** and **Control** lie on opposite ends of the y-axis while **Attack** and **Active Love** lie on opposite ends of the x-axis. This surface refers to the manner in which one spouse focuses on the other. In contrast, the second surface, the *intransitive* layer measures behaviors that focus on self in response to the other; Separate and Submit lie along the y-axis and Recoil and Reactive Love lie along the x-axis. Thus, a transitive focus on other that is comprised of equal amounts of affiliation and control is **Protect** and the matching or complementary (intransitive) response of the other would be Trust. [Though not the focus of this study, the final layer is the *introject*, which represents a person's internalized view of the self based on how important others have treated him/her; *Self-Emancipate* and *Self-Control* lie on the y-axis and *Self-Attack* and *Active Self Love* lie on opposite ends of the x-axis (Benjamin, 1974; 1996)]. In the SASB figure shown below, transitive behaviors reflected at the eight points on the circumplex are denoted in bold while intransitive behaviors are represented in underline.

In sum, according to interpersonal theory, individuals develop patterns of interpersonal behavior that are shaped in their significant relationships with others. Interpersonal behaviors are interactional in that they are dependent on both an individual's predisposition towards particular behaviors (i.e., based on learned behavioral patterns) and situational or environmental factors or events (i.e., how another person responds to or acts towards the individual; Kiesler,

1982). *Interpersonal complementarity* is defined in terms of correspondence on the Affiliation



**Figure 1.** Structural Analysis of Social Behavior (SASB; Benjamin, 1974; 1996)  
Corresponding behaviors on the **Transitive** and Intransitive Surfaces

dimension (**hostility** or **friendliness**, located on the x-axis from left to right) and reciprocity on the Control/Interdependence dimension (**freeing/separating** or **controlling/submitting** located on the y-axis from top to bottom). Interpersonal interactions that are not highly complementary may be defined as non-complementary (i.e., similar on control and opposite on affiliation; for example, a husband's **controlling** behaviors met by the wife's sulking behaviors; Tracey, 2004) or a complementary (i.e., neither complementary nor non-complementary; for example, a husband's **controlling** behaviors met by asserting or separating behaviors from the wife, though both behaviors are neutral with respect to affiliation). Complementary relationships are thought to be satisfying and long lasting (Tracey, 1996; 2004); therefore, it is expected that marriages in



which there is greater complementarity among spouses' interpersonal roles will be more satisfying for each spouse and marriages in which spouses have similar interpersonal roles (e.g., both are dominant) may be more frustrating and dissatisfying.

### *Summary*

The ideas of both theories taken together provide an explanation for marital relationship satisfaction and adjustment as a result of interpersonal complementarity. Interpersonal complementarity is expected to vary as a function of relationship familiarity (i.e., complementarity is expected to be stronger among spouses than among strangers; Tracey, 2004). Thus, it is expected that interpersonal complementarity among spouses will be positively associated with higher levels of marital adjustment. Furthermore, the extent of interpersonal complementarity among spouses may represent the generative mechanisms through which extent of match in spouse birth rank influences marital adjustment. The purpose of this study is to examine whether spouses' reports of interpersonal complementarity mediates the proposed relationship between birth rank complementarity among spouses and their marital adjustment.

The following section will provide a review of the literature that has explored Toman's *duplication theorem of social relationships* in marriage. Next, research exploring interpersonal complementarity in marriage will be discussed in light of Toman's theory. Finally, the literature exploring marital adjustment will be reviewed. This chapter will conclude with a statement of research goals and hypotheses.

## Chapter 2: LITERATURE REVIEW

### *Empirical findings on Birth Order Complementarity in Marriage*

Very little research has focused on Toman's *duplication theorem of social relationships* in marriage, but the literature that does exist is wrought with contradictory findings. Toman consistently found support for his theory that "disturbed" marriages have lower levels of complementarity than "non-disturbed" marriages. Toman and Gray (1961) sampled 93 "disturbed" couples (i.e., parents of children who were receiving counseling services) and 309 "normal" couples (i.e., parents of college students and adults drawn from the general population) and found that couples in the disturbed group had significantly lower levels of rank complementarity (i.e., had more *rank conflict* among spouses). Additionally, individuals in the disturbed group had lower proportions of opposite-sex siblings (e.g., they had more same-sex siblings) than did those in the normal group.

Toman (1964) tested rank complementarity among men from monosexual sibling groups, and the sample included 20 oldest and 20 youngest males. He found that the men tended to marry women who represented more complementary sibling positions at rates greater than would be expected by chance. When he examined "mistakes" in each group (i.e., oldest male/oldest female and youngest male/youngest female pairings) he found that the mothers of most of the men held the same birth position as their wives (i.e., the mother of a youngest male married to a youngest woman was also a youngest in her family of origin). Toman concluded that the men unconsciously selected spouses of the same birth position as their mother due to their lack of female siblings from which to model relationships with the opposite sex. Toman also found support for his theory that "only" children adopt an interpersonal role consistent with the birth position of their same-sex parent: the two only-child women married to youngest men had

mothers who were the oldest sisters in their family of origin, and the same was true among the only-child women married to oldest men (e.g., three of the four only child women married to oldest men had mothers who were younger sisters).

Finally, in 1971, Toman reported the results of two studies examining birth order complementarity in marriage. In the first study, which was conducted in 1962, he tested for complementarity among 16 divorced and 16 married couples, none of which included an only-child spouse. After controlling for socioeconomic status (SES), education, income, ethnic origin, and age, he found that 12 of the 16 married couples were highly complementary while only 1 of the 16 divorced couples had high levels of birth rank complementarity. In contrast, 15 of the 16 divorced couples and only 1 of the 16 married couples had medium to low levels of birth rank complementarity. Toman also sampled 108 divorced couples that came from a population of 2,300 families from Nuremberg (Germany) and Zurich (Switzerland). He found that levels of high birth rank complementarity among divorced spouses was lower than would be expected by chance (18 actual/ 32 expected) while levels of medium and low birth rank complementarity were higher than would be expected by chance (52 actual/49 expected and 38 actual/27 expected, respectively). Additionally, he found that among divorced couples those with higher levels of birth rank complementarity held out longer prior to divorce than those with medium or low levels of complementarity.

In sum, Toman tested both rank and sex complementarity among spouses. He consistently found support for rank complementarity, but results supporting the influence of sibling sex were not as strong. It is important to note that Toman found greater and more consistent support for birth rank complementarity, and this is why in the current study birth order complementarity is operationalized as the extent of rank complementarity in marriage.

Toman believed that birth order complementarity (“disposition toward conflict”) in married couples could be measured by way of a formula that numerically combines the “rank disposition” (i.e., birth rank) and “sex disposition” (i.e., number of same and/or opposite sex siblings) of each spouse (see Figure 2). Rank disposition is determined by subtracting the total number of siblings older than the spouse from the number younger than the spouse and dividing that number by the total number of children in the family minus 1. Sex disposition is determined by dividing the number of same-sex siblings an individual has by the total number of siblings in the family minus 1. So, for example, if a wife was child number 4 of 5 and had 2 sisters and 2 brothers, her rank disposition would be  $(1-3)/(5-1) = -0.5$  and sex disposition would be  $2/(5-1) = 0.5$ . If her husband was child number 2 of 2 and had a brother, his rank disposition would be  $(0-1)/1 = -1$  and his sex disposition  $1/1 = 1$ . Therefore, their rank disposition would be:  $(-0.5 + 0.5 + (-1) + 1)/4 = 0$ , which, according to Toman, indicates ideal rank complementarity among the spouses (Levinger & Sonnheim, 1966).

**Figure 2.** Toman’s numerical representation of birth order complementarity

Disposition Toward Conflict	
$d_t = \frac{d_r(\text{husband}) + d_r(\text{wife}) + d_s(\text{husband}) + d_s(\text{wife})}{4}$	
Higher numbers indicate greater disposition toward marital conflict; “0” indicates ideal rank complementarity.	
Rank disposition ( $d_r$ )  $d_r = \frac{n_{\text{junior}} - n_{\text{senior}}}{n-1}$	Sex disposition ( $d_s$ )  $d_s = \frac{n_s}{n-1}$
$n_{\text{junior}}$ = number of younger siblings $n_{\text{senior}}$ = number of older siblings $n-1$ = total number of siblings – 1 + 1 to +0.01 represent seniority 0 represents middle status -0.01 to -1 indicates junior status	$n_s$ = total number of same sex siblings $n-1$ = total number of siblings - 1 0 to 0.49 indicates more opposite-sex siblings 0.50 indicates equal numbers of opposite and same-sex siblings 0.51 to 1 indicates more same-sex siblings

(See Toman, 1959, for a full explanation of this formula)

Efforts were made to use Toman's formula in a pilot study testing the *duplication theorem of social relationships* in married individuals (Stanley & Skowron, 2005). However, it was discovered that the formula could not be used to measure relationships in which one or both of the spouses was an only child as the formula was problematic in two ways. First, when calculating the birth rank of "only" child spouses and "middle" child spouses who were directly in the middle of a sibling group (e.g., child number 3 out of 5 or number 2 out of 3), the result for both was a score of "0", which indicates middle child status (see Figure 1 above) and, consequently, the presence of siblings. Additionally, when calculating the sex composition of a sibling group, individuals who only had opposite-sex siblings and those who were only children both received a "0", indicating the presence of opposite-sex siblings only. In each case, the number resulting from the formula provided an inaccurate representation of an only child's family experiences. As previously mentioned, only children are unique in that they never lived closely with peers or opposite-sex peers, which Toman proposed impacts an individual's ability to adjust to married life with an opposite-sex peer. Therefore, the purpose of Toman's formula, which is to provide a numerical representation of early experiences in the sibling group, is of limited utility when individuals with disparate early intrafamilial experiences are represented in numerically identical ways.

It may be assumed that individuals who were only children have been left out of much of the research that has used Toman's formula to test his theory due to the inability to provide a numerical representation of their birth rank. In fact, in Toman and Gray's 1961 study, only-child spouses were excluded from the sample and in his 1964 study, only-child spouses were included in the category with oldest children. Thus, the exclusion or misclassification of only children

prevents a full and accurate investigation of the range of birth order complementarity in studies utilizing Toman's formula to operationalize his theory as he did originally. Additionally, this problem casts doubt on the validity of the research that has been conducted exploring this theory (e.g., Kemper, 1966; Weller, Natan, & Hazi, 1974).

Therefore, Toman's formula was not used to operationalize birth order complementarity in this study due to its inability to accurately represent only-child spouses. Instead, complementarity was represented categorically for each couple, such that couples composed of a firstborn and a last born spouse were represented by a "1", indicating the highest level of birth rank complementarity; couples composed of a middle child and either a first or a last born were assigned a "2," indicating moderate complementarity; couples in which both spouses have the same birth order were assigned a "3," indicating low levels of complementarity; and couples in which at least one spouse is an "only" child were assigned a "4," indicating non-complementarity. A categorical method of operationalizing birth rank complementarity is imperfect, especially when representing middle children (i.e., it ignores the differences between a middle child with 2 siblings and one with 4 or 6 siblings) but is the best way that the author of the current study knows to test Toman's theory and include only children and their spouses in the analyses. Additionally, using a categorical representation is in line with the majority of the studies that have tested Toman's *duplication theorem of social relationships*.

Another point of note concerning Toman's research is that he never used formal or published measures of marital satisfaction as indicators of marital adjustment. Instead, in his studies he categorized couples who were not in marital or family therapy as "normal" and identified "disturbed couples" as those who were either seeking marital therapy or who had a child in therapy (Toman, 1993).

While Toman consistently found support for his theory, the findings of other researchers exploring his theory have been mixed; only a few authors have been able to replicate his results while others have found no support for his theory. Among studies that have found support for Toman's theory, Baxter (1965) examined birth rank complementarity and the presence of marital conflict by surveying all incoming students at the University of Kentucky about their parents' marriage. Only those who reported being reared in an intact family were included in the study, which resulted in 1,503 student reports of parental birth rank complementarity and conflict. However, Baxter found that rank complementarity correlated significantly with marital conflict: high rank complementarity was associated with less conflict for those dyads in which each partner was a member of a multi-child family (i.e., each spouse had siblings),  $\chi^2 = 9.28, p < .01$ . Baxter found no relationship between birth rank complementarity and conflict for dyads in which at least one partner was an only child. The results of this study provide some evidence for an inverse relationship between rank complementarity and marital conflict, which was tested in the current study.

