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Sibling Closeness and Similarity and the Presence of Perfectionism

Jennifer L. Crowe
Antioch University - New England

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by

Jennifer Crowe

B.A., Elmira College, 2007
M.S., Antioch University New England, 2011

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The undersigned have examined the dissertation entitled:

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by

Jennifer Crowe

Candidate for the degree of Doctor of Psychology
and hereby certify that it is accepted*.

Dissertation Committee Chairperson:
Theodore J. Ellenhorn, PhD

Dissertation Committee members:
Gina Pasquale, PsyD
James Graves, PhD

Accepted by the
Department of Clinical Psychology Chairperson

Kathi A. Borden, PhD

on **7/15/13**

* Signatures are on file with the Registrar's Office at Antioch University New England.

Dedication

To my family — thank you.

Acknowledgements

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Abstract

This study explored whether characteristics of the sibling relationship are related to the level of

perfectionistic tendencies that an individual reports. The framework of this study was based on

Tesser's Self-Evaluation Maintenance Model, which says that the effects of comparisons with a

close other, such as a sibling, can be mediated in one of three ways: (a) by reducing the closeness

of the relationship, (b) by improving one's performance/impeding on the other's performance, or

(c) by decreasing the relevance of the performance to one's self-concept (pursuing different

areas and interests). Several hypotheses were offered which were based on the presumption that

individuals with high levels of closeness *and* similarity in their sibling relationships might

attempt to reduce the effects of sibling comparison by improving their performances. In turn,

continually striving for high level of performance might be evident in the form of perfectionistic

tendencies. A total of 186 participants completed an online questionnaire containing

demographic questions, the Perfectionism Inventory, the Warmth/Closeness composite scale of

the Sibling Relationship Questionnaire, and the Sibling Similarity Scale. Results suggest that

sibling similarity and closeness are related to perfectionistic tendencies, but in different ways

than originally anticipated. In particular, each sibling type (non-twins, identical twins, and

fraternal twins) demonstrated a different pattern of relationships with perfectionism, suggesting it

is important to consider sibling types when studying sibling relationships.

Keywords: siblings, perfectionism, self-evaluation maintenance

Sibling Closeness and Similarity and the Presence of Perfectionism

Most people would be happy getting an A in school and, generally, I was. There were times, however, that even an A was just not good enough. For example, I can remember several instances when I received my paper or test back with a good grade, only to have my moment of pride ended when I realized my identical twin sister had scored higher than me. It could have been a difference of a few points, yet somehow I felt as though I had not done my best. I had been outdone. Not just by anyone, but by someone who shared an exact replica of my genes and the same environment. If she could get a higher score, shouldn't I have been able to as well? Being on the bottom of this comparison felt like a bruise to my self-esteem. My solution to this was to attempt to do better than my sister, especially in areas where we or other people would be comparing our performances. This carried out into many areas of my existence, including school, sports, extracurricular activities, and life in general.

I would classify myself as a perfectionist. After some self-reflection I concluded that my high standards for myself were at least partly related to my sense that I did not want to be outdone by others, particularly my sister. It was not that I wanted my sister to do poorly; I just wanted to make sure I was one step ahead at all times. Growing up, because my sister and I were so similar, we were compared in just about every way—from who did better in school or sports to who had more freckles. The way I dealt with this was to try and minimize the number of areas where I would end up on the bottom of the comparison. This meant maintaining high standards for myself. Over time, as I came to know more twins, I noticed that many of them had a similar tendency to have high standards for themselves. Admittedly, this observation might have been biased from the start, since many of the twins I met were also female identical twins, but I still I wondered whether there could be more to it.

My first thought was to develop a study exploring whether twins were in fact highly likely to be perfectionists, but I soon realized that it made sense to look at all sibling types (i.e., non-twin combinations) so that comparisons could be made between the groups. Not only would adding other sibling types increase the usefulness of the study, it also broadened the pool of potential participants and solved the predicament of finding enough participants to conduct the study using only twins. After seeing that there was a gap in the literature, as no prior studies have explored the possibility that sibling relationships may be related to the development or presence of perfectionism, my ideas and observations slowly developed into a study that was the basis of this dissertation.

Brief Overview of the Literature

The construct of perfectionism has received increasing attention in the personality literature (Rice & Ashby, 2007). There are a variety of conceptualizations of perfectionism, which tend to agree on a common attribute: having extremely high standards for oneself and being highly critical of one's performance (Mainwaring, 2009). Based on analyses of perfectionism measures, researchers have determined that there are two types of perfectionism: one that is considered to cause impairment to the individual's functioning and another that is considered to aid the functioning of the individual. Throughout the literature, researchers have used various terms, such as adaptive and maladaptive perfectionism (Rice, Ashby, & Slaney, 1998), functional and dysfunctional perfectionism (Craddock, Church, & Sands, 2009), and perfectionistic strivings and perfectionistic concerns (Stoeber & Otto, 2006), to describe these types.

Many perfectionism studies have focused on the effects of perfectionistic tendencies on an individual's functioning. In some instances, these tendencies have been found to be beneficial

to the individual and to help foster high achievement, while in others they have been found to be inhibiting and detrimental to an individual's functioning. For example, some of the positive outcomes that have been associated with perfectionistic characteristics are doing well in a triathlon (Stoeber, Uphill, & Hotham, 2009) achieving a high GPA (Canter, 2009), or experiencing a greater sense of satisfaction with life (Hill, Huelsman, & Araujo, 2010). On the other hand, perfectionism has also been linked to depression (Arale, 2010), anxiety (Arale, 2010), obsessive-compulsive disorder (Moretz & McKay, 2009), and eating disorders (Joiner, Heatherton, Rudd, & Schmidt, 1997).

Given the range of possible outcomes to which perfectionism has been linked, it is important to understand who is more likely to demonstrate perfectionistic tendencies in the first place. However, relatively few studies have sought to answer this question. Surratt (2009) explored whether siblings of children with disabilities were more likely than siblings of children without disabilities to demonstrate perfectionistic tendencies and found no significant difference between these groups. Canter (2009) studied perfectionism in college students and found that Asian American students were significantly more likely to exhibit maladaptive perfectionism and African American students were significantly more likely to demonstrate adaptive perfectionism than other racial groups. Female college students were also more likely to demonstrate adaptive perfectionism than male college students (Canter, 2009). These and other similar studies provide some insight into the topic of perfectionism, but they only begin to answer the question of who is more likely to be a perfectionist.

Parental factors are often theorized to have the greatest influence on whether a child demonstrates perfectionistic tendencies and thus, they have been the focus of a majority of perfectionism studies (Flett, Hewitt, Oliver, & Macdonald, 2002). Craddock et al.'s (2009)

research is an example of one recent study that provided support for the connection between perfectionism and parental factors. The researchers found that dysfunctional perfectionism was related to family enmeshment, authoritarian parenting style, and high psychological control from parents. Family enmeshment and authoritarian parenting style were also related to functional perfectionism, as was low family chaos. Although Craddock and his colleagues' work suggests that parental factors do play a role in the development of perfectionism, the researchers also found that these variables only predicted 28% of the variance in the development of dysfunctional perfectionism and 13% of the variance in the development of functional perfectionism. Thus, there are likely other influential variables that have yet to be explored. Since children also spend a significant proportion of their developmental years interacting with their siblings, it is also possible that the nature of sibling relationships might be linked to perfectionistic tendencies. This connection has yet to be explored.

Siblings and Social Comparison

According to Suls, Martin, and Wheeler (2002), people have a natural tendency to compare themselves to others as a way of evaluating their own performance. For instance, comparing oneself to someone else may tell us how attractive we are, how intelligent we are, or how well we perform a particular skill. The more similar an individual is to us in various traits (such as age, height, gender, etc.), the more likely we are to allow a comparison to effect our self-evaluations of where we stand in relation to others. These "perceptions of relative standing can influence many outcomes, including a person's self-concept, level of aspiration, and feelings of well-being" (Suls et al., 2002, p. 159).

Being compared to and comparing oneself to one's siblings is a common experience of childhood (Bank & Kahn, 2003). Comparisons may be overt, where another individual (often a

parent) intentionally and openly compares two siblings. They can also be covert, where someone unintentionally reveals their judgment about a comparison. An example of a covert comparison would be a child recognizing that a sibling gets more attention from a parent when demonstrating a particular skill. Children may also draw their own conclusions about how they fare in relation to their siblings. These comparisons occur around several traits that are observable by oneself and others. Bank and Kahn (2003) explain**:**

> A child's identity of sense of self is certainly influenced by conspicuous characteristics such as gender, age, intelligence, physical appearance, abilities, health, or emotional strengths and weaknesses. In the struggle to develop a self-concept, one always looks to a sibling close in age and compares oneself with his fellow traveler in life's voyage. (p. 52)

In turn, the appraisals that result from these comparisons affect how children view themselves and eventually factor into their sense of identity (Bank & Kahn, 2003). According to Dunn (2000), comparisons with one's siblings start from the time a child is born, suggesting that they begin to influence one's self-concept early in life, during the developmental years.

In accordance with the idea that similarity breeds a greater degree of comparisons, sibling comparison is particularly common among twins, who are generally more alike than non-twin siblings (Noller, Conway, & Blakeley-Smith, 2008). According to Stewart (2000)**,** society generally views twins as a unit, or more like one individual, as opposed to two separate people with unique identities. Twins are often compared in abilities or developmental outcomes, and people tend to assume that twins should develop at the same pace or should be able to perform at the same level. Although twins may develop at different paces, particularly if they are dizygotic twins, any difference between a set of twins is often mistaken as a problem or abnormality (Clegg & Woollett, 1998).

Social Comparison and Self-Evaluation

Tesser (1980) posited that when placed in a situation in which one is compared to another, three factors affect how this comparison influences an individual's self-evaluation: (a) the closeness of the affiliation between the two compared individuals, (b) the individual's level of performance, and (c) the importance of the task to the individual's self-concept. Tesser studied the effects of performance on individuals in relationships of various levels of closeness (i.e., siblings and friends) and discovered that the closer the relationship, the more tension that arises when one is outperformed by the other person and the greater the threat to one's self-esteem.

Since people have a tendency to act in ways that protect their self-evaluations, they look for ways to reduce this tension or to avoid being outperformed. According to Tesser (1980), this tension can be lessened in one of three ways. The first is through reducing the closeness of the relationship, or creating physical or mental distance between oneself and another person. The second is by increasing the level of one's performance in comparison to another's. This can be accomplished by improving one's performance or by acting in ways that impede on the other's performance. The third way to reduce tension is to decrease the relevance of the performance to one's self-concept. This is done by shaping one's identity around skills or qualities that are unlike those of the other person (Tesser, 1980). For example, an individual who is not very athletic may pursue a path in life that allows him or her to utilize his or her musical talents. Therefore, doing poorly at an athletic event might not necessarily have much impact on the person because it is not a significant aspect of his or her identity.

Several studies have found that siblings often use deidentification as a way of lessening the number of comparisons they experience. Deidentification occurs when an individual purposely seeks out a different niche or identity than those held by his or her siblings

(Whiteman, Becerra, & Killoren, 2009). In cases where siblings do not deidentify (and therefore share particular characteristics, qualities, or abilities), the tension is higher and a greater degree of sibling rivalry and competition is likely to result (Bank & Kahn, 2003). Watzlawik (2009) found that twins demonstrate lower levels of deidentification. The researcher suggested that environmental factors, such as society's expectation "that twins should be (and look) especially alike" (p. 575), might play a role in this finding. This point, in combination with the fact that twins tend to experience a greater degree of comparison than non-twin sibling pairs, might suggest differences in how twins and non-twins manage sibling comparisons in order to maintain their self-evaluations.

Statement of the Problem

To date, research on perfectionism has paid much attention to the influence of parents, while generally ignoring the effects that other family members, such as siblings, might play in this process. Children often spend a significant amount of time with their siblings during their early formative years (Bank & Kahn, 2003). Sibling relationships have been shown to impact how children behave and who they become (Kluger, Carson, Cole, & Steptoe, 2006; Lewis, 2006). Therefore, further investigation of sibling relationships might offer greater insight into other circumstances that are linked to the presence of perfectionism.

