

Comparison and Competition in Sibling and Twin Relationships:  
A Self-Evaluation Maintenance Perspective

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Although the sibling relationship is not studied as frequently as other family relationships such as those of married couples and parents and children, there is no doubt that it is an important relationship with its own unique characteristics. In fact, over the years I have come to believe that study of the sibling relationship has a unique contribution to make to our understanding of family relationships as a whole. Researchers had tended to “treat the family as a monolithic unit” (Pike, Manke, Reiss, & Plomin, 2000, p. 96), and focus on variables related to the family as a whole, without differentiating the varied experiences of siblings in the same family. As Dunn (2000, p. 247) notes:

“The message is not that family influence is unimportant, but that we need to investigate those experiences that are specific to each child within the family”.

In terms of the unique characteristics of the sibling relationship, first, for most people, it is the longest relationship they will ever have, with around 80 per cent of the population in western countries having at least one sibling (Dunn, 2000). In addition, it is an intense relationship with most siblings living together over an extended period, interacting on a daily basis and competing for finite resources in terms of both material goods and attention from parents (Dunn, 2000; McHale & Crouter, 1996; Noller, 2005). This competitiveness is generally referred to as sibling rivalry and can evoke extremes of emotion in siblings (Bedford & Volling, 2004; Dunn, 2000).

Dunn (2000) comments on the way that the sibling relationship, because of its intensity, can affect the emotional well-being of individual siblings: “that emotional intensity, and the intimacy of the relationship, the familiarity of children with each other, and the significance of sharing parents mean that the relationship has

considerable potential for affecting children's wellbeing" (p.244). Other researchers such as Dunn, Deater-Deckard, Pickering et al., (1999) have also commented on the importance of the sibling relationship, noting that differences in the quality of the sibling relationship in childhood tend to be related to children's concurrent and later adjustment.

In other work, Patterson and colleagues have shown the ways in which children's aggressive behavior can be shaped by the reinforcement provided by the siblings who fight back, tease and work at escalating conflict (Bank, Patterson & Reid, 1996; Patterson, 1984). Patterson (1984) goes so far as to title one of his papers "Siblings: Fellow travellers in coercive family processes". According to Patterson (1986) the negative aspect of this relationship dynamic has the potential to become, over time, a vicious cycle in which siblings reinforce each other's coercive and aggressive behavior in such a way that the coercive behaviour can escalate out of control.

On the other hand, it is important to remember that the sibling relationship can also be the context for learning cooperative and prosocial behavior (Dunn & Munn, 1986). Although parents tend to be involved in childhood in helping children develop cooperative relationships with their siblings (Sroufe, 1996; Tronick, 1989), by adolescence, siblings themselves can regulate the amount of time they spend with siblings, and may often choose to spend more of their free time with peers.

Research on sibling relationships has shown that these relationships are highly variable, with sometimes dramatic differences between them (Boer & Dunn, 1990; Brody, 1996). For example, some sibling relationships are continually hostile and aggressive, whereas others are affectionate, supportive and companionable, at least most of the time (Dunn, 2000; Kaplan, Ade-Ridder & Hennon, 1991). It is also likely

that many are sometimes hostile and sometimes affectionate and supportive. For example, in our study of young people going through the separation or divorce of their parents (Sheehan, Darlington, Noller & Feeney, 2005) we found evidence of relationships that were high in both warmth and conflict, the kinds of relationships that McGuire, McHale and Updegraff (1996) labelled as affect intense. This affect intensity was related to the older sibling's concern for their younger sibling at this time of family crisis, and younger children's mixed feelings about being 'parented' by their older sibling.

An important aspect of the relationship between siblings is the tendency for comparison and competition between them. These comparisons may be made by parents, other family members, teachers or friends and may be about physical characteristics such as height, weight, physique and attractiveness, skills and abilities in areas such as academics, sport, music, or art, or in terms of personality characteristics such as extraversion, aggressiveness or friendliness. Given this competitive environment, siblings are likely both to compare themselves to each other and to have strong emotional reactions to comparisons made by others.

The exacerbated emotional responses evoked in siblings by comparison and competition have been attributed to certain distinguishable features of their relationship (Noller, 2005). The non-volitional nature of the relationship means that sibling comparisons are often unavoidable (Wheeler, & Miyake, 1992). Also, the fact that sibling comparisons begin in infancy (Dunn, 1988, 1998, 2000) and usually continue throughout the life course (Cicirelli, 1996) means that self-schemata based on these comparisons start to form very early in life. Over the decades, the information processed through these filters is consistently compounded (Markus, 1977) by one's self-evaluations (Tesser, 1988). In time, such self-evaluative

processes become automatic, the most powerful and pervasive kind of cognitive processing (Stapel, Koomen, & Ruys, 2002). With automaticity comes an implicit effect on self-esteem that is, in turn, associated with psychosocial adjustment (Koole, Dijksterhuis, & Knippenberg, 2001).