Weller, Natan, and Hazi (1974) surveyed 258 women in Israel about their marital satisfaction (measured by an instrument developed by Nye & MacDougall, 1959), operationalized rank complementarity categorically, and found support for Toman's theory. The authors found that marital satisfaction correlated with greater birth order complementarity, and satisfaction ranged from highest to lowest according to birth order pairings in the following order: oldest male/younger female; oldest female/younger male; middle child and any other birth position; only and oldest pairings; two first-borns married; two later-borns married; and marriage between two only children.

Mendelsohn, Linden, Gruen, and Curran (1974) examined rank and sex complementarity in dating relationships among college students. The sample included 128 students (64 male-female dyads) that signed up for Psych-a-date (a computer dating program). Students participating in the study were paired and placed in the following categories based on four levels of birth rank complementarity: both rank and sex complementarity; rank complementarity only; sex complementarity only; and neither rank nor sex complementarity. Each category had two levels representing opposing rank and/or gender effects (e.g., for the rank and sex complementarity group the two levels were “Older brother of a younger sister paired with the younger sister of an brother” and “Younger brother of an older sister paired with the older sister of a younger brother”) and each category contained eight dyads. Participants reported their satisfaction with the date by completing a Date Enjoyment Form [a nine-item measure, created by Mendelsohn and his colleagues, adapted from the Date Evaluation Sheet (Curran, 1971)] and reported the total number of dates the dyad had over a 3-month period. The authors found that those dyads in which partners were paired on sex and rank complementarity reported greater enjoyment on their dates than those paired by rank complementarity or sex complementarity alone, or those in which couples were non-complementary. Additionally, rank complementary and sex complementary dyads were more successful than non-complementary dyads. Finally, it was reported that couples paired for rank complementarity were more successful than those paired for sex complementarity, but the authors did not specify how “success” was measured. The results of this study provide support for the relative importance of rank complementarity over sex complementarity in predicting marital adjustment, as couples paired by rank complementarity were more successful than those paired by sex complementarity.



Kemper (1966) surveyed 246 married men about the birth order composition of their marriages and their marital satisfaction. Satisfaction was measured by a 42-item, non-standardized questionnaire that evaluated each participant's admiration for his wife, the degree to which he found pleasure in her company, the degree to which she made him uncomfortable, and his satisfaction with their sexual relationship. Kemper observed mixed support for Toman's theory, and also reported interesting findings concerning the perceived distribution of power in marital relationships and its contribution to the marital satisfaction of the participants. First, Kemper's study failed to support Toman's hypothesis that men tend to marry women who have complementary birth order positions. Second, Kemper found that certain complementary pairings were more satisfying than others: men that had younger sisters and were married to women that had older brothers were more satisfied than men that had older sisters and were married to women that had younger brothers. Likewise, men with younger sisters married to women with older brothers were happier than men who had older and younger sisters (e.g., middle children) who were married to women with older brothers.

Kemper's first set of findings are interesting because, according to Toman's theory, an oldest/youngest pairing should be equally satisfying regardless of which spouse is the oldest child. Kemper also found that, overall, men with older sisters were more satisfied in their marriage when their wife had only younger siblings (i.e., were not middle children), and he attributed this to wives being "clear" about their power in the relationship: it is assumed that she was always in control in her sibling group as the oldest rather than a "mix of power" in a family where the wife was an oldest and a youngest (i.e., a middle child). Finally, Kemper found that men in non-complementary marriages in which the wife was clearly dominant in terms of her own birth order were more satisfied than men in marriages where the power structure was "less

stable” (i.e., pairings in which both spouses were oldest children). The results of this study provide support for the exploration of rank complementarity in the absence of consideration of sibling sex; spouse birth rank does indeed appear to contribute significantly to the marital adjustment of men, and in the current study this relationship was tested for both men and women.

A few studies testing Toman’s theory have failed to support his proposition that (a) “disturbed” marriages have lower levels of birth rank complementarity than “non-distressed” marriages or that (b) birth rank complementarity is associated with higher levels of marital satisfaction and stability. Birtchnell and Mayhew (1965) compared 982 “successfully” married and 1,012 “unsuccessfully” married individuals. Marital success was indicated by asking individuals, “Would you say that your first marriage was successful, fairly successful, or unsuccessful?”, and only individuals answering “successful” or “unsuccessful” were included in the sample. The authors found that there was no significant difference between the groups on the number of complementary relationships reported, but one significant trend emerged: men who reported being especially fond of an older sister tended to marry women who had only younger brothers, a trend that is consistent with the results of Kemper’s study discussed above.

Levinger and Sonnheim (1966) used Toman’s formula to test the relationship between birth order complementarity (i.e., taking into account both the rank and sex disposition of each spouse) and marital satisfaction among 60 “normal” couples (i.e., those with children at a local elementary school) and 24 “disturbed” couples (i.e., clients at a family service agency). Couples in which at least one spouse was an only-child were excluded from the sample. Also excluded were couples in which at least one spouse had step-siblings, half siblings, adopted siblings, deceased siblings, or a twin, with a total of 8 “normal” and 4 “disturbed” couples removed from the initial sample. The authors found no differences between the disturbed and normal couples

in the extent of birth order complementarity. Furthermore, there was no significant difference between the marital satisfaction of the disturbed couples and those drawn from the community (i.e., “normal” couples). It should be noted that (1) the difference in sample size between the normal and disturbed groups was rather large (36 couples) and (2) it is not possible to accurately ascertain the levels of relationship satisfaction of each population in the absence of measures of satisfaction, which may have resulted in the two samples actually being from the same population in which variations in marital satisfaction exist. It is also noteworthy that the authors replicated Toman’s research methods but were not able to support his theory.

Gold and Dobson (1988) also utilized Toman’s formula in their study exploring the relationship between birth order complementarity and both marital satisfaction and marital stability. The sample included 150 married couples recruited from three churches in a suburban area. Marital satisfaction was measured by the Dyadic Adjustment Scale (Spanier, 1976) and stability was measured by the Marital Stability Scale (Gold & Dobson, 1988). The authors found that birth order complementarity was not a significant predictor of marital quality or marital stability.

Ortiz (1982) explored the predictive role of sibling position (birth rank) on husbands’ and wives’ marital satisfaction. The sample was composed of 160 volunteer couples, and each spouse reported his/her birth order and completed the Marital Satisfaction Scale (MSS; Roach, Frazier & Bowden, 1981). Ortiz found that for husbands, spousal combinations of first-born females/middle born males and middle-born females/last born males corresponded with lower husband ratings of marital satisfaction. For wives (but not husbands), marital combinations of first-born female/middle-born male and middle-born female/last-born male were significantly and negatively correlated with marital satisfaction. Additionally, first-born females married to

last-born males had lower scores on the MSS than the other sibling combinations. These findings are interesting because (1) a pairing that is proposed to be one of the most complementary (first-born female and last-born male), and, consequently, the most satisfying, was found to have the lowest levels of satisfaction and (2) differences in marital satisfaction based on complementarity differed for men and women. The current study will allow for the exploration of the underlying mechanisms of birth order complementarity that may contribute to lower levels of marital adjustment in structurally complementary marital pairings.

In sum, the results from empirical studies examining birth order complementarity in marriage and romantic relationships are equivocal. Several studies have found no support for Toman's hypothesis that birth rank/birth order complementarity is associated with marital satisfaction (e.g., Birtchnell & Mayhew, 1965; Gold & Dobson, 1988; Levinger & Sonnheim, 1966; Ortiz, 1982) while others have shown that birth rank/birth order complementarity is linked with marital or relationship satisfaction and success (e.g., Baxter, 1965; Kemper, 1966; Mendelsohn et al., 1974; Weller, Natan, & Hazi, 1974). All of the studies that supported Toman's theory provided evidence for the impact of rank complementarity on marital or relationship satisfaction, and two (Kemper, 1966; Mendelsohn et al., 1974) found support for the impact of both rank and sex complementarity on relationship satisfaction.

It is interesting to note that neither of the studies that utilized Toman's formula to operationalize birth order complementarity found support for his theory. The methods used by Levinger and Sonnheim (1966) were identical to those used by Toman in that "normal" and "disturbed" couples" were identified based on whether or not the couples were receiving mental health treatment. Conversely, Gold and Dobson (1988) measured marital satisfaction with a

standardized measure (i.e., the Dyadic Adjustment Scale) but made no attempt to differentiate couples into “disturbed” or “non-disturbed” groups.

The purpose of the current study is to help clarify whether and how birth order complementarity in marriages predicts ratings of marital satisfaction by testing whether interpersonal complementarity mediates (i.e., provides an explanation for) the proposed relationship between birth order complementarity and marital adjustment. As previously mentioned, there are many factors that contribute to the development of interpersonal roles (e.g., the presence of siblings; spacing between siblings; sibling sex; and sibling incompetence), and the influence of such factors on interpersonal role development can not be ascertained solely by knowing an individual’s birth rank. Consequently, assumptions about the marital adjustment of a couple can not be made simply by knowing the birth rank of each spouse; the evidence cited above is equivocal with respect to the role of birth rank/birth order complementarity in predicting levels of marital adjustment.

The author of the current study believes that measuring the extent of interpersonal complementarity among spouses may provide a clearer understanding of the critical aspects of birth rank complementarity operating in the marital relationship that impact marital adjustment. According to Toman’s *duplication theorem of social relationships*, birth rank complementarity among spouses implies cooperation or match of interpersonal roles and reciprocity in levels of relational power within a marriage (Toman, 1993). Research exploring interpersonal theory has supported the idea that that interpersonal complementarity (i.e., a match on affiliation and reciprocity on dominance and submission) can be observed in relationships and is positively associated with relationship satisfaction. Thus, the construct of interpersonal complementarity is well suited to be tested as a mediator between birth rank complementarity and marital adjustment

as it is proposed to provide an explanation of the underlying interpersonal mechanisms of Toman's *duplication theorem of social relationships*. The next section provides a review of the studies that have examined the role of interpersonal complementarity in marital relationships.

#### *Interpersonal complementarity and marriage*

Only two studies to date have examined the relationship between interpersonal complementarity and marital satisfaction. Campbell (1990) surveyed 103 married couples and found that complementarity [as reported by each spouse on the Checklist of Interpersonal Transactions (Kiesler, 1987)] was significantly associated with both marital satisfaction [as measured by the Satisfaction subscale of the Dyadic Adjustment Scale (Spanier, 1976)] and stability. Similar to methods used in the current study, each spouse reported his or her own interpersonal style and these ratings were combined into a single index of complementarity. Couples' composite complementary scores were significantly associated with relationship satisfaction ( $F(1, 204) = 33.57, p < .0001$ ) and security ( $F(1, 204) = 12.18, p < .0002$ ).

Additionally, each spouse rated the interpersonal style of their spouse (i.e., husbands rated their wives and vice versa) and those ratings were combined to form a single complementarity score. This composite complementarity score was also significantly associated with both relationship satisfaction ( $F(1, 204) = 43.83, p < .0001$ ) and security ( $F(1, 204) = 11.88, p < .0007$ ), such that greater interpersonal complementarity predicted higher reported levels of satisfaction and security. These results demonstrate that spouses' perceptions of the extent of interpersonal complementarity in their marriage are associated with greater self-reported relationship satisfaction and security.

Saitzyk, Floyd, and Kroll (1997) tested the relationship between marital satisfaction and Autonomy/Interdependence and Affiliation/Disaffiliation (as measured by the SASB) during

interactions in which spouses provided social support to one another. Thirty-three satisfied and 23 dissatisfied couples, as indicated by scores on the Dyadic Adjustment Scale (Spanier, 1979), participated in a 16 minute discussion where each spouse presented an issue and received support from the other spouse. The interactions were videotaped and coded using the SASB. The researchers found partial support for differences in SASB-coded interactions based on levels of marital satisfaction. During the interactions, dissatisfied wives' support attempts were coded as "Ignore": they presented behaviors that were autonomy-inhibiting when acting as supporters, and they were lacking in behaviors that promoted autonomous behaviors in their husbands (i.e., "Affirm"). In contrast, satisfied wives were found to balance autonomous and interdependent behaviors while providing and receiving support.