In particular, the degree of similarity and closeness between siblings might be two characteristics that are connected to the presence of perfectionism. Perfectionist individuals attempt to perform well because they want to think highly of or avoid feeling badly about themselves and they generally want others to judge them highly as well. Thus, there is some reason to think that perfectionism might be linked to self-evaluation maintenance. Additionally, past research has demonstrated that similarity and closeness are factors that influence the process

of self-evaluation maintenance. Bringing together the research on sibling similarity and

closeness, self-evaluation maintenance strategies, and perfectionism might produce noteworthy

findings.

To explain further, if Suls et al.'s (2002) finding holds true that the more similar someone

is to the person to whom they are compared, the more meaningful the appraisal is to his or her

self-evaluation, then siblings who are more similar would likely be more susceptible to the

effects of sibling comparisons. Therefore, following Tesser's (1980) logic, siblings who are very

similar would be left with two strategies for buffering the effects of these comparisons: (a)

reducing the closeness of their relationships, or (b) altering their performances so as to

outperform their siblings. In some cases, distance may already be in place when siblings are far

apart in age (and thus, already hold very different spots in the family) or siblings may create it by

maintaining physical or emotional distance from one another. In instances where siblings are

similar *and* close, improving one's performance might be the only remaining strategy for

protecting one's self-evaluation. If this is the adopted method, it is possible that these people

might demonstrate higher levels of perfectionistic tendencies, since consistently striving to

perform well is a central characteristic of perfectionism.

Definition of Terms

Perfectionism

Perfectionism in this study is conceptualized as it is defined by Hill et al. (2004). Hill and

his colleagues defined perfectionism as demonstrating the following characteristics: being overly

concerned by mistakes, having high standards for others, needing a greater amount of approval

from others, being highly organized and planful, having a sense of high parental pressure,

ruminating over past mistakes, and striving for excellence. Each of these domains will be

considered "perfectionistic tendencies" for the purposes of this study. Hill and his colleagues also conceptualized these characteristics as falling within two subtypes of perfectionism: Conscientious Perfectionism and Self-Evaluative Perfectionism. Conscientious perfectionism is most strongly correlated with organization, striving for excellence, planfulness, and high standards for others, while Self-Evaluative Perfectionism is more strongly correlated with concern over mistakes, need for approval, rumination, and perceived parental pressure.

In line with Broman-Fulks, Hill, and Green's (2008) finding that perfectionism is best conceptualized along a continuum, perfectionism will be considered a dimensional variable throughout this study. Therefore, individuals' levels of perfectionism will be considered, as opposed to whether they are perfectionists or under which type of perfectionism they might be best categorized.

Closeness and Similarity

The two characteristics of the sibling relationship that are of particular interest in this study are similarity and closeness between siblings. Closeness is defined in two ways. The first is the definition Furman and Buhrmester (1985) used to describe closeness, or a positive emotional tone between two siblings that is characterized by intimacy, affection, prosocial behaviors, companionship, and similarity to and admiration for one another. The second is the definition of closeness used by Tesser (1980) when he developed the SEM model, or closeness (difference) in age. Similarity is defined as likeness in a variety of observable characteristics, including physical appearance, values and beliefs, interests, personality, intelligence, behavior, talent, academic achievement, and health.

Conceptual Framework

The Self-Evaluation Maintenance Model

Tesser's (1980) Self-Evaluation Maintenance Model provided the framework upon which this study was based. Tesser's model describes the connection between various situational factors and the effect that a social comparison has on an individual's self-evaluation (similar to self-esteem). The model suggests that individuals' self-evaluations can either be damaged or improved when a close other performs well, depending on the way they interpret situations. If they simply reflect on situations, their self-esteem may be raised when close others perform well because they are able to "bask in the reflected glory" (p. 89). However, if they compare themselves to a close other who performs well, this situation is likely to lower their own self-evaluation because of the realization that they have been outperformed. These effects are particularly strong when the task being considered is one that is linked to a person's self-definition. Tesser (1980) also said that, "since variables of closeness, performance, and relevance affect self-esteem, an individual can operate on these variables to maintain or to raise his self-esteem" (p. 89).

Purpose of the Study

This study seeks to explore whether similarity and closeness in the sibling relationship are linked to the level of perfectionistic tendencies a person reports. Further investigating Tesser's (1980) notion of Self-Evaluation Maintenance strategies, one particular focus is to determine whether individuals who had childhood sibling relationships that were high in closeness *and* similarity also report higher levels of perfectionistic tendencies. Another aim of this study is to determine whether the difference in age between siblings is related to the levels of perfectionistic tendencies an individual reports, since age spacing has been shown to impact the nature of the

sibling relationship, as well as how people develop. Because twin relationships are generally

characterized by closeness, twins are less likely to deidentify and they experience a greater

degree of comparison than non-twin siblings, this study also seeks to explore whether twins

demonstrate significantly higher levels of perfectionistic tendencies than non-twins.

Review of the Literature

Sibling Relationship

Cicirelli (1995) defines the sibling relationship as "the total of the interactions (physical,

verbal, and nonverbal communication) of two or more individuals who share knowledge,

perceptions, attitudes, beliefs, and feelings regarding each other, from the time that one sibling

becomes aware of the other" (p. 3). Sibling relationships are unlike any other affiliations that

individuals take part in. For one, they tend to start in early childhood and last longer than any

other relationship. Children are born into this position and so cannot choose whether they want to

be part of a sibling relationship. In most cases, siblings tend to relate to one another as equals,

have regular contact with one another, and have a significant amount of shared experience

(Cicirelli, 1995).

No two sibling relationships are exactly alike. Even within the same family, relationships

between each pair of siblings may be very different (Cicirelli, 1995). The nature of the sibling

relationship is influenced by several factors, including the amount of shared experience between

the siblings, family dynamics and culture, and individual characteristics (Ross & Milgram,

1982). The characteristics of the sibling constellation, such as the number children, gender of

each child within the family, and birth order, have also shown to impact who siblings become

(Steelman, Powell, Werum, & Carter, 2002). Closeness and similarity are two characteristics that

are frequently considered in discourses on the nature of sibling relationships. A brief review of the literature on these two factors is provided here.

      Closeness. Research on sibling closeness has tended to be done in the context of studies on the general nature of relationships between siblings. One example of this is Buhrmester and Furman's (1990) study on the quality of sibling relationships throughout middle childhood and adolescence. Their sample consisted of 363 children and adolescents in grades 3, 6, 9, and 12. The researchers found that in the area of warmth and closeness, adolescents reported lower levels of companionship, intimacy, and affection in their sibling relationships than children reported. Participants reported being more intimate with older siblings, with the highest levels of both intimacy and affection being reported toward older sisters. They also reported being most prosocial with older sisters and admiring older siblings more than younger ones. Participants said they were more intimate and affectionate with siblings who were closer in age, yet they had the highest admiration for and were more prosocial with siblings who were further from them in age. Female participants reported being more intimate, having greater companionship, and being more prosocial with sisters, but there was no difference for female participants with brothers or male participants with siblings of either gender. On the similarity scales, female participants reported feeling more similar to sisters than brothers, but there were no significant findings for male participants. Female participants also felt more admired by their sisters (Buhrmester & Furman, 1990).

      Similarly, in a study of various family sizes, Klagsbrun (1992) found that children often had one particular sibling to whom they felt closest. Most often, children reported feeling closest to the sibling who was closest to them in age, especially when they were two or fewer years apart. A more recent study, conducted by Kim, McHale, Osgood, and Crouter (2006) supported

the finding that sisters tend to have the highest degree of intimacy. The researchers also

discovered that intimacy levels remained constant over time for same-sex sibling pairs. For

opposite-sex pairs, however, intimacy levels decreased in early adolescence and then increased

again in later adolescence (Kim et al., 2006).

      In 2000, Noller and Northfield (as cited in Noller, 2005) studied the nature of sibling

relationships in late adolescence using Furman and Buhrmester's (1985) Sibling Relationship

Questionnaire. The researchers found that "(s)atisfaction with the sibling relationship was

positively correlated with the length of interactions, the number of interactions, and the levels of

involvement and disclosure in interactions with the sibling" and "negatively correlated with

levels of negative emotion, sibling dominance, and conflict" (p. 10) during interactions with the

sibling. Lower warmth and conflict, and higher ratings of hostility and an unequal relationship

predicted the presence of sibling dominance during interactions. From these findings, Noller and

Northfield concluded that warmth/closeness is one of the most influential factors on the overall

quality of the sibling relationship.

      Several factors have been implicated as influencing the level of closeness between

siblings. For example, Bank and Kahn (2003) note that the level of "access" between siblings

can play a significant role in how much they influence one another, the closeness of the

relationship, and the strength of the bond between the sibs. The authors define "access" as the

amount of shared experience between siblings. *Low access* siblings "have shared little time,

space, or personal history, partaking of different schools, friends, and parents (since people are

different parents at different ages) in very different ways" (Bank & Kahn, 2003, p. 10).

Circumstances for *high access* siblings are just the opposite. High access siblings tend to have

"attended the same schools, played with the same friends, dated in the same crowd, been given a

common bedroom (even the same bed), worn each other's clothes, and so on" (Bank & Kahn, 2003, p. 10). Siblings of similar age and sex tend to have the most access to one anther, a factor that increases not only their level of closeness, but their likelihood of being similar in other areas as well. Identical twins usually represent the highest degree of access, as they generally have a great deal of shared experience (Bank & Kahn, 2003).

The level of closeness in the sibling relationship has also been linked to circumstances such as separation from a sibling, sickness or death of a parent or sibling, parentification of one or more children, adoption of a sibling (Ross & Milgram, 1982), and divorce (Milevsky, 2004). The number of children in the family, age differences between siblings, and birth order can also affect the general nature of sibling relationships (Sulloway, 1996), as can other circumstances unique to some families, such as having a sibling with a disability (Wolf, Fisman, Ellison, & Freeman, 1998). The individual personalities of each sibling can also influence sibling relationships. For example, in one study, children felt closest to those siblings who were good listeners, were nonjudgmental, and cared about them (Cicirelli, 1995).

A family's pattern of interacting can be another influential factor in the type of relationship that develops between siblings. For instance, the level of involvement and the nature of the interactions between members can determine the level of closeness that family members demonstrate, as well as the amount of freedom they have to differentiate themselves from other members. At one extreme, families may be enmeshed, or have interactions that are characterized by a high degree of closeness. In this case, family members are overly concerned with and involved in the lives of other members and individuals tend to lack uniqueness and a sense of separateness (Goldenberg & Goldenberg, 2008). At the other extreme, families may have very diffuse personal boundaries, where members have little involvement with or concern for one

another. Individuals in this type of family tend to lack a sense of connection and commonality

with one another (Goldenberg & Goldenberg, 2008).

In particular, how parents treat each child seems to impact the quality of the sibling

relationship, including how close siblings are. For instance, McHale and Crouter (1996)

concluded that when parents model closeness by acknowledging each child's strengths and

demonstrating cooperation, respect, and love, these qualities are often mirrored in the

relationship between siblings. On the other hand, as Bunch (2010) points out, when parents have

harsh or neglectful parenting styles or are less available (for reasons such as a chemical

dependency or mental illness), children may seek comfort from one another, which can also

increase closeness between them.

In addition to family interactions, the society or culture in which an individual grows up

can also play a role in how close siblings become. Bunch (2010) notes that in cultures where

there tends to be a more collectivistic approach (such as that seen in many Asian cultures),

siblings are likely to see one another as important parts of the family unit and have mutual

respect for one another. However, in Western cultures, where there tends to be a greater focus on

individualism, sibling relationships are more likely to be characterized by high levels of sibling

rivalry.