Further, couples that reported higher marital satisfaction provided more affirmation for independent actions, engaged in agreements high in affiliation, and tended to avoid hostile interdependent exchanges (i.e., **Criticize/Sulk**). Dissatisfied couples struggled more to provide support and provided less affirmation of independent functioning during discussions. In addition, they demonstrated more hostile patterns of interacting, which included blaming by the supporter, which lead to highly independent behaviors on the part of the confiders. The researchers found support for interpersonal complementarity in both satisfied and dissatisfied couples, but it was not found for behaviors that fell on polar extremes of the interdependent/independent axis (i.e., bids for control on the part of the supporter were not met with submission by the spouse being supported; Saitzyk et al., 1997).

The results of the two studies taken together provide some support for the presence of interpersonal complementarity in marital relationships, and also demonstrate that interpersonal complementarity among spouses is associated with higher levels of relationship satisfaction.

Campbell's (1990) findings suggest that spouses' perceptions of interpersonal complementarity may be used as an accurate assessment of relationship functioning, providing support for the use of such methods in the current study. Saitzyk et al.'s (1997) results provide support for the use of the SASB to measure complementarity among spouses and demonstrate that interpersonal complementarity predicts variation in marital satisfaction. Taken together these results provide evidence for the association between interpersonal complementarity and marital adjustment; both couple reports of interpersonal complementarity and couple behavioral observations provide evidence that higher levels of interpersonal complementarity are associated with higher levels of marital adjustment.

The majority of the empirical studies that have explored interpersonal complementarity have studied the interactions between two people unfamiliar with one another (i.e., two strangers or a confederate and a participant). The results of these studies generally support the existence of reciprocity on the control/status domain: participants, when interacting with another participant or a confederate, display behaviors that are complementary to that of their partner (e.g., one partner is more dominant and the other is submissive; e.g., Markey, Funder, & Ozer, 2003; Sadler & Woody, 2003; Strong, Hills, Kilmartin, DeVries, Lanier, Nelson, Strickland, & Meyer, 1988; Tracey, 1994). Additionally, participants report complementary behavior in their relationships with others on self-report measures of interpersonal traits/styles (e.g., Tracey, Ryan, & Jaschik-Herman, 2001; Sadler & Woody, 2003). Finally, studies examining participants' satisfaction in complementary and non-complementary relationships or interactions provide support for the hypothesis that complementary relationships are satisfying (Toman, 1993; Tracey, 1994; 2004).



Toman proposed that complementary relationships are most satisfying due to cooperation among spouses and role complementarity (e.g., each partner performs different tasks; Toman, 1961/1993), and interpersonal theory states that the “fit” of behaviors among individuals in a complementary interaction [e.g., (a) match on affiliation and (b) reciprocity with respect to power, in which one is dominant and the other is submissive] contributes to relationship satisfaction due to the confirmation of each partner’s interpersonal role. None of the research exploring relationship adjustment among married individuals has looked specifically at interpersonal roles but much of this research can inform our knowledge of certain behaviors that contribute to marital adjustment. The next section will review the literature that has explored behavioral factors that impact spouses’ reported levels of marital adjustment.

#### *Behavioral Factors that impact Marital Adjustment*

Noller and Fitzpatrick (1990) conducted a review of research in the eighties that explored communication patterns in married couples and found that differences exist between satisfied and dissatisfied married couples. Distressed couples reported more frequent conflicts and more time in conflict and were found to exhibit more negative communication behaviors (i.e., criticizing, complaining, and making sarcastic remarks). Satisfied couples were more likely to agree with one another, provide approval to their spouse, and to use humor and laughter during interactions. Non-distressed couples were found to exchange more rewards and fewer punishments during interactions while distressed couples exchange more negative behaviors, which lead to escalating and coercive interactions. In addition, distressed couples were reported to be highly reactive to their spouse to immediate relational events while non distressed spouses were less reactive.

Another interesting finding is that distressed spouses were found to be less accurate at decoding nonverbal communication cues of their spouse (than of strangers), and the ability to encode and decode nonverbal cues was more crucial to marital satisfaction for husbands than for wives. In addition, distressed spouses were unaware that they were misunderstanding each other (Noller & Fitzpatrick, 1990). These findings provide support for the assumption that misread or ambiguous interpersonal cues (verbal and non-verbal) lead to conflict and misunderstanding (Horowitz et al., 2006), and also suggests that dissatisfied couples may be lacking in the ability to accurately read verbal and non-verbal behavioral cues.

Bradbury, Fincham, and Beach (2000) conducted a review of research investigating marital satisfaction and concluded that distressed couples have higher levels of negative reciprocity and reactivity and participate more often in demand/withdraw patterns during interactions (e.g., one spouse, usually the wife, criticizes or nags while the other withdraws). Karney and Bradbury (1995) conducted a meta-analysis of 115 studies of marital satisfaction and found similar results and reported effect sizes for variables that have been found to be associated with marital satisfaction for wives, husbands, and couples, and it is noteworthy that the strongest effect sizes reported relate to aspects of marital communication. For wives, couple positive behavior (.42) and couple negative behavior (-.30) had strong associations with marital satisfaction while couple positive behavior (.37), couple negative behavior (-.42), negative reciprocity (-.31), husband avoidance (-.22), and husband negative behavior (-.21) were highly related to marital satisfaction for husbands. Finally, for couples, husband positive behavior (.54), couple positive behavior (.33), wife positive behavior (-.43), husband negative behavior (-.36), negative reciprocity (-.32), and couple negative behavior (-.24) were associated with marital satisfaction.

In sum, distressed couples are more likely to participate in conflict and exhibit negative behaviors than non-distressed couples. Additionally, results of research show that distressed spouses have more trouble decoding their partners' non-verbal behaviors and are more reactive toward their spouse than non-distressed spouses. It may be posited that a mismatch of interpersonal roles and/or behaviors may contribute to such problems in marital relationships and may impact reports of marital adjustment, and thus the current study seeks to explore this relationship.

In light of the findings of the studies reviewed above, two indices of marital satisfaction will be used to operationalize marital adjustment in the current study. First, the Global Distress subscale of the Marital Satisfaction Inventory- Revised (MSI-R; Snyder, 1997; Snyder & Alkman, 1999) will measure each couple's overall level of marital distress or satisfaction. It is expected that greater levels of birth rank complementarity and interpersonal complementarity will be associated with lower levels of marital distress (e.g., lower scores on the Global Distress subscale). The second index of marital adjustment will be measured by the Problem-Solving Communication subscale of the MSI-R. Thus, couple ability to solve problems and manage conflict in the marriage together are important components of marital adjustment and will be examined in this study. In sum, it is expected that greater complementarity among spouses (both birth rank and interpersonal complementarity) will be associated with greater effectiveness at solving problems in the relationship due to the cooperation of interpersonal roles among spouses. Further, this study will explore whether the extent of interpersonal complementarity, as indicated by spousal ratings of the interpersonal behaviors of themselves and their spouse on both the transitive (i.e., active) and intransitive (i.e., reactive) surfaces on the SASB, accounts for the proposed association between birth rank complementarity and marital adjustment.

*Summary and statement of research hypothesis*

Toman's *duplication theorem of social relationships* is inherently interpersonal in nature; he proposed that sibling relationships serve as the primary means through which interpersonal behaviors are learned and shaped (Toman, 1993). While no empirical evidence exists concerning the association between birth rank complementarity and the extent of interpersonal complementarity, Toman and other birth order theorists have proposed that older siblings are more likely to be dominant and younger siblings more likely to respond with submission. Relationships in which spouses have more complementary birth ranks (e.g., an oldest married to a youngest; a youngest married to a middle child) are expected to have greater levels of marital adjustment due to the cooperation of the learned interpersonal roles of each spouse. But, as previously mentioned, birth rank alone does not guarantee that such tendencies would exist due to other factors that exist in a sibling group (e.g., sibling incompetence or spacing between siblings), and studies testing Toman's theory have resulted in equivocal results, which may be a result of these underlying factors.

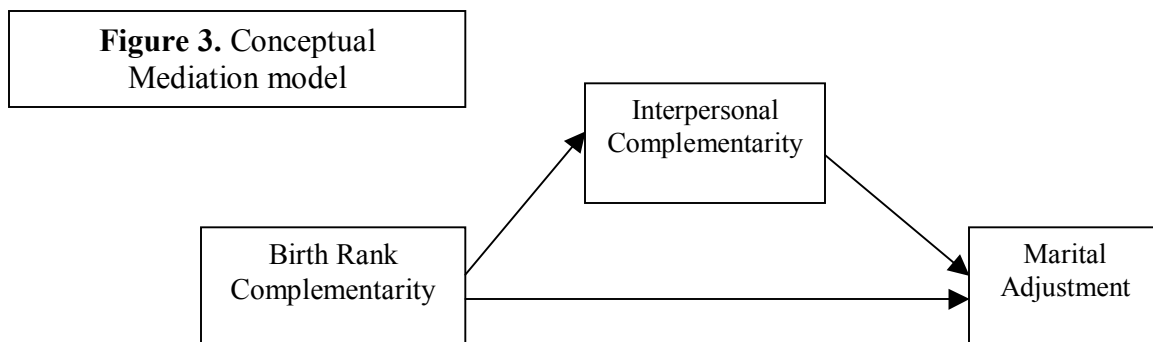
Toman and other researchers that have tested his theory never directly explored the mechanisms underlying birth rank complementarity- namely the role of interpersonal complementarity- in married couples, and the author of this study believes that doing so may provide insight into why some couples in seemingly complementary relationships based on birth rank may report lower levels of marital adjustment than would be expected and why some in non-complementary birth rank relationships may report higher than expected levels of marital adjustment. Thus, the purpose of this study was to contribute to this area of research by testing whether levels of interpersonal complementarity mediate the proposed relationship between birth order complementarity and marital adjustment in a sample of married couples. In other words,

couples with higher levels of birth rank complementarity are expected to report the highest levels of marital adjustment only when they also demonstrate higher levels of interpersonal complementarity.

The hypothesis for this study was that interpersonal complementarity mediates the proposed relationship between birth rank complementarity and marital adjustment. According to Baron and Kenny (1986), mediator variables are assumed to explain and/or account for the relationship between the predictor and outcome variables and “explain how external physical events take on internal psychological significance” (p. 1176; Baron & Kenny, 1986). To provide evidence for a mediated relationship the following conditions must be met, and were tested in the current study:

- (a) the relationship between birth rank complementarity (i.e., the predictor) and interpersonal complementarity (i.e., the mediator) must be significant;
- (b) the relationship between birth rank complementarity (i.e., the predictor) and marital adjustment, as measured by the MSI-R subscales Global Distress and Problem-Solving Communication (i.e., the outcome variables) must be significant;
- (c) the relationship between interpersonal complementarity and marital adjustment must be significant; and
- (d) the association between birth rank complementarity and marital adjustment must decrease in the presence of the proposed mediator (Baron & Kenny, 1986).

Figure 3 shows the conceptual mediation model that was tested in the current study.



## Chapter 3: METHODOLOGY

### *Participants*

The sample consisted of 60 heterosexual couples who were married between January and December of 2001, 2002, and 2003. The total number of years married for the couples ranged from 3.5 years to 7 years ( $M = 5.43$ ,  $SD = .96$ ), and most of the participants reported that their current marriage was their first (Wives: 93.4%,  $N = 57$ , Husbands: 93.4%,  $N = 57$ ). Participants ranged in age from 25 to 53 years old (Wives:  $M = 30.5$ ,  $SD = 4.2$ ; Husbands:  $M = 32.6$ ,  $SD = 5.8$ ). Ethnically the sample was rather homogeneous with 90.8% White/Caucasian, 5% Black/African-American, 2.5% Hispanic/Latino, and 1.6% Asian or Pacific Islander. The majority of the sample reported having at least a bachelor's degree (Wives: 88.5%,  $N = 54$ ; Husbands: 73.8%,  $N = 45$ ), and mean combined family income was in the range of \$61,000 to \$70,000 per year. Most of the couples reported having at least one child ( $N = 48$ , 80%).

### *Measures*

*Demographic form.* Spouses reported their current age and age at marriage, ethnic/racial background, number of times married, education level, combined family income, and whether or not the couple has children.