Similarity. Research on siblings has generally revealed that even though siblings tend to

share much about their experiences and their environments, they are often quite dissimilar from

one another (Whiteman et al., 2009)**.** Various researchers have explored the likelihood that

siblings are similar in several different domains. For example, in their study involving 205

adolescent sibling pairs, Kretschmer and Pike (2010) found that siblings tend to have different

intrinsic values (i.e., benevolence and universalism) and extrinsic values (i.e., power,

achievement, and materialism). The exception to this finding was that when sibling relationships were characterized by a high level of competition, siblings were more likely to share high levels of extrinsic values and lower levels of intrinsic values.

Sibling similarity has also been studied regarding a variety of other characteristics. For example, in their review of the sibling literature, Rowe and Plomin (1981) found that non-multiple siblings' scores on cognitive measures tend to be moderately correlated, while the scores of twins tend to be strongly correlated. Regarding personality, ordinary siblings tend to be weakly correlated, dizygotic twins weakly to moderately correlated, and monozygotic twins moderately to strongly correlated in various personality traits. As the researchers concluded, sibling studies generally reveal that ordinary siblings tend to demonstrate the lowest level of similarity, dizygotic twins tend to be even more similar, and monozygotic twins tend to have the greatest degree of similarity in various traits (Rowe & Plomin, 1981).

A considerable amount of research has focused on the process of how and why siblings become similar or different from one another. As Rowe and Plomin (1981) point out, one of the most commonly assumed reasons for similarity between siblings is genetic relatedness, as sibling studies generally find that the greater the degree of similarity in genotype (genes) between two siblings, the more similar they tend to be in phenotype (the observable expression of these genes). Environmental factors are also assumed to play a role in how alike siblings become. Chipeur, Rovine, and Plomin's (1990) study on twins, siblings, and other pairs of relatives revealed that 35% of the variance in IQ scores is related to shared environmental factors for twins, while 22% is related to shared environmental factors for ordinary siblings. Rowe and Plomin (1981) suggest that, although they are difficult to study, nonshared environmental factors might also contribute to similarities and differences between siblings, and thus, should be

considered as well. These include factors such as the type of interactions between siblings,

family structure (e.g., birth order, age spacing, or gender), accidental occurrences (e.g., illness or

trauma), different treatment from parents, and influence from those outside the family (e.g.,

friends and peers). Summarizing the findings of twin studies aimed at determining why siblings

are similar or different from one another, Sulloway (1999) noted:

> (B)ehavioral geneticists have concluded that only about 5% of the variance in
>
> individual personality traits is attributable to the shared environment – that is,
>
> growing up in the same family – whereas 35% can be assigned to the nonshared
>
> environment. About 40% of the overall variance is believed to be genetic, and the
>
> remaining 20% is attributable to errors of measurement. (p. 190)

Thus, researchers seem to agree that the level of similarity between siblings is impacted by

several factors, including genetics and shared and non-shared environmental factors.

Several studies have looked more closely at the specific factors or practices that

contribute to sibling similarities or differences. One example is Carey's (1986) study on the

direct effects that siblings can have on one another's development. Carey notes that (as social

learning theory suggests) children may learn a behavior or develop a characteristic directly from

watching and imitating a sibling. Children's development might also be impacted by a sibling's

reaction to their behavior or a child eliciting a certain behavior from a sibling with their own

actions. Unlike "the passive kinds of environmental reasons that promote sibling similarity" (p.

321), such as sharing a home environment, Carey considers these processes more "active," as

they are the result of siblings directly (and sometimes intentionally) influencing one another.

Just as the level of access siblings have to one another influences their level of closeness,

so too can it influence their level of similarity. High access siblings, by virtue of having more

environmental factors and experiences in common, are likely to develop in similar ways (Bank &

Kahn, 2003). The overall quality of the sibling relationship can also impact how similar two

siblings become, as Feinberg and Hetherington (2000) discovered that sibling pairs who had a

greater degree of positive interactions were more similar to one another.

Parental expectations of children, as well as the amount of freedom that parents allow

children to explore different identities, impact the degree of both closeness and similarity

between siblings (Edwards, Hadfield, Lucey, & Mauthner, 2006). In families where differences

between siblings are encouraged, siblings are likely to develop unique identities and have diverse

interests. Parents can also reinforce certain characteristics in their children and unintentionally

assign them roles within the family, both of which affect whether siblings feel compatible or

clash with one another (Bank & Kahn, 2003). According to Hoffman (as cited in Bower, 1991),

siblings may also be more similar when their parents have common values, attitudes, and child-

rearing styles.

Although they may not intend to, it is not uncommon for parents to show favoritism to

one child or to have different expectations for their children. Highly unequal treatment from

parents has been linked to the development of sibling rivalry, as has frequent comparisons from

parents (Ross & Milgram, 1982). Greater competition or rivalry between children tends to create

tension, which results in negative feelings toward one another, such as jealousy and aggression

(Bank & Kahn, 2003). Competition between siblings can also cause children to purposely seek

out different niches or identities than those occupied by other siblings. This process is known as

deidentification. Because deidentification reduces the number of areas in which the two children

can be compared, this process serves to decrease the amount of direct comparison that occurs

between the two individuals (Whiteman et al., 2009).

Plomin (as cited in Bower, 1991) also commented that each individual interprets his or her experiences differently, and so regardless of how similar or different siblings' experiences in the family may be, it is ultimately their unique perceptions that determine how they are impacted by these experiences. For example, even in cases where parents treat their children quite similarly, each child might interpret their behavior differently and respond in unique ways.

In 2007, Whiteman, McHale, and Couter explored the role of observational learning in how similar siblings become. The researchers found that among second-born children, three types of sibling groups existed. A majority of these participants reported looking up to their older siblings and attempting to model their behavior in each of the domains considered (sports, arts, school, and behavior). The next most common group consisted of second-born children who attempted to deidentify from their siblings, or to be different from them in several ways. A small proportion of the sample was considered "non-referent" because they did not report using their sibling as a reference for their own behavior. The researchers saw this group as sibling pairs who were not emotionally close. Supporting the notion that deidentification serves the purpose of reducing competition between siblings, Whiteman and colleagues also found that when siblings were most similar, competition levels were highest, while competition levels were lowest in those pairs where siblings were least similar.

Schachter, Gilutz, Shore, and Adler (1978) studied 383 undergraduates from families with two or three children. The researchers found that the first two children in a three-child family tended to have the highest levels of deidentification. In particular, when these siblings were of the same sex, they were even more likely to pursue dissimilar interests and traits than when siblings were of the opposite sex. The second and third born children tended to have the second highest levels of deidentification from one another, while the first and third born showed

the lowest levels. Similarly, Feinberg and Hetherington (2000) found that siblings who were

closer in age were more likely to demonstrate signs of deidentification. However, Loehlin and

Nichols (1976) concluded this is not true for twins, who have no difference in age and are

generally quite similar.

Perfectionism

      Definition of perfectionism. Although perfectionism is a commonly used term in both

everyday settings and mental health literature, the construct of perfectionism does not have one

specific, agreed upon definition (Flett & Hewitt, 2002). Merriam Webster's Dictionary defines

perfectionism as "A disposition to regard anything short of perfection as unacceptable"

(Perfectionism, n.d.). Compiling several definitions from the perfectionism literature,

Mainwaring (2009) described perfectionism as a stable, global personality trait consisting of

many dimensions, and concluded that perfectionistic individuals have extremely high standards

for themselves and are highly critical of their performances. Mainwaring also added that these

individuals tend to focus on their failures, exhibit all-or-nothing thinking, and have inflexible and

impracticable standards for themselves and others. Despite Mainwaring and others' attempts to

define perfectionism, Flett & Hewitt (2002) pointed out that within the literature "the term

perfectionism has a variety of meanings and that the same term is being used to refer to different

concepts" (p. 13). Thus, it is not always possible to compare studies on perfectionism, as they do

not consistently measure the same construct.

      Dimensions of perfectionism. Until the early 1990s, perfectionism was viewed as one-

dimensional (Flett & Hewitt, 2002). At this time, two groups of researchers independently

developed measures that were both named the Multidimensional Perfectionism Scale (MPS;

Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). These scales helped to prove

that perfectionism was more complex than originally thought and was better explained as being comprised of several different dimensions. Although supposedly measuring the same construct, each of these measures proposed different dimensions as defining "perfectionism," with some areas of overlap between the two. Frost et al.'s scale consists of six factors, four of which suggest perfectionism involves having high expectations for oneself. These dimensions are: high personal standards, concern over mistakes, doubts about actions, and organization. The remaining two dimensions (high parental expectations and parental criticism) suggest perfectionism also involves sensing high expectations from one's parents (Frost et al., 1990). On the other hand, Hewitt and Flett's MPS consists of three dimensions: self-oriented perfectionism (perfectionism directed toward the self), other-oriented perfectionism (perfectionism directed toward others), and socially prescribed perfectionism ("the generalized belief that others are imposing unrealistic demands on the self" (Flett & Hewitt, 2002, p. 11)).

The varying dimensions that comprise Frost et al.'s (1990) and Hewitt and Flett's (1991) perfectionism scales demonstrate the difficulty that researchers have faced in developing an agreed upon definition for perfectionism. Therefore, researchers studying perfectionism are likely investigating slightly different variations of this construct. In general, these discrepancies have only been increased by the multitude of perfectionism measures that are used in research. Examples of perfectionism measures include: the Burns Perfectionism Scale (BPS; Burns, 1980), the Neurotic Perfectionism Questionnaire (NPQ; Mitzman, Slade, & Dewey, 1994), the Almost Perfect Scale-Revised (APS-R; Slaney, Rice, Mobley, Trippi, & Ashby, 2001), the Perfectionism Cognitions Inventory (PCI; Flett, Hewitt, Blankstein, & Gray, 1998), and the Positive and Negative Perfectionism Scale (PANPS; Egan, Piek, Dyck, & Kane, 2011) (see Enns & Cox, 2002 for a more complete description of perfectionism measures).

In 2004, Hill et al. attempted to simplify the difficulties created due to the various definitions of perfectionism by developing a new measure called the Perfectionism Inventory (PI). To construct the PI, Hill and his colleagues combined dimensions from both of the MPSs, as well as some additional elements. What resulted from this process was a measure comprised of 8 scales measuring the following characteristics believed to contribute to perfectionism: being overly concerned by mistakes, having high standards for others, needing a greater amount of approval from others, being highly organized and planful, having a sense of high parental pressure, ruminating over past mistakes, and striving for excellence. Confirmatory analysis suggested these characteristics fell within two subtypes, which Hill and colleagues refer to as *Conscientious Perfectionism* and *Self-Evaluative Perfectionism*. Conscientious perfectionism is most strongly correlated with organization, striving for excellence, planfulness, and high standards for others, while Self-Evaluative Perfectionism is more strongly correlated with concern over mistakes, need for approval, rumination, and perceived parental pressure (Hill et al., 2004).

Types of perfectionism. Research on perfectionism originally focused solely on the negative features and outcomes, and generally overlooked the positive aspects that could also accompany this trait (Flett & Hewitt, 2002). In his seminal work, Hamachek (as cited in Flett & Hewitt, 2002) was one of the first to note that perfectionism could be either normal or neurotic, and thus, lead to positive or negative outcomes. "Normal perfectionism is defined as striving for reasonable and realistic standards that leads to a sense of self-satisfaction and enhanced self-esteem, [while] neurotic perfectionism is a tendency to strive for excessively high standards and is motivated by fears of failure and concern about disappointing others" (Flett & Hewitt, 2002, p. 11).

Since this time, studies involving cluster and factor analyses on perfectionism measures have provided support for the idea that there might be two types of perfectionism (Slaney et al., 2001). Frost, Heimberg, Holt, Mattia, and Neubauer (1993) were some of the first to investigate this possibility. The researchers analyzed responses from Frost et al.'s (1990) Multidimensional Perfectionism Scale and Hewitt and Flett's (1991) Multidimensional Perfectionism Scale and found "a conceptually clean two-factor solution. The first of these reflected maladaptive evaluation concerns, and the second reflected positive achievement strivings" (Frost et al., 1993, p. 119). Thus, there was evidence that there may be a type of perfectionism that was helpful and produced positive results and another type that was not helpful and generally resulted in negative outcomes.