*Family Position Inventory (FPI; Roach, 1979).* The FPI was used to gather information about each participant's birth rank, which was used to compute each couple's birth order complementarity. Participants reported their birth rank (i.e., their birth position among the siblings with whom they lived for the majority of their life): *oldest* children are those who have only younger siblings and no older siblings; *middle* children are those who have both older and younger siblings; *youngest* children have only older siblings; and *only* children have no siblings. Participants who indicated only-child status were asked to provide the birth position of their same-sex parent (i.e., oldest, middle, youngest, or only child).

In the current study, birth rank complementarity was represented categorically: each couple was assigned a number based on the combination of each spouse's reported birth rank. The categories, which were based on Toman's degrees of complementarity (Toman, 1993), were: 1= "most complementary" pairings represented couples in which an oldest is married to a youngest; 2= "complementary" pairings represented couples in which a middle child is married to an oldest or a youngest; 3= "non-complementary" pairings represented couples in which each spouse has the same birth order (e.g., oldest/oldest, middle/middle, and youngest/youngest) but not only/only pairings; and 4= "least complementary" pairings represented couples in which at least one spouse is an only child.

The sample included only  $n = 3$  couples in which at least one spouse reported being an only child. Thus, in accordance with Toman's (1993) proposition that only children model the behaviors consistent with the birth order position of their same-sex parent, couples in Category 4 were redistributed into Categories 1 – 3 for the analysis based on the only child spouse's report of the birth rank of their same-sex parent (e.g., an only child spouse with a firstborn same-sex parent married to a middle child would be placed in category 2).

*Marital Satisfaction Inventory- Revised.* The Marital Satisfaction Inventory- Revised (MSI-R; Snyder, 1997) is a 150-item measure that provides a multidimensional assessment of relationship satisfaction. The MSI-R contains two validity scales (i.e., Inconsistency and Conventionalization), a scale assessing Global Distress, and 10 scales assessing areas of relationship distress (i.e., Affective Communication, Problem-Solving Communication, Aggression, Time Together, Disagreement about Finances, Sexual Dissatisfaction, Role Orientation, Family History of Distress, Dissatisfaction with Children, and Conflict over Childrearing). All responses are rated either true or false. The MSI-R takes approximately 25



minutes to administer, and can be hand scored in 10 minutes. The scores are normalized at  $T=50$  ( $SD=5$ ) and 66% of non-distressed couples are expected to fall between  $T=40$  to 60. (Snyder & Alkman, 1999).

In the current study, two scales were utilized to operationalize marital adjustment: Global Distress, which provides an overall rating of relationship dissatisfaction (22 items); and Problem-Solving Communication, which measures overt conflict and general ineffectiveness at resolving differences (19 items; Snyder, 1997; Snyder & Alkman, 1999). These two scales were selected for use because they explicitly assess aspects of marital interactions that have been found to directly contribute to marital adjustment (e.g., negative affectivity and criticism; Bradbury, Fincham, & Beach, 2000; Karney & Bradbury, 1995; Noller & Fitzpatrick, 1990). Husband and wife scores on Global Distress and Problem-Solving Communication were averaged in order to create a composite rating of overall marital functioning and satisfaction for the couple (Tabachnick & Fidell, 2001).

The normative group for the MSI-R consisted of 1,020 intact couples from the U.S. that were deemed geographically diverse and representative of the U.S. population based on ethnicity, educational level, and occupation. Individuals in the normative group ranged in age from late teens to 70 years old and beyond. Group mean profiles are available for individuals seeking and completing marital therapy, couples seeking treatment for sexual dysfunctions, physically abused women, couples in which at least one spouse is seeking treatment for a non-marital concern, and parents with a child in a psychiatric hospital (Snyder & Alkman, 1999).

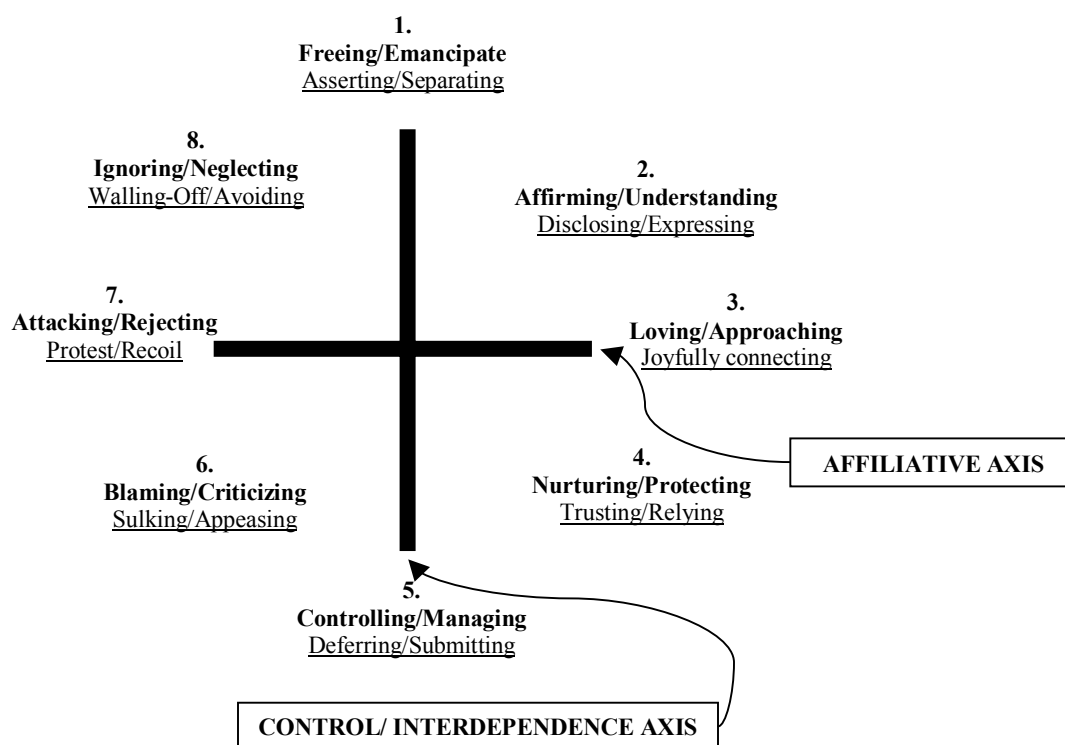
Snyder & Alkman (1999) report that the MSI-R has high internal consistency (Cronbach  $\alpha= .70$  to  $.93$ ,  $M= .82$ ) and test-retest reliability (6 weeks:  $.74$  to  $.88$ ,  $M= .79$ ). Support for the construct related validity of the MSI-R has also been demonstrated. For example, correlations

between the MSI-R and the original MSI range from .94 to .98 ( $M = .95$ ) and, for this reason, results from studies examining the validity of the MSI have been used to demonstrate the validity of the MSI-R. Discriminant validity has been demonstrated in 20 studies. The MSI was found to discriminate between clinical (i.e., couples seeking marital therapy) and control couples (non-therapy seeking) and between battered wives and martially distressed, non abused wives. In addition, the MSI has been found to indicate changes in couples' relationship satisfaction as a result of treatment (Snyder & Alkman, 1999).

Convergent validity has been demonstrated through high correlations between the MSI Global Distress scale and both the Locke-Wallace Marital Adjustment Test (1959) and the Dyadic Adjustment Scale (Spanier, 1976). Additionally, the Problem-Solving Communication scale scores have been linked to observer ratings of anger and contempt and also predict gains in communication skills associated with a brief cognitive behavioral couple's therapy (Snyder & Alkman, 1999). Reliability estimates for the current sample were very good for both subscales (Global Distress:  $\alpha = .93$ ; Problem-Solving Communication:  $\alpha = .87$ ).

*Structural Analysis of Social Behavior Intrex Questionnaires.* The Structural Analysis of Social Behavior Intrex Questionnaires (SASB- Intrex; Benjamin, 1974; 1996) measure interpersonal patterns by assessing an individual's perceptions of his/her behavior in relation to others and him/herself. The SASB model is a circumplex representation of interpersonal behavior with *affiliation* (i.e., Love and Attack) on the x-axis and *interdependence* (i.e., Emancipate and Control) on the y-axis. There are three surfaces of interpersonal behaviors that can be explored: the *transitive* surface; the *intransitive* surface; and transitive focus directed at self, or *introject*. The *transitive* surface assesses behaviors that are focused on others and refer to what will be done to or for another person (e.g., neglect, encourage, or protect). The *intransitive*

surface is composed of interpersonal behaviors that are in response to behaviors of another (e.g., avoid, disclose, or trust). Finally, the introject surface represents behaviors that are directed toward the self, and these generally reflect the way one has been treated by significant others (e.g., self-neglect, affirm self, and nurture self; Benjamin, 1974; 1996).



**Figure 4.** Structural Analysis of Social Behavior (SASB; Benjamin, 1974; 1996)  
Corresponding behaviors on the **Transitive** and Intransitive Surfaces

The SASB model is reflected in combinations of affiliation and interdependence to yield eight possible clusters on each of the three surfaces of the circumplex noted above. On each surface, the points in between the poles of each axis (e.g., 2, 4, 6, and 8) contain moderate levels of the behaviors represented by the adjacent affiliation and interdependence axes. For example, Cluster 8 on the transitive surface (**Ignoring/Neglecting**) contains moderate levels of Attacking (low affiliation) and Freeing (low control) (Benjamin, Rothweiler, & Critchfield, 2006).

In the current study, short forms of the SASB Intrex Scales for the transitive and intransitive surfaces were administered to each spouse. Introject ratings were not employed. Each short form contains 32 items that are rated from 0 (*completely false*) to 100 (*completely true*) in increments of 10. Interpersonal behavior on each of the 8 clusters on the SASB (i.e., **Emancipate/**Separate; **Affirm/**Disclose; **Active Love/** Reactive Love; **Protect/**Trust; **Control/**Submit; **Blame/**Sulk; **Attack/**Recoil; and **Ignore/**Wall-Off) is evaluated by one question on each surface (i.e., transitive and intransitive) for the self and the spouse, which results in 32 items. Neither reliability nor internal consistency of the short forms can be determined, as only one item from each cluster is utilized. Strong content, construct, predictive, and concurrent validity of the medium and long forms, however, has been established. Additionally, split-half reliability coefficients for the medium ( $r = .82$ ) and long forms ( $r = .76$ ) have been documented, and test-retest reliabilities for the short forms have been observed at  $r = .79$  (Benjamin, Rothweiler, & Critchfield, 2006).

SASB Intrex responses from each husband and wife were used to calculate the couple complementarity by combining each participant's ratings of him/herself and his/her spouse on both transitive (i.e., "how I treat my spouse" and "how my spouse treats me") and intransitive ("how I respond to my spouse" and "how my spouse responds to me") surfaces. Perfect complementarity is evident when behaviors on the transitive and intransitive surfaces correspond to one another in terms of location. Husband and wife SASB ratings focused on self and spouse behaving in the transitive and intransitive roles, resulting in four indices of couple-level complementarity:

1. Husband rates (1) husband transitive/wife intransitive;
2. Husband rates (2) wife transitive/husband intransitive;

3. Wife rates (3) wife transitive/husband intransitive;
4. Wife rates (4) husband transitive/ wife intransitive.

The SASB Intrex software and Microsoft Excel were used to transform raw scores into the final indices of couple-level complementarity. The SASB Intrex software calculates two dimensional scores (i.e., weighted **autonomy** and **affiliation**) for all response profiles (i.e., participant ratings for the self and the spouse) on both transitive and intransitive surfaces from the data in the Excel file. Dimensional scores range from approximately -1,000 to +1,000 and were used to plot each profile's location in space on the transitive and intransitive surfaces of the SASB [(e.g., (AF, AU), similar to plotting points in space on the (x, y) axes (Pincus & Benjamin, 2002; Pincus, Newes, Dickinson, & Ruiz, 1998)].

Next, a  $\Theta$  (Theta) was produced for each profile by using the formula  $\Theta = \text{TAN}^{-1}(\text{AU}/\text{AF})$ , which was calculated by way of an excel program that was provided to the researcher by Dr. Michael Gurtman. The equation results in an angle between  $0^\circ$  and  $359^\circ$ , and this angle represents the sum of the direction and magnitude of all vectors present in the profile (e.g., all reported responses on each surface; Pincus et al., 1998). The  $\Theta$  for each profile was used to quantify couple-level interpersonal complementarity by way of Gurtman's (2001) *A-statistic* (Pincus et al., 1998).

Gurtman's *A-statistic* numerically operationalizes complementarity by calculating the absolute value of the angular discrepancy between spouses' SASB Intrex scores on the transitive and intransitive layers. The equation used to calculate the indices of interpersonal complementarity is  $A = (90 - D)/90$ , where  $D$  is the angular discrepancy in degrees (Gurtman, 2001). Perfect agreement (i.e., perfect complementarity) would yield a  $+1$  and maximum disagreement (i.e., non-complementarity) a  $-1$ . Therefore, the theoretical range for scores is  $-1$  to

+1 where  $A > 0$  is complementarity,  $A = 0$  is a complementarity (i.e., neither complementary nor anticomplementary), and  $A < 0$  is non-complementarity. For example, considering the couple complementarity score comprised of husband's report of husband transitive and wife intransitive scores, if the husband **Protects** (SASB Cluster 4- **transitive**) and the wife Trusts (SASB Cluster 4- intransitive) the angular discrepancy would be "0°" (because the two behaviors lie on the same point on the **transitive** and intransitive layers) and the calculation of the *A-statistic* would result in a complementarity score of +1 (complete complementarity). Conversely, if the husband **Protects** (SASB Cluster 4- **transitive**) and the wife Walls-Off (SASB Cluster 8- intransitive) the angular discrepancy would be "180°" and the resulting *A-statistic* would be -1 (non-complementarity).

Husband and wife SASB scores were combined to create two composite complementary scores for each couple. The first couple complementarity score consisted of: (1) a husband transitive/wife intransitive composite score that is comprised of both husband and wife's reports of their interactions when "husband focuses on wife and she responds or reacts to him." The second couple complementarity score consisted of (2) a wife transitive/husband intransitive composite score that is made up of both husband and wife's reports of their interactions when "wife focuses on husband and he responds or reacts to her."

### *Procedure*

*Data collection.* Approval for the study was obtained from Penn State's Office of Research Protections. About half of the couples who participated in the study were recruited from a community database of families with young children ( $N = 28$ , 45.9%), the Families Interested in Research Studies (FIRSt) database, which was developed at the Pennsylvania State University and is maintained by Penn State's Child Study Center. The remainder of the sample

was recruited through colleagues and friends of the researcher ( $N = 28$ , 45.9%) and by mailing recruitment letters to a random sample of couples who applied for marriage licenses between January and December 2001 in Summit County, OH ( $N = 5$ , 8.2%).

Participants recruited through the FIRSt Families database were sent a recruitment letter (see Appendix D) that contained information about the study, the website where the study was located, and a numerical code for each spouse to use when completing the survey so that their data could be identified as a pair and analyzed together. Participants from the FIRSt Families database also received a follow up phone call from the researcher approximately two weeks after being sent a recruitment letter. Participants recruited through marriage licenses applied for in Summit County were mailed a recruitment letter (see Appendix E) that also contained information about the study, the website for the survey, and a numerical code that, and participants recruited by way of colleagues and friends of the researcher were sent an electronic copy of the recruitment letter by email (see Appendix F) and were either provided with a numerical code for spouses to use or were asked to enter their 6 digit marriage date (MMDDYY) in order that couple data could be linked.

All participants had the option of completing the study online on a secure website posted at [www.psychdata.com](http://www.psychdata.com) or by way of paper and pencil questionnaires, which were mailed to participants along with two self-addressed, postage paid envelopes. Each medium contained the informed consent form approved by Penn State's ORP, the SASB Intrex short form, the MSI-R subscales (e.g., Global Distress and Problem Solving Communication), the demographic questionnaire, and the Family Position Inventory. The Differentiation of Self Inventory (DSI; Skowron & Friedlander, 1998) was also included in the packet of measures but is not the focus of the current study. Seven (7) couples and 8 individuals completed paper and pencil forms, and

the remainder of the participants completed the survey online. Each couple that completed the study was compensated with two movie tickets, which were mailed to an address they provided after completing the surveys.

### *Plan of Analysis*

The means, standard deviations, and ranges were calculated and reported for the MSI-R subscales (i.e., Global Distress and Problem-Solving Communication) and the two indices of interpersonal complementarity (i.e., the combination of husbands' and wives' SASB Intrex ratings). Descriptive statistics for the demographic variables of interest (ethnic/racial background, number of times married, education level, combined family income, and whether couples have children) were also calculated and reported. A *t-test* was conducted to test whether differences exist between parents and non-parents on the MSI-R subscales, which would determine if parent status would be included as a covariate in the regression analyses. The three categories of birth rank complementarity were dummy-coded into 2 variables ("First" and "Second") for use in the regression analyses. Intercorrelations were calculated between the MSI-R subscales, the two indices of interpersonal complementarity, and the categories of birth rank complementarity.

A series of linear regression equations were used to test the hypothesis that interpersonal complementarity in couples would mediate the proposed relationship between birth rank complementarity and couple marital satisfaction. To test for evidence of this mediation model the following conditions were tested in the current study:

- (a) the relationship between the predictor (i.e., the dummy-coded birth rank complementarity variables) and the mediator variables (i.e., composite couple complementarity variables) must be significant;



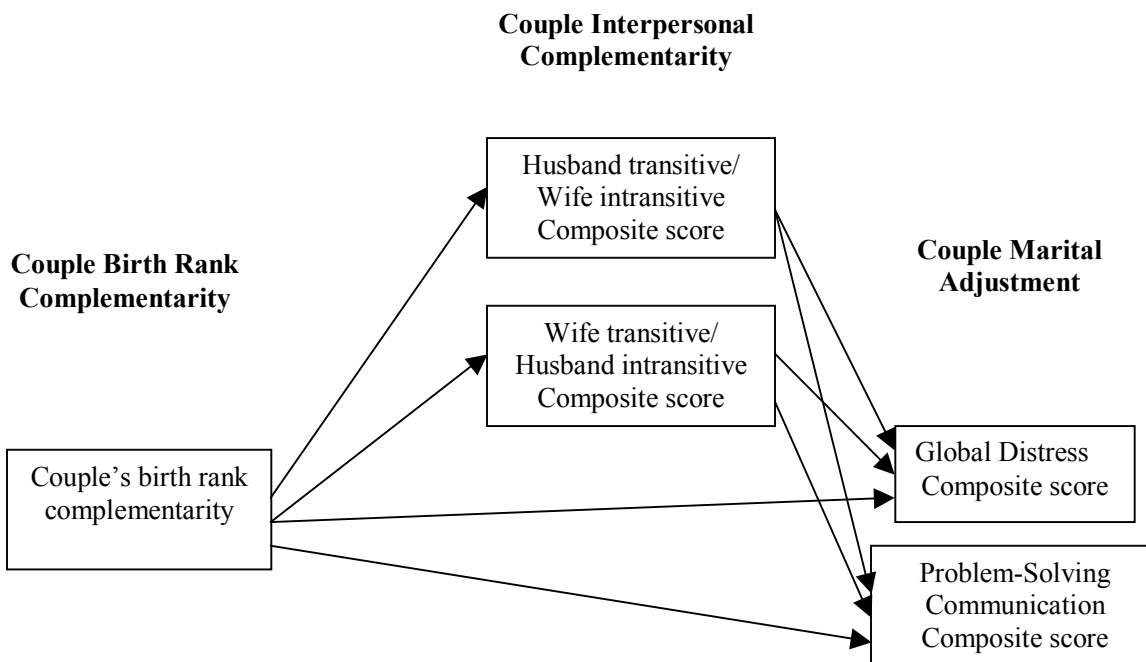
(b) the relationship between the predictor and the outcome variables (i.e., couple composite score on Global Distress and Problem-Solving Communication) must be significant;

(c) the relationship between the mediator and the outcome variable must be significant; and

(d) the effect of the predictor variable on the outcome variable decreases when the mediator variable is added to the equation (Baron & Kenny, 1986; Preacher & Leonardelli, 2001).

Thus, support for the hypothesized mediation model would be observed if the effect of the couple's birth rank complementarity on couple Global Distress or Problem-Solving Communication decreased after accounting for the level of couple interpersonal complementarity. Figure 5 below shows the mediation model that was tested. A Sobel Test was to be used to test the significance of the mediator and would be calculated by an online form provided by Preacher and Leonardelli (2001). In order to conduct the Sobel test online, it would be necessary to extract the unstandardized regression coefficients ( $B$ ) and their corresponding standard errors ( $SE$ ) for the equations testing the association between (a) the predictor and the mediators and (b) the predictor, mediators, and outcome variables from the regression analyses. For all regression analyses the  $B$ ,  $SE$ , standardized regression coefficients ( $\beta$ ),  $F$  values,  $R^2$ , and  $p$  values were reported.

**Figure 5.** Mediation model tested in the current study



## Chapter 4: RESULTS

The following section will outline the preliminary and major analyses that were conducted to test the hypothesis that a couple's interpersonal complementarity mediates the relationship between their birth rank complementarity and marital adjustment.

### *Preliminary Analyses*

Data stored on the *PsychData* website may be downloaded as either a Microsoft Excel file or a SPSS compatible file. An Excel file was used to transform the SASB Intrex Scale responses into the indices of interpersonal complementarity and SPSS was used to analyze the remainder of the data.

*Demographic information.* Information reported on the demographic form was examined to determine the composition of the sample. An independent samples *t-test* was conducted to determine whether significant differences existed between parents and non-parents on the marital adjustment variables (i.e., MSI-R subscales). No significant differences were observed (Global Distress:  $t = -.271, p = .788$ ; Problem-Solving Communication:  $t = -.599, p = .551$ ); therefore, parent status was not included as a covariate in the analyses (see Table 1).

*Birth rank complementarity.* Participant reports of birth rank from the FPI were used to place couples in one of the three categories of birth rank complementarity: 1= an oldest married to a youngest ( $n = 15$ ); 2= an oldest or a youngest married to a middle child ( $n = 23$ ); and 3= spouses with the same birth order ( $n = 20$ ). Because birth rank complementarity was represented by a categorical variable it was necessary to create dummy coded variables for use in the regression equations to test the hypothesis. Dummy codes were created by using the Transform/Recode into Different Variables command in SPSS, and 1's and 0's were used to create comparisons between the three levels of the birth rank categories. For the first new

variable (labeled “First”) couples in category 1 were assigned a “1” while those in categories 2 and 3 were assigned a “0” and for the second new variable (labeled “Second”), couples in category 2 were assigned a “1” while those in categories 1 and 3 were assigned a “0”. When “First” and “Second” are entered in the regression equation, the resulting output provides information about the differences in means when there is a shift from category 0 to category 1; category 3 is the Constant, while “First” represents the difference between the means of category 1 and category 3 and “Second” represents the difference between the means of category 2 and category 3.

Table 1  
*Independent Samples t-test exploring mean differences on marital adjustment variables between parents and non-parents*

Variable	<i>N</i>	Mean	<i>SD</i>	<i>t</i>	<i>p</i> -value
MSI-R Global Distress					
Parent	47	47.9	7.0		
Non-Parent	11	48.6	12.1	-.271	.788
MSI-R Problem-Solving Communication					
Parent	47	48.2	8.1		
Non-Parent	11	49.9	11.6	-.599	.551

*Note* : *N* = 58 in all categories ; MSI= Marital Satisfaction Inventory ; All scores on the MSI-R subscales are normalized at *T* = 50, with higher scores indicating greater marital distress (Global Distress) and greater difficulty resolving conflict (Problem-Solving Communication)

*Interpersonal complementarity.* Means, standard deviations, and ranges of the indices of interpersonal complementarity are reported in Table 2. The interpersonal complementarity variables were negatively skewed and scatterplots revealed that there were a few outliers in each set of the indices, indicating that for a few participants their responses ratings of complementarity and marital adjustment were not in the expected direction (e.g., low complementarity was associated with greater satisfaction or greater ability to effectively solve problems). After consulting with a statistician (M. Rovine) it was decided that casewise

diagnostics would be performed during each test of the hypothesis in order to explore the influence of outliers. This process is described in more detail in the major analysis section of this chapter.