Later researchers began to refer to these two types using various terms. For instance, several researchers (e.g., Rice et al., 1998; Slaney, Ashby, & Trippi, 1995) called them *adaptive perfectionism* and *maladaptive perfectionism*. Adaptive perfectionism referred to individuals demonstrating "high personal standards, a need for order and organization, and an unwillingness to procrastinate," (Rice et al., 1998, p. 311), while maladaptive perfectionism referred to individuals demonstrating "excessive concern about making mistakes, doubt about their actions, and [a tendency] to procrastinate, feel tense and anxious, and report having highly critical parents who had unrealistic expectations of their children" (p. 311). Other terms for the two types included *functional perfectionism* and *dysfunctional perfectionism* (Craddock et al., 2009), and *perfectionistic strivings* and *perfectionistic concerns* (Stoeber & Otto, 2006).

Categorical vs. dimensional perfectionism. In 2008, Broman-Fulks et al. questioned whether separating people into distinct categories of perfectionism (e.g., maladaptive and adaptive perfectionism) adequately captured the overarching construct of "perfectionism." Their

query reflected a common disagreement in the perfectionism field, as some researchers treated

perfectionism as a continuous variable, while others considered it categorical. Broman-Fulks and

colleagues acknowledged that cluster and factor analyses suggested the presence of two types of

perfectionism, but they questioned whether this was simply because these categories were

"forced" due to the types of statistical analysis that was used to obtain them. They also wondered

whether the two types of perfectionism could simply represent the extremes on a continuum,

somewhere upon which all individuals would fall.

After conducting a taxometric analysis of participant responses on perfectionism

measures, the researchers concluded that "individual differences in perfectionism are reflective

of a difference in degree rather than type of perfectionism experienced" (Broman-Fulks et al.,

2008, p. 488). Therefore, perfectionism might be most accurately reflected as falling on a

continuum, rather than into two distinct categories.

Trait vs. state perfectionism. Early research on perfectionism was conducted with the

assumption that this characteristic was a stable personality trait. Until relatively recently, this

belief was not studied, nor was it challenged (Maia et al., 2011). In recent years, researchers have

started to consider perfectionism as possibly having various types of stability, similar to those

that any personality trait may demonstrate. The first of these types is *absolute stability,* which is

the degree to which a certain trait changes over the course of a person's lifetime. Researchers

also consider the *relative stability* of a trait, which refers to the degree to which a person's level

of a certain trait changes over time in comparison to other individuals with that same trait. For

example, if a trait tends to decrease as people age, this trend would be observed throughout the

population so that each person's change in a trait should follow a similar pattern to others in the

population. The final way that researchers consider trait stability is by looking at a trait's level of

state-dependence, or the degree to which a person's current environment or state influences the level of the trait that he or she demonstrates (Santor, Bagby, & Joffe, 1997).

Although no studies have specifically tracked levels of perfectionism over the lifetime, a handful of studies have explored changes in this characteristic over shorter periods. These studies provide some insight into the degree of stability of perfectionism, but have produced varying results. For instance, in their study of perfectionism's connection to sleep disturbances in medicine, dentistry, and humanities students, Maia et al. (2011) found that participants' perfectionism scores tended to decrease from baseline to a two-year follow-up. More specifically, their scores on Self-Oriented Perfectionism and Socially Prescribed Perfectionism significantly decreased, while scores on Other-Oriented Perfectionism did not. The researchers also discovered that, even though perfectionism scores decreased over time, they demonstrated relative stability. In relation to sleep disturbances, perfectionism showed little state dependence (Maia et al., 2011).

Similarly, Rice and Aldea's (2006) study on perfectionism and depression produced mixed findings. The researchers gave participants a measure of perfectionism at three points in time, each separated by 4-5 weeks. Participants' scores on maladaptive perfectionism were significantly higher at Time 1 and Time 2 than they were at Time 3. For adaptive perfectionism, participants' scores were significantly higher at baseline than they were at Time 2 or Time 3. From this, the researchers concluded that there was little support for perfectionism having absolute stability. Rice and Aldea also found that maladaptive perfectionism demonstrated relative stability, while there was weak evidence of state dependence for perfectionism. Contrary to Rice and Aldea's findings, a longer-term study involving individuals recovering

from eating disorders found no changes in participants' levels of perfectionism during their

eight-year and sixteen-year follow-ups (Nilsson, Sundbom, & Hägglöf, 2008).

      Research also indicates that a person's level of perfectionism may vary across domains or

contexts. For example, in their investigation of working mothers, Mitchelson and Burns (1998)

found that participants demonstrated significantly higher levels of self-oriented, other-oriented,

and socially prescribed perfectionism pertaining to their work than they did at home. Similarly,

Stoeber and Stoeber (2009) found that individuals varied quite considerably on their levels of

perfectionism in 22 distinct domains (examples of domains studied include Work, Bodily

Hygiene, Physical Appearance, and Social Relationships). The domains most commonly

endorsed as areas of perfectionism were Work and Studies (Stoeber & Stoeber, 2009). These

findings suggest that people likely demonstrate varying levels of perfectionism in different areas

of life.

      In 1999, Saboonchi and Lundh investigated the effects of context on perfectionism levels.

They found that individuals who were primed to think perfectionistically and observed during a

social encounter had slightly elevated levels of perfectionistic qualities (lower level of

spontaneity and increased thinking about shortcomings). The opposite effect was found when the

same conditions were imposed while participants engaged in a problem-solving task, as they

rated themselves lower on several dimensions of perfectionism (fewer worries about making

mistakes and being systematic and organized). Saboonchi and Lundh (1999) concluded that their

findings suggest that "pefectionistic thinking can be subjected to temporary changes due to

situational conditions. A recent activation of perfectionistic constructs and the experience of

being observed by others as predicted, appear to be 2 relevant factors in producing such changes"

(p. 161). As mentioned, since most measures of perfectionism consider perfectionism an

enduring trait, the notion that perfectionism might vary based on context or domain is not often taken into account.

The above studies suggest that perhaps several factors, such as mental illness, life experiences, or one's environment, come into play when determining the stability of a characteristic like perfectionism. Due to the fact that many of these studies were conducted with special populations, the findings may not generalize to the general population. Therefore, more research is needed to determine the stability and state dependence of perfectionism.

Negative and positive findings. Many perfectionism studies have focused on the effects of perfectionistic tendencies on an individual's functioning. In some instances, these tendencies have been found to be beneficial to the individual and to help foster high achievement, while in others they have been found to be inhibiting and detrimental to an individual's functioning. A review of the literature regarding all outcomes is beyond the scope of this paper, but several studies have been compiled to provide a range of examples.

Negative findings. Several negative findings have been linked with perfectionism. For example, in their study of 450 senior citizens, Fry and Debats (2009) discovered that individuals who scored high on measures of perfectionism were 51% more likely to have died by the 6.5-year follow-up. Male junior-elite athletes who scored high on measures of socially prescribed perfectionism were more likely to experience burnout in Appleton, Hall, and Hill's (2009) research. Similarly, in their study on junior-elite soccer players, Hill, Hall, Appleton, and Kozub (2008) discovered that socially prescribed perfectionism was related to "physical and emotional exhaustion, reduced accomplishment, and sport devaluation" (p. 638). Socially prescribed perfectionism was also linked with athlete burnout, in that athletes with higher levels of this form of perfectionism were more likely to experience burnout than those with lower levels (Hill et al.,

2008). In Longbottom, Grove, & Dimmock's (2010) study on physical activity, individuals with

maladaptive perfectionism were more likely to demonstrate negative cognitions and behaviors

surrounding physical activity, such as a fear that they would fail in the physical activity, anxiety

and worry about not exercising, and an avoidance of exercise.

Moore (2010) found that students with higher levels of passive perfectionism (a

maladaptive form of perfectionism) demonstrated higher levels of anxiety in both math and

writing, while Kempe et al. (2011) discovered that individuals with chronic fatigue syndrome

who also had high levels of maladaptive perfectionism demonstrated higher levels of fatigue and

depression. In a similar study, Besharat, Pourhosein, Rostami, and Bassasian (2011) discovered

that both positive and negative perfectionism were associated with levels of fatigue in

individuals with multiple sclerosis.

In a study of female college athletes with eating disorders, 53% of participants studied

reported perfectionism as a reason they developed an eating disorder (Arthur-Cameselle &

Quatronmoni, 2010). Besharat and Shahidi's (2010) work demonstrated that individuals

exhibiting negative (maladaptive) perfectionism were more likely to experience anger and anger

rumination. Perfectionism has also been linked to a greater risk for postpartum depression

(Gelabert et al., 2012).

In their extensive review of perfectionism literature, Egan, Wade, and Shafran (2011)

concluded that there is clear evidence that perfectionism is linked to several pathologies. For

instance, their review resulted in strong evidence that perfectionism is most likely a risk factor

for eating disorders and that it "increases, and maintains, eating disorder pathology" (p. 204).

Several of the studies they reviewed found a positive relationship between perfectionism

(specifically, self-oriented and socially prescribed perfectionism) and depression or depressive

symptoms. Egan and colleagues' review also revealed that high scores in certain perfectionism

domains were linked to increased risk of bipolar disorder symptoms, such as manic and

hypomanic episodes and mood swings. Similarly, the studies on anxiety disorders reviewed by

Egan et al. (2011) demonstrated overwhelming evidence that perfectionism is associated with

obsessive-compulsive disorder, social anxiety, panic disorder, and other anxiety disorders. The

researchers even found that the limited studies on perfectionism and personality disorders

suggested a link between perfectionism and certain Axis II disorders. In particular,

obsessive-compulsive personality disorder showed the greatest evidence of being linked with

perfectionism, while other studies provided some support for a connection between

perfectionism and borderline personality disorder and narcissistic personality disorder (Egan et

al., 2011).

     Positive findings. Several positive outcomes have also been linked to perfectionism.

However, the literature available regarding positive outcomes is much sparser than those

investigating negative outcomes. This may be an indication that there are more negative aspects

of perfectionism, or simply a result of the fact that perfectionism was originally viewed from a

pathological standpoint and it was not until relatively recently that researchers considered the

positive aspects of this construct (Stoeber & Otto, 2006).

     Longbottom et al.'s (2010) study on perfectionism and physical activity is one example

of a study where perfectionism was associated with positive outcomes. The researchers found

that individuals with adaptive perfectionism were more likely to have more positive cognitions

and behaviors surrounding physical activity, such as valuing exercise and being more persistent

about exercising (Longbottom et al., 2010). In their study on attachment and perfectionism,

adaptive perfectionists were found to be more likely to have secure attachments than maladaptive

perfectionists. Shaunessy, Suldo, and Freidrich (2011) found a moderate correlation between adaptive perfectionism and both academic achievement and life satisfaction. Perfectionism has also been linked with doing well in a triathlon (Stoeber et al., 2009), achieving a high GPA (Canter, 2009), and experiencing a greater sense of satisfaction with life (Hill et al., 2010).

In their review of the perfectionism literature, Stoeber and Otto (2006) discovered several studies that provided evidence that perfectionistic strivings (a healthy form of perfectionism) can be associated with positive factors. For instance, these studies demonstrated that individuals with healthy perfectionism exhibited:

> higher levels of conscientiousness, extraversion, endurance, positive affect, satisfaction with life, active coping styles…achievement, and…lower levels of external control and suicidal ideation…higher levels of self-esteem, agreeableness, social integration (e.g., greater social interest, greater willingness to go along with others) and academic adaptation (e.g., a higher grade point average [GPA], greater GPA satisfaction); show lower levels of anxiety, depression, procrastination, defensiveness, maladaptive coping styles, and interpersonal problems; and report fewer somatic complaints and psychological symptoms than individuals with high levels of perfectionistic strivings and high levels of perfectionistic concerns (unhealthy perfectionism) or individuals with low levels of perfectionistic strivings (nonperfectionists). (Stoeber & Otto, 2006, p. 312)

These studies suggest that perfectionism (in particular healthy perfectionism) is associated with numerous positive outcomes.