*Marital Adjustment.* Husband and wife Global Distress and Problem Solving Communication scores were averaged in order to create a couple composite score for each MSI-R subscale. The mean, standard deviation, and range were computed for the subscales and are reported in Table 2. Mean scores on each scale were right at or just below the normative scores for the scales, indicating that participating spouses were generally satisfied in their marriage and able to effectively solve problems with their spouse.

Table 2  
*Means, Standard Deviations, and Ranges of Indices of Interpersonal Complementarity and MSI-R Subscales*

Variable	Mean	SD	Range
Couple Interpersonal Complementarity Scores ( $n = 58$ )			
Husband transitive/Wife intransitive A-statistic	.77	.28	-.69 to .98
Wife transitive/Husband intransitive A-statistic	.70	.30	-.51 to .98
Couple MSI-R Subscale Scores ( $n = 58$ )			
Global Distress	48.0	8.0	39 to 72
Problem-Solving Communication	48.5	8.8	35.5 to 74

*Note:* Possible range of scores for MSI-R Subscales: Global Distress = 39 to 83; Problem-Solving Communication = 32 to 77

*Correlations among study variables.* Intercorrelations among the predictor (birth rank complementarity categories 1-3), outcome (Global Distress and Problem-Solving Communication), and mediator (2 indices of interpersonal complementarity- Husband transitive/Wife intransitive and Wife transitive/Husband intransitive) variables are reported in

Table 3. A strong inverse relationship was observed between spouse ratings of interpersonal complementarity and the outcome variables (Global Distress and Problem-Solving Communication), such that greater reported interpersonal complementarity was associated with lower marital distress and greater effectiveness at resolving problems among spouses. No relationships were observed between birth rank complementarity and the mediator or outcome variables.

Table 3  
*Intercorrelations among predictor, outcome, and mediator variables (N = 58)*

	Ht/Wi	Wt/Hi	GDS	PSC	BO
Ht/Wi	1				
Wt/Hi	.573**	1			
GDS	-.688**	-.713**	1		
PSC	-.659**	-.617**	.776**	1	
BO	-.216	-.041	.163	.102	1

*Note:* Ht/Wi= Husband transitive/Wife intransitive complementarity; Wt/Hi= Wife transitive/Husband intransitive complementarity; GDS= Global Distress; PSC= Problem-Solving Communication; BO= Categorical representation of birth rank complementarity (categories 1 – 3)

\*\* Significant at  $p = 0.01$  (2-tailed)

#### *Major Analysis*

Three sets of regression analyses were conducted in SPSS to test the main hypothesis that spouse ratings of interpersonal complementarity would mediate the proposed relationship between birth rank complementarity and marital adjustment. Casewise diagnostics were performed during each set of analysis to examine the effect of outliers on the fit of the model. The SPSS casewise diagnostics function provides the case number containing outlying data points with their actual and predicted values, and this information was used to determine which cases to exclude from follow up analyses. If removing identified outlying cases from the analysis did not improve the significance of the relationship then the regression coefficients from

the original analysis that included the case(s) were reported. Unstandardized regression coefficients ( $B$ ),  $SE$ , standardized regression coefficients ( $\beta$ ),  $F$  values,  $R^2$ , and  $p$  values are reported for all relationships tested.

In the first step, a set of two regression analyses were conducted to test the relationship between the predictor (i.e., the couples' birth rank complementarity) and each of the two mediator variables [(i.e., the 2 indices of interpersonal complementarity: (1) husband and wife composite ratings of Husband transitive/Wife intransitive (Ht/Wi) and (2) Wife transitive/Husband intransitive (Wt/Hi)] was tested by running equations. In the first equation, the two dummy coded birth rank complementarity variables were entered as the predictors and the indices of interpersonal complementarity (Ht/Wi) as the dependent variable and a non-significant relationship was observed [ $F(2, 55) = .599, p = .553$ ]. Five cases were identified as outliers and were excluded from the analysis and doing so resulted in a significant relationship among the variables [ $F(2, 50) = 3.255, p = .047$ ]; spouses in birth rank category 2 (i.e., a middle child married to either an oldest or a youngest) reported significantly higher levels of interpersonal complementarity than those in category 3 (i.e., spouses with the same birth rank) [ $t = 2.524, p = .015; B = .073, SE = .029, \beta = .384$ ]. In the second equation, the two dummy coded birth rank complementarity variables were entered as the predictors and Wt/Hi as the dependent variable in the second equation and a non-significant relationship was observed:  $F(2, 55) = 1.262, p = .291$ . A total of three cases were identified as outliers and were excluded from the follow up analyses but did not improve the model:  $F(2, 52) = .315, p = .732$ . Table 4 lists the regression coefficients for this set of analyses.

Table 4  
*Multiple regression testing the relationship between birth rank  
 Complementarity and interpersonal complementarity (N = 58)*

Variable	B	SE B	$\beta$
Husband transitive/Wife intransitive			
First	.050	.032	.236
Second	.073	.029	.384*
Wife transitive/Husband intransitive			
First	.111	.103	.163
Second	.141	.092	.231

“First” represents the difference between the means of category 1 and 3

“Second” represents the difference between the means of category 2 and 3

\*Significant at  $p = 0.05$

In the second set of analyses, two regression equations were run to test the relationship between the predictor (i.e., birth rank complementarity) and the outcome variables (i.e., MSI-R Subscales Global Distress and Problem-Solving Communication). In the first equation, the dummy coded birth rank complementarity variables were entered as the predictors and the couple composite Global Distress score as the dependent variable. No outliers were identified and no significant relationship was observed:  $F(2, 55) = 1.580, p = .215$ . In the second equation, the dummy coded birth rank complementarity variables were entered as the predictor variables and the couple composite Problem-Solving Communication score was entered as the dependent variable. Again, no cases were identified as outliers and no significant relationship was observed:  $F(2, 55) = .734, p = .485$ . Table 5 lists regression coefficients for this set of analyses. Because no relationship was observed between birth rank complementarity and the marital adjustment variables, a final test of the mediation model was unnecessary.



Table 5  
*Regression testing the relationship between birth rank complementarity and marital outcome variables (N = 58)*

Variable	<i>B</i>	<i>SE B</i>	$\beta$
Global Distress			
First	-3.167	2.738	-.173
Second	-4.261	2.451	-.260
Problem-Solving Communication			
First	-2.817	3.016	-.142
Second	-3.037	2.699	-.171

In order to examine the relationship between the hypothesized mediators- couple ratings of interpersonal complementarity (i.e., Husband transitive/Wife intransitive and Wife transitive/Husband intransitive)- and the marital adjustment variables (i.e., Global Distress and Problem-Solving Communication), two multiple regression analyses were run. In the first equation, couple ratings of interpersonal complementarity were entered as the predictors and Global Distress as the dependent variable and the model was highly significant ( $F(2, 55) = 45.634, p = .000$ ). In the second equation, couple ratings of interpersonal complementarity were entered as the predictors and Problem-Solving Communication as the dependent variable. Again, a highly significant relationship was observed ( $F(2, 55) = 29.729, p = .000$ ). Overall, greater interpersonal complementarity predicted lower levels of marital distress and greater ability to resolve conflict among spouses. Table 6 lists the regression coefficients for this set of equations.

Table 6  
*Regression testing the relationship between birth rank complementarity, interpersonal complementarity, and marital outcome variables (N = 58)*

Variable	<i>B</i>	<i>SE B</i>	$\beta$	R	R <sup>2</sup>
Global Distress				.790	.624
Ht/Wi	-12.010	2.912	-.416**		
Wt/Hi	-12.719	2.705	-.474**		
Problem-Solving Communication				.721	.519
Ht/Wi	-14.264	3.573	-.455**		
Wt/Hi	-10.360	3.319	-.356**		

*Note:* Ht/Wi = Husband transitive/Wife intransitive; Wt/Hi: Wife transitive/Husband intransitive.  
 \*\*Significant at  $p = 0.01$

## Chapter 5: DISCUSSION

The purpose of this study was to test whether interpersonal complementarity would mediate the relationship between birth rank complementarity and marital adjustment in a sample of married couples. This chapter will (1) present the major findings of this study; (2) provide suggestions for additional avenues of research; (3) discuss the limitations of the current study; and (4) discuss implications for practice.

The main hypothesis of this study, that interpersonal complementarity would mediate the relationship between birth rank complementarity and marital adjustment, was not supported; the relationship between birth rank complementarity (i.e., categories 1, 2, and 3) and spouse composite ratings of Global Distress and Problem-Solving Communication was non-significant, making a test of mediation unwarranted. The lack of a significant relationship between these variables may be explained in a couple of ways. First, it is possible that no relationship exists between birth rank complementarity among spouses and marital adjustment. The second explanation is that there are intervening variables that affect a relationship between birth rank complementarity and marital adjustment, and thus prevent the observation of this relationship. Both theory (e.g., Adler, 1956; Kerr & Bowen, 1988; Leman, 1998; Toman, 1993) and research (e.g., Conley, 2004) have cited other important intrafamilial experiences that impact the development of interpersonal roles (e.g., gender and sibling sex; spacing among siblings; the effect of blended families; and sibling disability) and thus obscure any direct association between birth order complementarity and marital outcomes. Additionally, Conley (2004) and Sulloway (1996) discussed additional family factors and practices that impact sibling roles (e.g., family size; inheritance practices; living in a city vs. a rural area). Finally, it is plausible that the

intervening variables serve as a string of mediator variables that, once factored into the equation, reduce to nil an actual relationship between birth rank complementarity and marital adjustment.

While the expected association between birth rank complementarity and marital adjustment was not observed, a significant relationship was found between birth rank complementarity and interpersonal complementarity: couples comprised of spouses with the same birth rank reported significantly lower levels of interpersonal complementarity than did couples with higher birth rank complementarity (i.e., middle-child spouses married to either a first-born or last-born spouse).

This finding is significant because it supports the existence of a relationship between birth order and the critical underlying interpersonal factors that the author believes form the basis of Toman's *duplication theorem of social relationships*, namely interpersonal complementarity in which spouses show matching levels in affiliation and reciprocity on levels of interdependence. Toman (1993) believed that greater marital adjustment among spouses would result from greater cooperation among spouses when they have complementary birth ranks and these results, in part, support this idea. As previously mentioned, Toman (1993) proposed that middle-child spouses are the most flexible in their interpersonal roles because they have been both an oldest and a youngest child in their family of origin; therefore, it is expected that a middle-child spouse would display more conciliatory behaviors with their spouse (i.e., an oldest or youngest-child spouse) than would individuals of other birth ranks. Conversely, spouses who hold the same birth rank are expected to experience more conflict and, consequently, less satisfaction in their relationship because they attempt to perform the same role as their spouse. Thus, the finding that couples in which a middle-child spouse is married to either an oldest or youngest-child spouse report greater interpersonal complementarity than couples in which both

spouses hold the same birth rank may reflect the tendency for middle-child spouses to be more flexible and conciliatory with their mate and same birth rank spouses to exhibit lower levels of interpersonal matching on interdependence.

Although there was no support for a direct link between birth rank complementarity and the marital outcome variables (i.e., Global Distress and Problem-Solving Communication), strong associations were observed between levels of interpersonal complementarity and the marital outcome variables. Indeed, the second set of significant findings observed in this study demonstrated that couple composite ratings of interpersonal complementarity were significantly and positively associated with couple composite ratings of marital adjustment. In other words, spouse composite ratings of greater complementarity along the dimensions of affiliation and interdependence (i.e., ratings of the husband is in the active interpersonal role and the wife responds) significantly predicted reports of greater couple relationship satisfaction (i.e., higher spouse composite ratings on the MSI-R subscale Global Distress). Additionally, spouse composite ratings of Wife transitive/Husband intransitive (i.e., ratings of the wife is in the active interpersonal role and the husband responds) also significantly predicted greater relationship satisfaction and couple's ability to effectively solve problems with their spouse (i.e., spouse composite ratings on both the MSI-R Global Distress and Problem-Solving Communication subscales). These results are in line with two other published studies that have observed associations between interpersonal complementarity and marital satisfaction and adjustment (i.e., Campbell, 1990; Saitzyk, Floyd, & Kroll, 1997). The current study employed a similar design in that (1) study participants were married couples; (2) standardized measures of marital satisfaction were utilized; and (3) standardized measures of interpersonal complementarity were used to operationalize complementarity. The current study focused on couples who were

married between 3.5 and 7 years, and Saitzyk et al.'s (1997) study is the only to date that used observations of couple interactions to ascertain levels of interpersonal complementarity. Taken together, these findings indicate that the relationship between interpersonal complementarity and relationship satisfaction extends across a range of marriage lengths and even to non-familiar relationships but the results of the three studies taken together, in addition to the literature that has explored interpersonal complementarity among strangers and in non-intimate relationships (e.g., Tracey, 1994; 2004). Overall the three studies discussed provide support for the utility of both self-report and observational methods for evaluating complementarity among married couples, and also provides further evidence for the strong positive influence that interpersonal complementarity exerts on marital satisfaction.

As previously stated, prior studies testing Toman's theorem have produced equivocal results, and the current study aligns with those that have not found support for a link between birth rank complementarity and marital adjustment (e.g., Birtchnell & Mayhew, 1965; Gold & Dobson, 1988; Levinger & Sonnheim, 1966; Ortiz, 1982). Further, the current study extends the existing findings in that (1) couple composite marital adjustment scores were used as the outcome variable: Gold and Dobson (1988) and Ortiz (1982) explored the impact of birth rank complementarity on husbands and wives' ratings of satisfaction separately [both Birtchnell & Mayhew (1965) and Levinger & Sonnheim (1966) simply made comparisons of subjective ratings of relationship satisfaction among those in various categories of birth rank complementarity], and (2) the number of years married was limited to a specific time frame (i.e., couples married in 2001, 2002, or 2003) in order to minimize the "duration of marriage" effect in the sample (i.e., marital satisfaction has been found to decrease over time; Glenn, 1990) while the other studies surveyed couples across a wide range of years married. Two of the studies

operationalized birth rank complementarity by using Toman's flawed *disposition toward conflict* equation (Gold & Dobson, 1988 and Levinger & Sonnheim, 1966; see page 14 for a review of this equation) while the other two (Ortiz, 1982 and Birtchnell & Mayhew, 1965) and the current study utilized a categorical representation of birth rank complementarity. As previously mentioned, we attempted to use Toman's formula in a pilot study (Stanley & Skowron, 2005) but found that it was unable to account for the early experiences of only children; therefore a categorical representation of birth rank complementarity was used in order to include only-child spouses in the sample, and birth rank complementarity of only-child spouses was determined by their reports of their same-sex parents' birth rank.

In sum, the current study improved upon existing published work by utilizing the best methods previously employed to test the theorem (i.e., using a categorical representation of birth rank complementarity), but still failed to observe support for Toman's *duplication theorem of social relationships*. However, the fact that Toman's theorem was not supported indicates that no direct relationship appears to exist between birth rank and marital adjustment outcomes; thus, the extent of interpersonal complementarity could not be tested as a mediator in that relationship. It may be that the relationship proposed does not exist or that the notion of a direct association between birth rank complementarity and marital adjustment may be too simplistic to ascertain the complex interpersonal relationship that Toman's theorem proposed. As previously mentioned, birth rank alone does not guarantee that specific interpersonal roles will be adopted by an individual (i.e., oldest children are more dominant and/or youngest children are more submissive), and several intrafamilial factors have been proposed to impact interpersonal role development (i.e., sibling disability, spacing among siblings, gender). Therefore, the extent of

interpersonal complementarity among couples was measured in order to account for variation that may exist in interpersonal roles due to intrafamilial factors such as those listed above.

The second contribution the current study makes to the body of literature that has tested Toman's *duplication theorem of social relationships* concerns the use of couples versus individuals as study participants. It is interesting to note that three of the four studies that did not find support for Toman's theorem, along with the current study, utilized married couples to test the theorem; utilizing married couples rather than individuals is preferable as makes it possible to explore whether the extent of birth rank complementarity of the couple predicts individual and/or couple ratings of marital adjustment. Conversely, none of the studies that found support for Toman's theorem, including the studies he himself conducted, studied married couples: Baxter (1965) surveyed college students about their parents' marriage; Weller, Natan, and Hazi (1974) surveyed married women; Mendelsohn, Linden, Gruen, and Curran (1974) paired college students for dates based on rank and sex complementarity or rank or sex complementarity alone; and Kemper (1966) surveyed married men.

The final contribution is related to the use of standardized measures to ascertain participants' level of relationship satisfaction. None of the studies that found support for Toman's theorem used standardized measures of relationship satisfaction: Weller et al. (1974) and Kemper (1966) each utilized a non-standardized, non-published measure of marital satisfaction; Mendelsohn et al. (1974) administered a "Date Enjoyment Form" to the college students paired for dates; and Baxter (1965) asked college student to answer 3 questions pertaining to conflict in their parents' relationship, and classified relationships as high in conflict if students rated one or more of the items in the positive (conflict) direction. On the other hand, two of the studies that did not find support to Toman's theorem, in addition to the current study,



utilized standardized measures of marital satisfaction: Gold and Dobson (1988) used the Dyadic Adjustment Scale (Spanier, 1976) and Ortiz (1982) used the Marital Satisfaction Scale (Roach, Frazier, Bowden, 1981). The other two studies that did not find support for Toman's theorem utilized subjective ratings of marital satisfaction: Birtchnell and Mayhew (1965) asked participants to answer the question "Would you say that your first marriage was successful, fairly successful, or unsuccessful", and Levinger and Sonnheim (1966) labeled couples as "disturbed" if they were seeking services at a family services agency while "normal" couples were parents from a local elementary school. Based on the above methods (i.e., the utilization of couples vs. individuals as participants and measuring relationship satisfaction with either standardized or non-standardized measures), it may be argued that the studies that found support for Toman's theorem may have overestimated the effect of birth rank complementarity on relationship satisfaction. In the absence of objective, standardized ratings of relationship satisfaction to classify participants there is no way to determine whether they actually belong to the population to which they have been assigned by the researcher (e.g., "normal"/"disturbed", "successful"/"unsuccessful", or "satisfied"/"dissatisfied") or to compare their level of reported satisfaction to the others in the sample. Additionally, focusing only on one half of a couple does not provide complete data about the satisfaction of both partners, and pairing participants together for dates is not an accurate representation of the way in which married couples self-select a partner. Thus, the methods utilized by the studies that found support for Toman's theorem were incomplete and may be regarded as inaccurate and deficient observations of Toman's *duplication theorem of social relationships* while the current study provided an in depth exploration of the theorem which improved upon the research that has been conducted to date.

In sum, the literature that has explored the impact of birth rank on the personality development of individuals calls to attention the necessity of exploring both intrafamilial and extrafamilial factors that provide considerably more influence on personality development. As previously stated, knowing an individual's birth rank alone does not provide a full picture of the factors that may have influenced an individual's interpersonal role development.

The results of the current study provide a foundation upon which further research testing Toman's *duplication theorem of social relationships* may be developed. First, the current study did not explore whether an individual's birth rank was directly associated with the extent of their dominant or submissive behaviors in marriage (i.e., whether oldest siblings are more dominant and youngest siblings are more submissive). Since Toman's theory of birth rank complementarity rests on the assumption that spouses of different birth positions hold different interpersonal roles, the next step for research would be to explore whether this assumption holds true. Future research can test this assumption by correlating each participant's birth rank (i.e., oldest, middle, or youngest) with his/her reported interpersonal style on both the SASB transitive and intransitive surfaces. Oldest-child individuals would be expected to display with a higher frequency of behaviors characterized by greater dominance than submission and more autonomous behavior [i.e., Clusters 5 (**Control**), 4 (**Protect**), 1 (Differentiate)] on the **transitive** and intransitive surfaces respectively, while youngest-child individuals would be expected to display more Cluster 5 (Submit) and 4 (Trust) behaviors on the intransitive surface. It would be especially interesting to explore whether the interpersonal role of middle-child spouse varies depending on the birth rank of their spouse as Toman's theorem proposes by testing whether middle children married to a youngest-child spouse would look more like oldest children

interpersonally and those married to an oldest-child spouse would look more like youngest children interpersonally.

Another direction for future research is to explore whether an association exists between interpersonal complementarity and physiological reactivity and regulation among married couples. The measurement of cardiac vagal tone has been used by researchers as an indicator of an individual's ability to regulate emotions during social interactions (Porges, 1991). Greater vagal suppression (i.e., decreases in vagal tone from resting baseline during an interpersonal task) has been associated with greater physiological activation while increases in vagal tone are associated with greater emotional reactivity (Gross, 1998). Thus, it would be interesting to examine whether couples who display greater interpersonal complementarity during neutral and/or conflict discussions also show greater vagal suppression (i.e., physiological regulation). Further, would greater vagal suppression during couple interactions predict greater relationship satisfaction in terms of greater cooperation and match on dominance and submission.

Although the methods employed in the current study reflect an improvement upon the body of research that has tested Toman's *duplication theorem of social relationships* in many important ways, there were several limitations that must be considered in light of the results of this study. First, the external validity of the study results is limited as the racial/ethnic composition of the participants was rather homogeneous. The vast majority of the sample was White/Caucasian, and future studies should aim to test Toman's theorem and/or explore the impact of interpersonal complementarity on marital satisfaction in a more ethnically/racially diverse sample. Research has shown that there are differences in reported levels of marital satisfaction between White/Caucasian married individuals and those from ethnically diverse backgrounds and that different sociocultural factors impact marital satisfaction for diverse

couples. For instance, Madathil and Benshoff (2008) explored differences in reported levels of marital satisfaction among Asian Indian couples in arranged marriages living in the United States (AI-US) and in India (AI-India), and couples from the U.S. who were not in arranged marriages (US-Choice; ethnic composition of the sample was not reported). The results indicated that AI-US couples had the highest overall levels of reported satisfaction, and the researchers proposed that this difference may be attributed to the security of an arranged marriage in conjunction with the couple living in a less constrained culture than India and away from the day-to-day influence and intervention of family members. The two AI groups (AI-US and AI-India) both differed from the US-Choice group in the importance of finances and shared values on marital satisfaction, with the AI groups scoring significantly higher on both indices. Cultural influences were hypothesized to impact these scores as financial security and lack of debt, religion, marital roles and responsibilities, and similar (culture-based) views on raising children are important values for the AI groups.

Additionally, cultural and gender-based differences in reported levels of marital satisfaction have been observed among African-American and Black Caribbean married couples. Bryant, Taylor, Lincoln, Chatters, and Jackson (2008) found that Black Caribbean women reported significantly higher levels of marital satisfaction than did African-American women. Among the African-American women, older women reported higher levels of satisfaction than the younger women in the sample, and both length of marriage (i.e., greater than 20 years) and higher levels of financial strain were negatively associated with marital satisfaction. African-American women were overall less satisfied with their marriages than African-American men, and education was negatively associated with marital satisfaction for African-American men. No gender differences in marital satisfaction were observed among the Black Caribbean group,

and income was positively associated with marital satisfaction for both men and women in this group. For the Black Caribbean men, immigration status and number of years married were positively associated with marital satisfaction, and for the Black Caribbean women number of years married was also positively associated with marital satisfaction.

In sum, results of the two studies discussed above (i.e., Madathil & Benshoff, 2008; Bryant et al., 2008) highlight the importance of exploring cultural factors as covariates in marriage research with ethnically diverse samples. Huston (2003) proposes a three-level analysis in marital research that considers societal influences (e.g., social norms about marriage and divorce), individual spouses (e.g., historical events in the family of origin, stable personality traits), and the marriage relationship (e.g., extent of interpersonal complementarity among spouses) when evaluating marital satisfaction and adjustment. The studies discussed above demonstrate various ways in which societal and cultural influences impact marital satisfaction, and Huston's model accounts for such differences and should be applied in future research testing Toman's theorem and/or explore the impact of interpersonal complementarity on marital satisfaction.