SEM Model and Siblings

Testing Tesser's (1980) Self-Evaluation Maintenance Model, Noller et al. (2008) explored young adults' and adolescents' retrospective accounts of instances where their

performances were compared to those of close others (either a sibling or a friend) in activities that were both important and unimportant to their self-concepts. Noller and colleagues asked pairs of same sex siblings, both twins and non-twins, to recall a total of eight scenarios involving competition or comparison with close others. Specifically, they were asked to recall two examples of times when they performed better than a friend, two examples of times when they performed better than a sibling, two examples of times when they performed worse than a friend, and two examples of times when they performed worse than a sibling. Participants were also asked to make sure that one of the examples they provided in each pair of scenarios involved being compared/competing in an activity that was of high relevance to them and low relevance to the other person and one example where the activity was of low relevance to them and high relevance to the other person. Following these reports, participants explained how they felt about the competitor after the activity (positive or negative). They also rated how likely they would be to continue participating in the activity and how likely they would be to downplay their performance (i.e., to provide an excuse for their performance that made their success or failure seem less important).

Noller and colleagues sought to explore whether participants' reports would provide support for Tesser's (1980) notion that the closeness of a relationship, relevance of the activity, and level of performance during instances of competition/comparison have an impact on one's self-evaluation. They were also curious whether participants would act in ways to maintain their self-evaluations that were consistent with what Tesser's SEM model predicted. Based on the SEM model, the researchers hypothesized that participants would react more negatively when outperformed by a sibling in an activity that was of high self-relevance and low relevance for the competitor. They also expected participants to report stronger emotional reactions when

competing against a sibling than a friend. Finally, Noller and colleagues expected to see evidence that participants were able to "bask in the reflected glory" of their siblings' successful performances by demonstrating more positive reactions in instances where the activities were of low relevance to their own self-concepts and of high relevance to the sibling.

The researchers analyzed participants' responses and found that they generally supported the SEM model. However, each sibling group (adolescent non-twins, adolescent twins, young adult non-twins, and young adult twins) demonstrated a different pattern of reactions, suggesting that the model cannot predict responses to competitive/comparison situations in all cases. Their work shows that there are likely several different factors at play that are not accounted for in the SEM model. The relevant results of their study are outlined below.

Adolescent non-twins. Adolescent non-twin participants reported having more positive reactions when competing with a sibling than with a friend on high-relevance activity. They also reported significantly more negative reactions after being outperformed by a sibling in a high self-relevance activity than one of low self-relevance. Older siblings were more negative and less positive when outperformed by a younger sibling on a high self-relevance activity than a low self-relevance activity, while younger siblings were more negative when outperformed by an older sibling on a low self-relevance activity.

Participants in this group reported that they were more likely to downplay their success on activities that were of low self-relevance, and they were more likely to downplay failures than successes on tasks of high self-relevance. Older siblings in the adolescent non-twin group were more likely to downplay their failures in both high and low self-relevance situations, while younger siblings were more likely to downplay their successes when the task was of low importance to their self-concepts.

Higher warmth and lower levels of conflict in the sibling relationship were related to more positive reactions when both being outperformed and performing better than siblings. Participants indicated more negative reactions both when their relationships were lower in warmth and their siblings performed better on an activity and when their relationships were higher in conflict and they performed better than a sibling.

Adolescent twins. Adolescent twins indicated that they had more positive feelings when they performed better than their twin and more negative feelings when their twins outperformed them on high-relevance activities. They also reported feeling more positive and less negative when outperformed by friends or siblings on tasks of low self-relevance. Monozygotic twins of this age group had more positive reactions than dyzygotic twins, regardless of how well they performed or whether the activity was of high or low relevance to them. Younger twins indicated that they felt more positive and less negative than older twins when their twin outperformed them on tasks of high self-relevance. They also indicated that they felt more positive and less negative when their twin outperformed them than when their friend outperformed them on tasks of high-relevance. Older twins were just the opposite and experienced more negative feelings when outperformed by their twin than by their friend.

Male adolescent twins reported being more negative after competing with their twins than with their friends, but this was not the case for females. Adolescent twins as a whole were more likely to downplay their performance when their twin outperformed them in low-relevance activities. In particular, older twins were more likely to downplay being outperformed by both their twin and their friend in both high and low-relevance tasks. Younger twins were more likely to downplay a successful performance on activities of high self-relevance than to downplay their failures on these tasks.

High warmth and low conflict in adolescent twins' sibling relationships were related to less negative and more positive reactions to competition/comparison with siblings. Adolescent twins' self-esteem also appeared less likely to be impacted by negative reactions to competition and comparison when their sibling relationships were high in warmth and low in conflict.

Young adult non-twins. When competing in tasks of high self-relevance, females in this group reported being more positive both when they performed better than their sibling compared to when their siblings or friends outperformed them, and when they performed better than a friend compared to when they performed better than their sibling. Young adult non-twins were the most negative when a sibling outperformed them and they were likely to downplay their performances on tasks of low self-relevance, regardless of whether they succeeded or failed. As with other groups, the levels of warmth and conflict in the sibling relationship was an important factor in how participants were impacted by situations involving comparison/competition, as these variables were found to mediate the relationship between emotional reactions to comparison/competition and self-esteem levels.

Young adult twins. Participants in this group reported feeling significantly more positively when they performed better than and more negatively when outperformed by their twins on an activity of high self-relevance than one of low self-relevance. They were also significantly more positive when they performed better than their twin than a friend on a high-relevance activity. Adult twins were more likely to downplay the significance of their performance when they were outperformed than when they performed better than the other, regardless of whether the other was a twin or a friend or the task was of high or low relevance. Similar to adult non-twins, the levels of warmth and conflict in the sibling relationship mediated

the relationship between emotional reactions to comparison/ competition scenarios and

self-esteem levels, as did perceptions of being treated unequally by parents.

Conclusion. Although some of Noller and colleagues' (2008) findings did not support

the SEM model, most did. Their study revealed that there are differences in how each of the four

sibling groups responded to instances of competition and comparison, suggesting the need to

consider the type of sibling relationship when looking at how individuals react to and are

impacted by competition and comparison situations.

Research Questions

1. Is the level of closeness and similarity in sibling relationships related to the level of

   perfectionistic tendencies individuals report?

2. Is the difference in age between closest-in-age siblings related to the level of

   perfectionistic tendencies those individuals report?

3. Do twins demonstrate higher levels of perfectionistic tendencies than non-twins?

Hypotheses

1. Individuals who perceive high closeness *and* high similarity in their sibling relationships

   will report higher levels of perfectionistic tendencies.

2. Closeness in age between siblings will be negatively related to levels of perfectionistic

   tendencies.

3. Twins will demonstrate a significantly higher level of perfectionistic tendencies than

   non-twins.

Method

Participants

Selection criteria. Individuals were eligible to participate in the study if they were over

the age of 18, were not only children, and lived with their closest-in-age sibling for most or all of

their childhood. Because the study was conducted online, participants also had to have access to

a computer with Internet. Participation was voluntary.

Recruitment. Participants were recruited in two ways. In order to obtain a large twin

sample, one set of participants was recruited amongst the crowd of a parade that is held during

the annual Twins Days Festival in Twinsburg, Ohio. This parade runs for a mile stretch on a

public street in downtown Twinsburg. A large number of twins and their families from all around

the country come to attend the fair (and the parade). Therefore, recruiting at this location

provided a larger sample of twins than might be obtained elsewhere, as well as potential

participants from different regions of the country. This location was only utilized for the

recruitment of twin participants; thus, another recruiting site was needed. So that all participants

were recruited using similar methods under similar circumstances, the second set of participants

were recruited at a parade near the researcher's hometown that occurs on Independence Day.

This parade is attended by hundreds of locals, but is in a high tourist area and also offered the

potential to recruit individuals from different parts of the country.

During both recruitment sessions, the primary researcher and her identical twin sister

approached individuals passing by and asked whether they were willing to participate in the

study. Those who expressed interest in participating were provided with a handout that contained

the website address for the survey. Interested individuals were given a small bag of candy to

demonstrate the researcher's gratitude for agreeing to be a potential participant. Potential

participants were also encouraged to pass the survey information on to anyone else who might be interested in participating.

   Descriptive statistics. The sample in this study consisted of 163 females (87.6%), 22 males (11.8%), and 1 participant who selected "Other" (.5%). Participants' ages ranged from 18 to 72 years, with a mean age of 41.58 (n = 182). Educational backgrounds included 20 participants with a high school degree (10.8%), 19 with some college (10.2%), 18 with an Associate's degree (9.7%), 66 with a Bachelor's degree (35.5%), 43 with a Master's degree (23.1%), 18 with a professional/doctoral degree (9.7%), and 2 participants who selected "Other" (1.1%). This study's sample was comprised of 138 non-twins (74.2%), 27 identical twins (14.5%), 15 fraternal twins (8.1%), and 5 other multiples (2.7%). The difference in age between participants and their closest-in-age siblings ranged from 0 to 144 months, with a mean of 28.8 and a mode of 0 (n = 185). Eighty-four participants reported being older and 101 participants reported being younger than their closest-in-age siblings. When considering gender of participants and their closest-in-age siblings, 13 male participants had siblings who were also male (SM), 9 male participants had siblings who were female (DM), 97 female participants had siblings who were female (SF), and 65 female participants had siblings who were male (DF). The sample consisted of 68 first-borns (37%), 65 second-borns (35%), 36 third-borns (19%), 8 forth-borns (4%), 5 fifth-borns (3%), and 4 later-borns (2%).

Procedure

   Once potential participants received handouts containing the address for the online survey, they voluntarily went to the website to complete the study. The first page of this questionnaire served as an informed consent form and described the purpose of the study and the eligibility requirements (see Appendix A). So as not to bias participants' responses, they were

told that the study was about personal characteristics and sibling relationships. Participants were

asked to make sure that they fit all eligibility requirements before continuing with the study.

Anyone who went to this website was given the opportunity to enter a raffle to win one of two

gift cards. Once the set deadline passed, the researcher collected the results for analysis.

Measures

Data was collected through an online questionnaire that was constructed using a survey

website (kwiksurveys.com). This questionnaire contained items pertaining to demographic

information, the Perfectionism Inventory (Hill et al., 2004), the scales that make up the

Warmth/Closeness factor of the Sibling Relationship Questionnaire (Furman & Buhrmester,

1985) and the Sibling Similarity Scale (a measure developed for this study).

Demographic questionnaire. The demographic questionnaire asked participants to

report their age, gender, socioeconomic status, sibling type (non-twin, identical twin, fraternal

twin, or other multiple), birth order position, number of months between themselves and their

closest-in-age sibling, whether they are the older or younger of the sibling pair, and gender of

this sibling.

Perfectionism. Perfectionistic tendencies were measured using the Perfectionism

Inventory (PI; Hill et al., 2004). This measure consists of 59 items that are divided into 10

subscales. These subscales correspond with the eight characteristics of perfectionism as defined

by Hill et al. (2004), as well as two composite scores that make up Conscientious Perfectionism

and Self-Evaluative Perfectionism. Respondents provide answers on a 5-point Likert scale (1 =

strongly disagree to 5 = strongly agree). A total composite score representing the construct of

"Perfectionism" can also be obtained by totaling the scores of all 59 items. High scores on this

measure indicate high levels of perfectionistic tendencies.

The PI has demonstrated good convergent validity with two other well-established measures of perfectionism, the Multidimensional Perfectionism Scale developed by Frost et al. (1990), and the Multidimensional Perfectionism Scale developed by Hewitt and Flett (1991) (Hill et al., 2004). During the study in which the measure was developed, Chronbach's αs ranged from .83 to .91 and the test-retest reliability coeffecients ranged from .71 to .91 for the eight scales (Hill et al., 2004). Bromann-Fulks et al. (2008) found similar results in their study with a Cronbach's α of .95 for the entire measure and α coefficients for individual subscales that ranged from .83 to .91. In the present study, Cronbach's α for the entire PI was .95, and the subscales ranged from .83 to .95.

Sibling closeness. Sibling closeness was assessed using the scales that make up the Warmth/Closeness factor on the Sibling Relationship Questionnaire (Furman & Buhrmester, 1985). This factor is made up of 7 scales that pertain to the areas of Intimacy, Affection, Prosocial Behavior, Companionship, Similarity, Admiration of Sibling, and Admiration by Sibling. Each scale contains 3 questions, resulting in a total of 21 questions. Respondents provide answers on a 5-point Likert-type scale (1 = hardly at all to 5 = extremely much). The Warmth/Closeness score is computed by first averaging scores on the individual scales, adding them up, and then dividing by seven. High scores on this measure indicate high levels of emotional warmth and closeness between siblings. For the present study, participants were instructed to report their answers to all items according to their perception of their closeness with their sibling during their childhood (before they were 12 years old). Therefore, questions were posed in the past tense (e.g., "How much did you and this sibling care about each other?").

Furman and Buhrmester (1985) found a Chronbach's α of .70 or higher for all scales used in this study and for the Warmth/Closeness factor. Test-retest reliability of the entire

questionnaire ranged from .58 to .86. Other studies have produced similar results. Yelland and

Daley (2009) found Chronbach's αs ranging from .65 to .85 for all scales and .63 or higher for all

composite factors. Looking specifically at the Warmth/Closeness factor, Howe, Aquan-Assee,

Bukowski, Lehoux, and Rinaldi (2011) found a Chronbach's α of .93. Derkman, Scholte, and

Van der Veld (2010) found that the measure demonstrates good construct validity. In the present

study, Cronbach's α for the Warmth/Closeness scale was .97 and composite scales raged from

.87 to .96.

Sibling similarity. The measure of perceived similarity used in this study, the Sibling

Similarity Scale (see Appendix B), was an adapted version of a measure that was created by

Graham-Bermann (1991). The original measure consists of one question, "How much are you

and your sibling alike?" and required participants to provide responses on a 5-point Likert-type

scale (1= very much alike to 5 = not very much alike). Graham-Bermann (1991) found that this

measure was highly correlated ($r = .87$ $p < .0001$) with the number of adjectives that participants

and their siblings both chose to describe themselves during a card sort activity, suggesting that

the measure has shown some validity. In addition to this question, the adapted measure also

contained several other items that asked participants to rate their perceived similarity in nine

domains (appearance, values/beliefs, interests, personalities, intelligence, behavior, talents,

academic achievement, and health). Participants responded to items on a 5-point Likert-type

scale similar to the one used by Graham-Bermann, only reversed (1= not very much alike to 5 =

very much alike) in order to maintain uniformity across all measures used in this study. Higher

scores represent greater similarity. Participants were instructed to report their answers to all

items according to their perception of their similarity with their sibling during childhood (before

they were 12 years old). Therefore, questions were posed in the past tense (e.g., "How much were you and your sibling alike in appearance?").

Since this is a new measure, item analysis was conducted to determine whether the Sibling Similarity Scale possesses internal consistency. A Chronbach's α of .93 (M = 29.60, SD = 9.627) suggested good internal consistency; thus, no items were removed. The average scores on the first nine questions (assessing similarity in various domains) was significantly correlated with scores reported for the final question ("Overall, how much are you and your sibling alike?"), $r(162) = .81$, p < .001. Therefore, in future use, the final question might be as useful to researchers as the entire similarity scale.

Level of perceived similarity, as measured by this scale, was highly correlated with scores on the Warmth/Closeness Scale, both when the similarity questions of the Warmth Closeness Scale were included, $r(164) = .74$, $p < .001$, and when they were removed, $r(164) = .70$, $p < .001$. This finding brings into question whether the Sibling Similarity Scale possesses discriminant validity. Because this was not a focus of the present study, further analysis was not conducted.

Results

The first hypothesis tested in this study was whether individuals who perceived high closeness *and* high similarity in their sibling relationships would also report higher levels of perfectionistic tendencies. Using the enter method, a multiple regression revealed that for the entire sample, Similarity and Closeness did not significantly predict the variance in Total PI scores, $F_{2,162} = .26$, $p = .77$, Adjusted $R^2 = -.009$, nor any of the PI subscales. Even when sibling types (twins and non-twins) were analyzed separately, Similarity and Closeness did not significantly predict the variance in Total PI or scores on any of the PI subscales for either

sibling type. Thus, the first hypothesis was not supported. Of note was the fact that level of

perceived similarity, as measured by the Sibling Similarity scale, was strongly correlated with

Closeness, both including the similarity questions on the Warmth/Closeness scale, $r(164) = .74$,

$p < .001$, and without, $r(164) = .70$, $p < .001$. This suggests that these factors shared some

predictive power in the regression analysis.

When Similarity and Closeness were considered independently, however, significant

correlations emerged. Within the entire sample, higher scores on Similarity were very weakly

related to higher scores on Conscientious Perfectionism, $r(168) = .14$, $p < .05$, and Organization,

$r(168) = .18$, $p < .01$. Closeness was not significantly related to Total PI or scores on any of the

PI's subscales. Therefore, in this sample, Similarity was very weakly related to one type of

perfectionism and one perfectionistic characteristic, while Closeness scores were not related to

any of these variables.

The second hypothesis tested was that the smaller the difference in age between an

individual and his or her closest-in-age sibling, the more likely an individual would be to report

perfectionistic tendencies. Within the entire sample, a correlational analysis revealed a very

weak, but significant relationship between Difference in Age and Total PI scores, $r(173) = .13$, p

$< .05$. Difference in Age was also very weakly related to Concern Over Mistakes, $r(173) = .16$, p

$< .05$, Parental Pressure, $r(174) = .14$, $p < .05$, Rumination, $r(174) = .13$, $p < .05$, and

Self-Evaluative Perfectionism, $r(174) = .14$, $p < .05$. Since the Difference in Age for twins is

always 0, another analysis was conducted with the twin participants removed to determine

whether the large twin population may have artificially swayed the data (as it is not

representative of the proportion of twins in the general population). For all non-multiple

participants, Difference in Age was weakly positively correlated with scores on Total PI, $r(129)$

= .20, $p < .05$, Self-Evaluative Perfectionism, $r(129)= .21$, $p < .05$, Rumination, $r(129) = .21$, $p <$ .05, and Concern over Mistakes, $r(129) = .24$, $p < .01$ (thus, only Parental Pressure was no longer significant with the twin participants removed). These findings suggest a weak positive relationship between the Difference in Age and Total PI, as well as scores on several PI subscales. The direction of this correlation is contrary to the expected relationship; thus, the second hypothesis was not supported.

A one-way ANOVA revealed that there was not a significant effect of sibling type (twin vs. non-twin) on Total PI scores or scores on any of the PI subscales. Therefore, the hypothesis that twins would demonstrate a significantly higher level of perfectionistic tendencies than non-twins was not supported. Appendix C presents the findings from this analysis.

Ancillary Analyses

Exploratory ancillary analyses revealed several other significant findings. For instance, when data for sibling types were separated, correlational analyses between scores on the PI and its subscales demonstrated multiple significant relationships with Closeness, Similarity, and/or Difference in Age scores. These findings varied within each sibling type. Because there were so few Other Multiples, this group was not considered for a separate analysis.

Non-twins. For non-twins, Similarity and Closeness were strongly correlated, $r(129) =$ .62, $p < .001$. Similarity was also weakly related to Rumination, $r(128)= -.21$, $p < .01$ (there were no other correlations between Similarity or Closeness and Total PI or any of the PI subscales). Difference in Age was not significantly related to any other PI subscales, Similarity, or Closeness scores. Difference in Age and Younger/Older (status in sibling pair) did not significantly predict the variance of Total PI or any PI subscales. Similarity and Closeness scores

did not significantly differ between Younger/Older (status in sibling pair), nor did Total PI or PI

subscale scores.

Twins. For the twin group (both identical and fraternal twins combined), Similarity and

Closeness were strongly correlated, $r(33) = .83$, p <.001. Similarity was moderately to strongly

correlated with High Standards for Others $r(33) = -.40$, p <.05, Organization, $r(33) = .35$, p <.05,

Rumination, $r(32) = .39$, p <.05, and Self-Evaluative Perfectionism, $r(33) = .37$, p <.05. Closeness

was significantly correlated with Need for Approval, $r(33) = .41$, p <.05, Organization, $r(33)$

$= .45$, p = .01, Concern Over Mistakes, $r(33) = .46$, p = .01, Rumination, $r(33) = .42$, p <.05, Self-

Evaluative Perfectionism, $r(33) = .48$, p <.001, and Total PI, $r(33) = .44$, p = .01. Similarity and

Closeness scores did not significantly differ between Younger/Older (status in sibling pair), nor

did Total PI or PI subscales.

Although the sample sizes were quite small, the twin types (identical twins and fraternal

twins) were analyzed separately to explore whether there appeared to be any difference in these

findings between the two groups (this was simply exploratory). For identical twins, Similarity

scores were strongly negatively correlated with High Standards for Others, $r(22) = -.55$, $p = .01$,

and positively correlated with Organization, $r(22) = .70$, $p = .05$. Closeness scores were also

strongly correlated with Need for Approval, $r(22) = .42$, $p < .001$, Organization, $r(22) = .65$, $p <$

$.001$, Concern over Mistakes, $r(22) = .44$, $p < .05$, Rumination, $r(22) = .46$, $p < .05$, Self-

Evaluative Perfectionism, $r(22) = .44$, $p < .05$, and Total PI, $r(22) = .49$, $p < .05$. In the fraternal

twin sample, Similarity was strongly correlated with Parental Pressure, $r(13) = .62$, $p < .05$, as

was Closeness, $r(13) = .60$, $p < .05$.

Entire sample. Additional exploratory analyses were also conducted using the entire

sample. For this group, Age was very weakly to weakly negatively correlated with several

variables, including Total PI, $r(162)= -.20, p < .05$, Planfulness, $r(172)= -.17, p < .05$,

Rumination, $r(173)= -.17, p < .05$, and Conscientious Perfectionism, $r(172)= -.17, p < .05$.

Scores on Similarity and Closeness were not related to Age.

Difference in Age was weakly to moderately negatively correlated with both Similarity,

$r(162)= -.29, p < .001$, and Closeness, $r(163)= -.33, p < .001$. When twins were removed from

this analysis (because their difference in age is 0) there was no longer a significant relationship

between Difference in Age and Similarity or Closeness, suggesting that the large twin sample

likely swayed the data.

Two one-way ANOVAs were conducted to assess whether sibling type (identical twin,

fraternal twin, non-twin) had an effect on Similarity and Closeness scores, followed by Tukey

HSD post-hoc tests. Results of the first ANOVA indicated a main effect of sibling type on

Similarity scores, $F(3,165) = 20.46$, p $< .001$. Identical twins ($M = 4.20, SD = .675$) saw

themselves as significantly more similar to their closest-in-age siblings than non-twins ($M =$

2.73, $SD = .850$) and fraternal twins ($M = 3.24, SD =1.03$). Results of the second ANOVA

indicated a main effect of sibling type on Closeness scores, $F(3, 161) = 17.836$, p $< .001$.

Identical twins ($M =29.89, SD = 5.22$) reported significantly higher levels of closeness than

non-twins ($M =20.83, SD = 5.84$. Fraternal twins ($M = 25.44, SD = 5.05$) also reported

significantly higher levels of Closeness than non-twins. Thus, identical twins might have higher

levels of perceived similarity than other sibling types, but fraternal and identical twins are both

likely to perceive higher levels of closeness than non-twins. Two additional multiple regressions

determined that sibling type (twin or non-twin) and Closeness did not predict the variance for

Total PI or any of the PI subscales, nor did sibling type and Similarity.