The second limitation of the current study relates to the use of a sample of convenience; participants were recruited through colleagues and acquaintances of the researcher, as well as through a database of families at Penn State who were willing to participate in research. Thus, couples that are more satisfied overall in their marriage may have self-selected to participate in the study. Conversely, those that are less satisfied and, perhaps, less complementary, may have opted not to participate in the study. Both situations may have limited the variability in reported levels of marital satisfaction and interpersonal complementarity of the sample, and may have prevented a full exploration of the interpersonal factors that are present in couples who are

considering divorce or who are currently separated. Future studies should seek to include separated couples in order to explore whether marital satisfaction and interpersonal complementarity differs between them and couples who would opt to participate in marriage research.

The third limitation of the current study is that it was cross-sectional: couple relationships were appraised at a single moment in time. Longitudinal data about couple interpersonal relationships would be able to address whether the extent of interpersonal complementarity changes over time, and whether there is an association between changes in interpersonal complementarity and changes in reported levels of marital adjustment.

The final limitation of the current study concerns the influence of different stages of the lifecycle on the marital satisfaction of the couples in the sample. Research has shown that couples who have children report lower levels of marital satisfaction than those without children, and this difference is more pronounced among women: mothers with young children (e.g., infants) report significantly lower levels of marital satisfaction than those with older children (Twenge, Campbell, & Foster, 2003). Additionally, as previously mentioned, marital satisfaction has been shown to decrease over time due to the “duration of marriage” effect (Glen, 1990). While the number of years married was restricted to a specific time period in the current study, attention was not given to the influence of the age and/or number of children in the family for the study participants. No significant differences were found to exist between parents and non-parents in the sample on the outcome variables (i.e., MSI-R Global Distress and Problem-Solving Communication subscales), but the number of non-parents was smaller than parents (12 non-parents vs. 48 parents). Thus, it is possible that a difference does exist in the population but could not be observed due to the small number of non-parents in the sample of the current study.

Future research may want to pay closer attention to both the number of years married of the sample and the impact of the presence, age, and number of children in each family represented in the sample.

The results of the current study provide implications for clinical practice. As previously stated, much of the research on marriage has focused on marital outcomes rather than the prediction of outcomes (Karney & Bradbury, 1995). The results of the current study indicate that the extent of interpersonal complementarity for couples is associated with their reported levels of marital satisfaction. Thus, it may be assumed that reported levels of interpersonal complementarity would be predictive of marital outcomes, such that lower levels of interpersonal complementarity might lead to marital discord and dissatisfaction and, ultimately, divorce.

One of the main concepts of marriage and family therapy is the importance of understanding the context in which individuals and families exist and the ways in which the context influences their behavior (Nichols, 2008). Within a family context, each member is assumed to mutually influence the behaviors of one another (Goldenberg & Goldenberg, 2008). Marriage and family therapists help distressed couples and families understand their interactions in terms of what is happening in the relationship and how and when it occurs (e.g., conflict occurs when members of the family feel threatened or neglected by other members; Goldenberg & Goldenberg, 2008). Thus, distressed couples entering marital therapy would benefit from an exploration of their patterns of interactions with one another. Although marriage and family therapists do not often explore why certain patterns of interactions exist among couples (Goldenberg & Goldenberg, 2008), couples entering marital therapy might benefit from an exploration of the origins of their interpersonal behaviors (e.g., roles learned in the sibling group): perhaps if spouses had a better understanding of each others' early experiences that

helped to shape their interpersonal behaviors they would have more empathy for one another and would be more invested in repairing the relationship. Without an understanding of the origins of their interpersonal patterns spouses may be likely to place blame on themselves or their partner for the conflict in the relationship, but gaining awareness of the context in which the interpersonal behaviors were originally developed and the ways in which these patterns are being replicated in their current relationship may enable spouses to focus on ways to modify the old relationship patterns to improve their current relationship.

In conclusion, the current study examined Toman's *duplication theorem of social relationships* in a sample of married couples. Interpersonal complementarity was tested as a mediator between birth rank complementarity and marital adjustment (i.e., MSI-R Global Distress and Problem- Solving Communication subscales), but no support for a mediating effect was observed, as there was no significant relationship between birth rank complementarity and marital adjustment. It was observed, however, that greater couple birth rank complementarity was associated with greater jointly perceived interpersonal complementarity among spouses, and that in turn, spouse composite ratings of interpersonal complementarity were highly predictive of spouse composite ratings of marital adjustment. To this writer's knowledge, this is the first time that a relationship between interpersonal variables and birth rank complementarity has been documented. The results of the current study provide a foundation upon which future research testing Toman's theory may be built, especially relating to further exploration of the association between interpersonal complementarity and other relational constructs, birth rank complementarity, and marital outcomes.



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## Appendix B: Family Position Inventory

**Your position among your brothers and sisters (check one):**

- First Child  
 Last Child  
 Middle Child  
 Only Child

**If you are an only child, what is the birth order of your same-sex parent?**

Child number \_\_\_\_\_ of \_\_\_\_\_ children

**Your Brothers and Sisters- List in birth order, oldest through youngest, including yourself and any deceased. For step siblings (non-blood related), only list siblings with whom you lived for the majority of your childhood (birth to 10 years old). For adopted siblings, list them in the order in which they entered your family. Circle the number of your position.**

	<u>Brother or Sister?</u>	<u>Present age</u>	<u>Deceased? (y/n)</u>	<u>Your age when sibling died</u>
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
8.	_____	_____	_____	_____
9.	_____	_____	_____	_____
10.	_____	_____	_____	_____

**If you feel that you need to explain anything about the composition of your sibling group please do so in the space provided below.**

## Appendix C: Recruitment Letters sent to FIRSt Families Participants

Greetings. My name is Krystal Stanley and I am a doctoral candidate in Counseling Psychology at The Pennsylvania State University. You or members of your family have been chosen as possible participants in a study that is being conducted by researchers at the Pennsylvania State University. Your family's name was obtained from Families Interested in Research Studies (FIRSt Families) database. As you may recall, your participation in FIRSt Families makes your name available to researchers at Penn State who are doing research with children and their families.

I am recruiting married couples to participate a study examining the impact of family of origin (i.e., the family in which an individual was reared) relationships on current relationships, and I am hoping that you will be willing to aid me in this endeavor.

You are eligible to participate in the study if:

- You are 18 years or older
- You were married between **January 1 and December 31 of 2001, 2002, or 2003**
- You are either married to or separated from your spouse, but not legally divorced
- Both you and your spouse are able and willing to complete a series of questionnaires online that will take no more than 45 minutes

If you meet these requirements and are interested in participating in this study, please go to <https://www.psychdata.com/> and enter survey # **121763** to complete the study. You will be asked to enter a numerical code prior to accessing the questionnaires; please use the number on the label attached to the bottom of this letter. Couples who complete the study will be compensated with 2 movie tickets, which will be mailed to you upon completion of the surveys.

I will follow up with you by phone within the next two weeks to see if you have received the letter and to answer any questions you may have about the study. Please do not hesitate to contact me for more information about this study or to complete the study prior to receiving a call from me.

Thank you in advance for your help.

*Krystal Stanley*

Krystal L. Stanley, M.Ed.  
330-524-5155  
[kls481@psu.edu](mailto:kls481@psu.edu)

This research is being conducted under the direction of Elizabeth Skowron, Ph.D., Assistant Professor of Counseling Psychology at the Pennsylvania State University.

Code # \_\_\_\_\_ **Note:** This is your unique study participation number; it simply helps us make sure that we match the questionnaires with the correct husband/wife, because this is a study about marriage. Often people enjoy taking these questionnaires and want to refer friends to the study. If you know of other couples that would like to participate in this study, feel free to pass along my contact information to them and I will be happy to provide them with their own unique code number.

Greetings. My name is Krystal Stanley and I am a doctoral candidate in Counseling Psychology at The Pennsylvania State University. You or members of your family have been identified as possible participants in a study that is being conducted by researchers at the Pennsylvania State University. Your family's name was originally obtained from a birth announcement from the Centre Daily Times.

I am recruiting married couples to participate a study examining the impact of family of origin (i.e., the family in which an individual was reared) relationships on current relationships, and I am hoping that you will be willing to aid me in this endeavor.

You are eligible to participate in the study if:

- You are 18 years or older
- You were married between **January 1 and December 31 of 2001, 2002, or 2003**
- You are either married to or separated from your spouse, but not legally divorced
- Both you and your spouse are able and willing to complete a series of questionnaires online that will take no more than 45 minutes

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I will follow up with you by phone within the next two weeks to see if you have received the letter and to answer any questions you may have about the study. Please do not hesitate to contact me for more information about this study or to complete the study prior to receiving a call from me.

Thank you in advance for your help.

*Krystal Stanley*

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This research is being conducted under the direction of Elizabeth Skowron, Ph.D., Assistant Professor of Counseling Psychology at the Pennsylvania State University.

<p>Code # _____ <b>Note:</b> This is your unique study participation number; it simply helps us make sure that we match the questionnaires with the correct husband/wife, because this is a study about marriage. Often people enjoy taking these questionnaires and want to refer friends to the study. If you know of other couples that would like to participate in this study, feel free to pass along my contact information to them and I will be happy to provide them with their own unique code number.</p>
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Appendix D: Recruitment Letter sent to participants recruited through the Summit County marriage license records

Greetings. My name is Krystal Stanley and I am a doctoral candidate in Counseling Psychology at The Pennsylvania State University. I am recruiting married couples to participate a study examining the impact of family of origin (i.e., the family in which an individual was reared) relationships on current relationships, and I am hoping that you will be willing to aid me in this endeavor.

You are eligible to participate in the study if:

- You are 18 years or older
- You were married between **January 1, 2003** and **December 31, 2003**
- You are either married to or separated from your spouse, but not legally divorced
- Both you and your spouse are able and willing to complete a series of questionnaires online that will take no more than 45 minutes

If you meet these requirements are interested in participating in this study, please go to <https://www.psychdata.com/> and enter survey # **121763** to complete the study. You will be asked to enter a numerical code prior to accessing the questionnaires; please use the number on the label attached to the bottom of this letter. Couples who complete the study will be compensated with 2 movie tickets, which will be mailed to you upon completion of the surveys.

I will follow up with you by phone within the next two weeks to see if you have received the letter and to answer any questions you may have about the study. Please do not hesitate to contact me for more information about this study or to complete the study prior to receiving a call from me.

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This research is being conducted under the direction of Elizabeth Skowron, Ph.D., Assistant Professor of Counseling Psychology at the Pennsylvania State University.

Code # \_\_\_\_\_ **Note:** This is your unique study participation number; it simply helps us make sure that we match the questionnaires with the correct husband/wife, because this is a study about marriage. Often people enjoy taking these questionnaires and want to refer friends to the study. If you know of other couples that would like to participate in this study, feel free to pass along my contact information to them and I will be happy to provide them with their own unique code number.

## Appendix E: Recruitment email sent to colleagues and friends of the researcher

Greetings. My name is Krystal Stanley and I am a doctoral candidate in Counseling Psychology at The Pennsylvania State University. I am recruiting married couples to participate a study examining the impact of family of origin (i.e., the family in which an individual was reared) relationships on current relationships, and I am hoping that you will be willing to aid me in this endeavor.

You are eligible to participate in the study if:

- You are 18 years or older
- You were married between **January 1 and December 31 of 2001, 2002, or 2003**
- You are either married to or separated from your spouse, but not legally divorced
- Both you and your spouse are able and willing to complete a series of questionnaires online that will take no more than 45 minutes

If you meet these requirements are interested in participating in this study, please go to <https://www.psychdata.com/> and enter survey # **121763** to complete the study. You will be asked to enter a numerical code prior to accessing the questionnaires; please use the number on the label attached to the bottom of this letter. Couples who complete the study will be compensated with 2 movie tickets, which will be mailed to you upon completion of the surveys.

Please do not hesitate to contact me for more information about this study.  
Thank you in advance for your help.

*Krystal Stanley*

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- 08/07- 07/08  
and                   **Pre-Doctoral Psychology Intern**, The University of South Carolina, Counseling  
Human Development Center, Columbia, SC
- 01/07- 05/07                   **Practicum Psychologist**, Centre Volunteers in Medicine, State College, PA
- 08/06- 5/07                   **Counseling Graduate Assistant**, Bank of America Career Services Center  
The Pennsylvania State University, University Park, PA
- 06/05- 5/07                   **Practicum Psychologist**, Counseling and Psychological Services (CAPS)  
The Pennsylvania State University, University Park, PA