A one-way ANOVA was also conducted to assess whether sibling pair type (SM, SF, DM, DF) has an effect on Similarity and Closeness scores. Results indicated that Closeness scores were significantly different between sibling pair types, $F(3, 161) = 4.15$, p = .01. In particular, female participants with sisters (SF) ($M = 24.17$, $SD = 6.58$) saw themselves significantly closer to their sibling than did female participants with brothers (DF) ($M = 21.13$, $SD = 6.19$) and male participants with sisters (DM) ($M = 19.25$, $SD = 3.97$). There was also a main effect of sibling pair type on Similarity scores, $F(3, 164) = 2.76$, p < .05, since female participants with sisters (SF) ($M = 3.15$, $SD = 1.01$) saw themselves as significantly more similar to their sibling than did male participants with sisters (DM) ($M = 2.42$, $SD = .69$) and female participants with brothers (DF) ($M = 2.79$, $SD = .90$). No significant differences were found between sibling pair types for Total PI or any of the PI subscales.

When sister pairs were compared to all other sibling pair types (brothers and brother-sister pairs), there was no significant difference on Total PI or PI subscales between sister pairs and other pairs, nor was there when same sex sibling pairs and opposite sex sibling pairs were compared. Similarity scores were significantly different between sister pairs and other pair types, $F(1, 166) = 5.84$, p < .05, as were Closeness scores $F(1, 163) = 11.81$, p < .001. Sister pairs saw themselves as significantly closer ($M = 24.17$, $SD = .71$) and more similar ($M = 3.15$, $SD = 1.01$) than other sibling pair types (Closeness: $M = 20.82$, $SD = 5.87$ and Similarity $M = 2.80$, $SD = .90$).

There was also an effect of sibling pair type on Closeness, $F(1, 164) = 8.18$, p < .001, and Similarity, $F(1, 167) = 7.23$, p = .01, when same sex sibling pairs were compared to opposite sex pairs. Same sex siblings also saw themselves significantly closer ($M = 23.76$, $SD = 6.55$) and more similar ($M = 3.15$, $SD = 1.00$) than opposite sex sibling pairs (Closeness: $M = 20.90$, $SD = $

5.98 and Similarity: $M =2.75, SD =.88$). For opposite sex sibling pairs, Similarity was weakly

correlated with Organization, $r =.28$, p < .05, Planfulness, $r = .24$, p < .05, Parental Pressure $r =$

-.27, p < .05, and Conscientious Perfectionism, $r = .26$, p < .05, while there were no significant

correlations between Closeness and Total PI or PI subscales for this group. For same sex sibling

pairs, there were no significant correlations between Similarity or Closeness and Total PI or PI

subscales.

       Because sister pairs were found to have higher levels of similarity and closeness, as were

twins, another exploratory analysis was conducted to determine whether female twin pairs

demonstrated higher levels of any perfectionistic tendencies than other sibling pair types. The

results of an ANOVA revealed that sex/sibling pair type (female twins vs. all others) had an

effect on PI subscale scores, $F(1,166) = 4.91$, p < .05. More specifically, female twin pairs ($M =$

3.68, $SD =.76$) reported higher levels of Need for Approval than all other pair types ($M = 3.32$,

$SD =.82$).

       An additional ANOVA revealed the only effect of birth order on Total PI scores or any

subscale on the PI, was on Parental Pressure $F(5,166) = 2.43$, p < .05. Firstborns reported

significantly higher scores on Parental Pressure ($M = 3.27, SD = 1.16$) than both second ($M =$

2.85, $SD = 1.12$) and third-borns ($M = 2.71, SD = 1.13$). Because of small group sizes, there was

not enough power to confidently determine whether there was a significant difference between

the Parental Pressure scores of fourth, fifths, or later-born participants and other groups. Birth

order was weakly negatively correlated with Striving for Excellence, $r(167) = -.21, p = .01$ and

Parental Pressure $r(167) = -.25, p < .001$.

       Whether a participant was the older or younger of a sibling pair only had an effect on

Striving for Excellence, $F(1,163) = 4.11$, p < .05, as the participants who identified as the

younger of the pair ($M = 3.53$, $SD = .89$) reported significantly higher levels of Striving for

Excellence than those who identified as the older of the pair ($M = 3.26$, $SD = .80$).

In summary, high levels of Similarity *and* Closeness were not predictive of higher levels

of overall perfectionism or perfectionistic tendencies. Independently, however, both of these

variables were related to overall perfectionism and various perfectionistic tendencies.

Relationships between Similarity or Closeness and overall perfectionism or perfectionistic

tendencies were more common and stronger for the twin participants than they were for the

non-twin participants. Thus, although twins did not report higher levels of perfectionism or

perfectionistic tendencies than non-twins, Similarity and Closeness appear to play a larger role in

predicting levels or perfectionism or perfectionistic tendencies in twin relationships. Closeness

and Similarity levels generally varied based on the characteristics of sibling pair (i.e., gender of

the siblings in the pair, whether the pair were twins or non-twins, whether the participant was the

older or younger of the pair, etc.). Age, birth order, and difference in age between siblings were

weakly related to some perfectionistic tendencies.

Discussion

The purpose of this study was to investigate whether two characteristics of sibling

relationships, closeness and similarity, are related to the level of perfectionistic tendencies an

individual demonstrates. The original hypothesis that participants with high levels of both

similarity and closeness would report higher scores on the Perfectionism Inventory was not

supported, both when the entire sample was considered and when the responses of twins and

non-twins were analyzed separately. However, when similarity and closeness were considered

independently, data analysis revealed that within the entire sample, similarity to one's

closest-in-age sibling is very weakly linked to higher levels of Conscientious Perfectionism and

Organization. These findings provide modest support for the notion that similarity is linked to a person's level of perfectionistic tendencies.

Within the twin and non-twin groups, a different pattern of correlations between Similarity or Closeness and Total PI or PI subscale scores became apparent. In some respects, the fact that a complex array of results emerged is not surprising, given Noller et al.'s (2008) finding that twins and non-twin siblings of different ages tend to show unique patterns of reacting to situations of competition or social comparison. For non-twins, the only significant relationship between these variables was a weak correlation between Similarity and Rumination. For the twin population, however, there were several significant (moderate to strong) relationships between Similarity or Closeness and Total PI/PI subscales. When the twin group was broken down (this was exploratory, as these groups were quite small), it became apparent that these correlations were mostly present in the identical twin sample, and less so for fraternal twins. These findings suggest that similarity and closeness levels are related to levels of perfectionism, especially in twin relationships. The twin group's reports are more consistent with the original line of thinking that similarity and closeness are linked to perfectionistic tendencies.

As was expected, for the twin sample higher levels of similarity were generally related to higher levels of several perfectionistic tendencies (with the exception of High Standards for Others, which was negatively correlated with Similarity), as were higher levels of closeness. Therefore, these variables appear to play a strong role for twins. Although twins may not have higher levels of perfectionism than non-twins, it seems that when twins have high levels of similarity and/or closeness, they are more likely to be perfectionistic than when high levels of these variables are present in a non-twin sibling pair.

Interpreted in relation to the SEM model, it is possible that siblings who are very similar share more interests, including those of high self-relevance. As a result, they may have more experiences of being compared to their siblings in areas that are important to their self-concepts, which would suggest greater need for self-evaluation maintenance strategies. Under these circumstances, the higher levels of certain perfectionistic tendencies seen in individuals who are very similar to their closest-in-age siblings (particularly for twins) might be a manifestation of their attempts to "improve their performance in relation to the other."

In cases where Closeness was related to Total PI or other perfectionistic tendencies, it is possible that this finding might be an effect of what Tesser (1980) noted when developing the SEM Model—that the closer the relationship, the more likely a comparison is to impact a person's self-evaluation. In cases where siblings are very close, they may feel a greater need to consistently manage their self-evaluations, which shows up as various perfectionistic tendencies (depending on the sibling type).

Having high levels of both similarity *and* closeness was not necessary for or predictive of high levels of perfectionism or perfectionistic tendencies for any sibling type. Interesting to note was that only for the twin groups did Closeness have any relation to Total PI or the various perfectionistic tendencies. Also surprising was the finding that, although both Similarity and Closeness were important variables for identical and fraternal twins, they were related to higher levels of different perfectionistic tendencies for each group. For identical twin participants, the more similar or emotionally close they were to their sibling, the higher their scores were on several different perfectionistic tendencies (Organization, Concern over Mistakes, Rumination, Self-Evaluative Perfectionism, and Conscientious Perfectionism), as well as overall perfectionism (Total PI), yet for fraternal twins, these variables were more strongly related to

Parental Pressure. Thus, it appears that identical and fraternal twins are likely impacted differently by the presence of similarity and closeness in their sibling relationships.

Also interesting was the moderate negative correlation found between Similarity and High Standards for Others that appeared for identical twin participants, as this was the only significant negative correlation found between Similarity and any other variable. This means that the more similar an individual is to his or her identical twin, the lower his or her standards for others. It is possible that growing up with and identical twin who is quite similar and close teaches individuals to be more understanding and accepting of others, encouraging them not to hold others to unrealistic standards.

Similarity and Closeness Levels

Also supported were Loehlin and Nichols' (1976) and Watzlawik's (2009) findings that twins tend not to deidentify, and therefore, are usually quite similar. This appears to be most true for identical twins, as the fraternal twins in this sample did not report higher levels of similarity than ordinary brothers and sisters. This finding suggests that when it comes to similarity, fraternal twins might consider themselves much like ordinary siblings, yet when it comes to closeness, they consider themselves as close as identical twins do. As Bank and Kahn (2003) noted, twins are particularly likely to have high access to one another, which supports the notion that high access might be related to higher levels of closeness. Research from social psychology (e.g., Blass & Schwarcz, 1982; Kahn & McGaughey, 1977) would also seem to support this, as studies have shown that when two individuals have more exposure to and share space with one another, they are more likely to like one another.

Higher levels of similarity between identical twins might be related to greater genetic similarity, as well as a response to society's expectation that identical twins should be very

similar. Twins might not feel the need to deidentify as strongly as other types of siblings, perhaps because they are not expected to do so. Fraternal twins, particularly if they are of the opposite sex, probably do not experience as much pressure to be similar as identical twins do, and they do not share as much of their DNA. Ordinary brothers and sisters share even less of their genetic makeup and are generally not expected to be identical, and therefore, they have the lowest levels of similarity with their siblings.

Difference in Age

Contrary to what was expected, the finding that Difference in Age between siblings is positively correlated with Total PI scores, as well as several areas of perfectionism, suggests that the further apart in age two siblings are, the more likely they are to be perfectionistic. When twins were removed from the analysis involving Difference in Age and other variables, Parental Pressure, Similarity, and Closeness were no longer significantly related to Difference in Age. This suggests that for these three variables, the large twin population (whose difference in age is 0) might have artificially swayed the data. Notably, once data from the twin participants were removed, the correlations between Difference in Age and Concern Over Mistakes, Rumination, Self-Evaluative Perfectionism, and Total PI became stronger. This suggests that the age difference between non-twin siblings is an important factor in predicting likelihood that an individual is going to demonstrate higher levels of certain perfectionistic tendencies, as well as overall perfectionism.

This finding might be related to one or more characteristics of the sibling relationship that were not explored in this study. One possible factor is differential treatment from parents. When two siblings are further apart in age they tend to be at two different stages of childhood. Parents might treat children of different ages differently because of this (for example, older children

might have more privileges and more responsibilities than younger children), and children may perceive these differences as favoritism or highly unequal treatment. Ross and Milgram (1982) found, when siblings are not treated equally, there is an increased sense of rivalry and conflict in the sibling relationship, which can result in negative feelings between siblings (Bank & Kahn, 2003). When sibling relationships are characterized by this negative tone, individuals are generally more likely to react negatively to instances of competition and comparison (Noller et al., 2008). Thus, sibling comparisons may have more impact on these particular individuals and increase their need for self-evaluation maintenance strategies, which may show up in the form of perfectionistic tendencies.

In addition to differential treatment from parents, it is also possible that difference between siblings stand out more when siblings are far apart in age. As mentioned, when two siblings are far apart in age, they are likely to be at different stages of development. Therefore, their abilities are likely to be quite different as well, and this difference may be more apparent to both themselves and others than when siblings occupy similar developmental levels. When the differences between people and their siblings are more obvious, individuals may be motivated to make sure they come out on top of comparisons. For example, an adolescent would probably not be pleased to notice (or have others notice) that his much younger brother is better at soccer, while the younger brother may look up to much older sibling and strive to play as well as him. Thus, there may be something about the obviousness of differences between siblings who are far apart in age that motivates individuals to try to do well at things.

Feinberg and Hetherington's (2000) finding that the further apart two siblings are in age, the less similar they tend to be was not supported in the present study, which found no relationship between difference in age and level of similarity in non-twins. It is possible that this

is an effect of the type of sibling relationship that was explored in this study. The present study only looked at a small segment of the sibling relationship (an individual and his or her closest in age sibling), whereas other studies have generally looked at sibships that consisted of only two or three children. Thus, there was less control over the number of siblings participants of the current study had, and this might have impacted the results. Studies on birth order (e.g., Rowe & Plomin,1981; Sulloway, 1996) suggest that the number of children in a family, as well as their place in the birth order, impacts who children become. Therefore, it is possible that different patterns might emerge if the entire sibling relationship constellation was considered.

Age

The finding that age is related to Total PI, several subscales on the PI, and Conscientious Perfectionism calls into question whether perfectionism levels remain stable as individuals age. It is possible that as people get older, their scores in these particular domains tend to decrease. These findings might also be the result of some sort of cohort effect—where various age groups demonstrate different levels of perfectionism due to the varying social times in which they lived. The first possibility is more in line with Maia et al.'s (2011) and Rice and Aldea's (2006) studies, which found that levels of perfectionism decreased with time. It is possible that as individuals age, they start to worry less about how they are viewed by others or how well they perform on tasks. Robins, Trzesniewski, Tracy, Gosling, and Potter's (2002) finding that self-esteem levels gradually increase during adulthood (with the exception of a sharp decrease in old age) offers some insight as to why perfectionism might also decrease with age. If people generally have more self-confidence as they age, they may also not be as concerned about how others view them and feel less need to be perfectionistic.

Birth Order

Birth order was also found to be negatively related to Parental Pressure and Striving for Excellence, and first-borns reported higher levels of Parental Pressure than second and third-borns. These findings suggest that first-borns seem to feel the greatest amount of pressure from parents, and that the further along an individual is in the birth order, the lower his or her sense of pressure from parents. It is possible that because parents are generally new at raising children when they have their first child, they may have the highest expectations for them. In turn, they become more lenient or have lower expectations for the children who follow.

The finding that Striving for Excellence also decreases as position in the birth order increases suggests that the later an individual is born in the sibling line-up, the lower his/her level of Striving for Excellence. This finding may be related to the previous finding, that later-borns tend to experience less pressure from parents. Perhaps the increased parental pressure that earlier born children feel leads to a greater sense that they need to strive for excellence, whereas later-born children (who do not feel as much pressure from parents) may not feel as compelled to perform at a high level.

Sibling Pair Types

In regard to sibling pairs, the only sibling pair group that differed in closeness or similarity were the female participants with sisters, as they generally rated themselves higher in both similarity and closeness than female participants with brothers and male participants with sisters (opposite sex pairs). This finding was consistent with past research (e.g., Buhrmester & Furman, 1990) that has found sisters report the highest levels of closeness.

Finally, in line with the original observations that contributed to the development of this dissertation, female twin pairs were found to have significantly higher levels of Need for

Approval than other sex/sibling combinations (as a group). This finding suggests that female twins might have a tendency to behave in ways that gain approval from others. It is possible that this greater need is related to some factor unique to being a female twin, or it may also be related to the fact that twins are often compared to one another (they may feel a greater need to gain others' approval because they are frequently exposed to judgment from others). As there were not enough male twin pairs in this study to compare to the female twin sample, it is unknown whether the responses of male twins would result in similar findings.

Conclusion

Overall, the findings of this study suggest that the levels of Similarity and Closeness in sibling relationships are related to levels of perfectionistic tendencies that an individual demonstrates. This appears especially true for twins. Although both Similarity and Closeness were related to perfectionistic tendencies in various situations, the relationship between these variables were different for each sibling type, indicating that sibling types are likely impacted differently by similarity and closeness within their sibling relationships. These findings provide some support for the notion that when levels of Similarity or Closeness are high in sibling relationships, individuals are more likely to demonstrate higher levels of self-evaluation maintenance strategies in the form of perfectionisitc tendencies. However, future research is needed to determine what factors may be influencing this link.

Limitations

There were several limitations to this study. For one, participants were asked to recall details about their relationship with their sibling from early to middle childhood. It is possible that some participants did not accurately recall this information, particularly if a lot of time has passed since the their childhood years. According to Whitehead (2009), early memories of

childhood are often revised versions of an actual event or experience. Thus, in addition to simply

forgetting, memories may become distorted or modified by factors such as the telling of family

stories, photographs, or other life events. The nature of the sibling relationship might change

over time, also making it more difficult to recall how things were during that one period.

The study also did not take into consideration all characteristics of the sibling

configuration, such as degree of relatedness (e.g., whether they are biological, half, or adopted

siblings), the total number of children in a family, or the spacing between all siblings. These

factors could also potentially play a role in the findings.

The fact that the PI asks about perfectionistic tendencies in a broad sense might also be

another limitation to this study. Given the findings of researchers like Mitchelson and Burns

(1998), Stoeber and Stoeber (2009), and Saboonchi and Lundh (1999), who all concluded

contextual factors play a role in levels of perfectionism, the PI might not adequately measure

variations in perfectionism across contexts. Thus, depending on how participants interpreted the

items on the PI, some participants may actually demonstrate higher or lower levels of

perfectionism in certain contexts that were not captured in the present study. Because

participants were asked to reflect back on their childhood, it is also possible that they

inaccurately recalled their level of perfectionism during that period of life (for example, they

might have been influenced by how they would respond to the question for themselves in present

day). Additionally, a person's level of perfectionism might impact how they remember things, as

well as what factors they remember, again influencing their responses on the questionnaires.

The method used to recruit participants might also represent another limitation.

Individuals asked to participate in the study were those approached by the primary examiner and

her twin sister. It is possible that this could lead to some sort of undetected bias in who is

approached and asked to participate, as well as who responded in the affirmative or the negative. Participants were also from two specific places, which limits the degree of generalizability to larger populations.

Future Directions

Reflecting back on the study, it would have also been helpful to have asked participants about how much they were compared to their siblings by others and themselves, as well the degree of competition and sibling rivalry between them. These variables might have provided greater insight into any connections between sibling relationships and the presence of perfectionism. Future research could explore these variables, as well as other variables related to the nature of sibling relationships. Since the present study only considered participants' responses in relation to their closest-in-age sibling, a more in-depth analysis of one's relationships with all of his or her siblings might also shed greater light on the complex interactions that appear to exist between the nature of sibling relationships and perfectionistic tendencies If possible, it would probably be beneficial to use child participants to avoid those limitations associated with asking adult participants to recall memories from childhood. Parental reports of when and to what degree their children developed perfectionistic tendencies might also be useful to compare to participants' self-reports, as parents may have a different perspective on these factors than participants.

Future researchers might consider studying whether perfectionism does in fact demonstrate any of the three types of stability mentioned by Santor et al. (1997), as it was not clear from this study why age was negatively related to some perfectionistic tendencies. A study specifically looking at perfectionism and self-evaluation maintenance might also provide greater insight into whether there is truly a link between these two concepts. Finding a way to look more

closely at how interpretations of comparison/competition situations impact individuals' reactions

to the situation (as well as the factors that influence whether these situations are interpreted in a

negative, neutral, or positive way) might also help clarify a possible link between these variables.

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Appendix A

Informed Consent

This study looks at the connection between personal characteristics and the sibling relationship. You may take part in the study if you are over the age of 18 and lived with a sibling for most or all of your childhood.

You will be asked to answer a series of questions. It should take less than 30 minutes to complete them all. Please be as honest as possible. You may leave any question blank, but please answer as many as you can. You may exit the study at any time.

This study has been approved by Antioch University New England. There are no risks involved in taking part. Your answers will remain confidential and will not be connected with your email address or any other identifying information.

If you complete the study, you will be eligible to enter to win one of two $25 gift cards to Amazon.com. You can also sign up to receive a summary of the results.

If you have any questions about the study, you may contact Jennifer Mayo at (603) 283-2183 or via email at jmayo@antioch.edu. If you have any questions about your rights as a research participant, you may contact Dr. Kevin P. Lyness, Chair of the Antioch University New England Human Research Committee, (603) 283-2149.

By clicking "Continue," you agree that you have read and agree to these terms. If you do not agree, you may exit the study.

Thank you for your participation.

Jennifer Mayo
Doctoral Candidate
Clinical Psychology
Antioch University New England

Appendix B

Sibling Similarity Scale

Please rate the following how you perceived yourself in relation to the sibling with whom you are closest in age. Responses should be based on how similar you *were* during *your* childhood (when *you* were under 12).

	Not Very Much Alike		Somewhat Alike		Very Much Alike
How much *were* you and your sibling alike?	1	2	3	4	5

Please rate how similar you *were* in the following domains.

Appearance	1	2	3	4	5
Values and beliefs	1	2	3	4	5
Interests	1	2	3	4	5
Personality	1	2	3	4	5
Intelligence	1	2	3	4	5
Behavior	1	2	3	4	5
Talent	1	2	3	4	5
Academic Achievement	1	2	3	4	5
Health	1	2	3	4	5

Appendix C

Table 1

One-way ANOVA Comparing Effect of Sibling Type on PI and PI Subscale Scores

	Non-Twins (*n* = 134)	Twins (*n* = 42)		*df*	F	*p*
	M (SD)	*M (SD)*				
Excellence	3.38 (.89)	3.40 (.93)	Between Groups	1	.025	.875
			Within Groups	172		
Need for Approval	3.32 (.82)	3.59 (.76)	Between Groups	1	.348	.064
			Within Groups	172		
Standards for Others	3.52 (.72)	3.50 (.74)	Between Groups	1	.033	.856
			Within Groups	172		
Organization	3.46 (.97)	3.55 (1.01)	Between Groups	1	.276	.600
			Within Groups	172		
Planfulness	3.77 (.88)	3.89 (.73)	Between Groups	1	.603	.438
			Within Groups	171		
Concern over Mistakes	2.83 (.96)	2.82 (.87)	Between Groups	1	.003	.960
			Within Groups	172		
Parental Pressure	2.95 (1.15)	2.78 (1.13)	Between Groups	1	.713	.400
			Within Groups	172		
Rumination	3.24 (.94)	3.26 (.95)	Between Groups	1	.014	.907
			Within Groups	172		
Self-Eval. Perfectionism	12.35 (3.28)	12.46 (2.76)	Between Groups	1	.037	.848
			Within Groups	172		
Conscientious Perfectionism	14.12 (2.65)	14.43 (2.18)	Between Groups	1	.292	.589
			Within Groups	171		
Total PI	26.48 (5.07)	26.82 (4.47)	Between Groups	1	.148	.701
			Within Groups	171		

Table 2

One-way ANOVA Comparing Effect of Sibling Type on Sibling Similarity and Sibling Closeness

	Non-Twins (*n* = 134)	Twins (*n* = 43)		*df*	F	*p*
	M (SD)	*M (SD)*				
Similarity	2.73 (.84)	3.85 (.93)	Between Groups	1	47.381	.000
			Within Groups	164		
Closeness	20.83 (5.82)	28.28 (5.53)	Between Groups	1	46.887	.000
			Within Groups	160		