Tesser (1980; 1988) argues that in situations of comparison and competition, individuals tend to behave in ways that protect their self-evaluations. According to Tesser's Self Evaluation Maintenance Model (SEM), siblings' reactions to comparison and competition depend on their performance (better or worse), the closeness of their relationship with their competitor and the relevance to their self-concept of the particular aspect of their lives on which they are being compared. For example, siblings would be expected to have weaker positive reactions and stronger negative reactions to comparison and competition when they are outperformed by their sibling on an activity of high relevance to themselves and low relevance to their sibling. We would also expect that emotional reactions would be stronger when competing against a sibling than against a friend. Two decades of research have provided strong support for the Self Evaluation Maintenance Model (Tesser, 1980, 1988; Lockwood, Dolderman, Sadler & Gerchak, 2004; Pilkington & Smith, 2000).

Social comparisons made by siblings are often the manifestation of perceptions of parental favouritism, a major cause of sibling jealousy (Dunn, 2000). These comparisons impinge not only on the self-evaluations siblings make, but also on the quality of their relationship (Noller, 2005; Sheehan, 2000). Being outperformed by a close other threatens one's self-evaluation, thereby evoking defensive attributional strategies (Alicke, Loschiavo, Zerbst & Zhang, 1997; Pyszczynski, Greenberg & Laprelle, 1985). Since this threat increases with the closeness of the relationship, so too do the negative SEM reactions to such threats (Tesser, 1988).

Tesser (1980) used siblings as participants in one of his early studies based on the Self Evaluation Maintenance model, although the variables were operationalized differently from the way they were in the series of studies to be reported here. He assessed closeness of the relationship in terms of the age difference between siblings, and their perceived similarity as a measure of their identification with one another. Performance was assessed with a global measure, and identification was used as the dependent variable. In these studies, males' identification with their sibling decreased with closeness when they were outperformed. Friction between the siblings increased with closeness when the respondent was outperformed, especially if the younger sibling outperformed the older sibling.

In our studies, as we will see, we had siblings provide retrospective reports of situations of comparison and competition. These situations were varied in terms of the closeness of the relationship (sibling or friend), performance (better or worse) and the relevance of the activity to their self-concept, because Tesser argued that reactions to situations involving comparison and competition depend on these variables. We carried out this research with samples of both siblings and twins, and using both adolescent and young adult samples. All samples involved same-sex pairs of siblings or twins because we thought that competition and comparison would be more salient for same-sex pairs.

The SEM model focuses on two processes that are proposed as the means by which individuals achieve, maintain and even bolster positive self-evaluations: comparison and reflection. The process of comparison is more likely to occur when evaluating one's performance against that of a close other (Pilkington & Smith, 2000; Tesser & Collins, 1988) and would take the form of "I am better on this activity than he/she is", or "He/she is better at this activity than I am".

The reflection process refers to the individual's self-evaluation being maintained or strengthened by association with the accomplishments of a close other (Cialdini et al., 1976). Reactions in this situation would take the form of "I am proud that my sister/brother is so good at that activity". Thus, the SEM model differs from a simple social comparison perspective by predicting the possibility of the reflection process, which becomes more important when self-relevance is low, because the better performance of a close other provides the potential for self-enhancement (Tesser et al., 1988).

One problem with the original SEM model was the lack of a component that took into account an individual's investment in the relationship with the close other, or the impact that a negative or positive comparison might have on the other person or the relationship. By arguing that people seek to protect not only their own self-evaluations but also those of close others, the extended SEM model (Beach & Tesser, 1993; Beach, Tesser, Fincham, Jones et al., 1998) emphasises the role of empathy in self-evaluation processes. Thus, individuals need not necessarily feel negative when they perform worse than their close other, or positive when they perform better. If the activity on which they outperform their close other is of low relevance to the self and high relevance to the partner, they may even feel bad about themselves and empathic towards the close other because they realize how important success in the activity is to him or her. In this situation, Beach and Tesser (1993) suggest that individuals can bask in the reflected glory of close others and show empathy towards them (Beach, et al., 1996; Pilkington, Tesser, & Stephens, 1991). Hence, we would expect that siblings would have more positive and less negative reactions when they are outperformed on an activity of high relevance to the sibling and of low relevance to the self. For example, if one sibling was particularly good at music and the other at

sport, they could each bask in the reflected glory of the other in the area that is of low relevance to themselves. The situation is likely to be more difficult, if like the Williams sisters (USA tennis) or the Waugh twins (Australian cricket) they not only both excel at sport, but excel at the same sport

The SEM model also focuses on the possibility that close others, whether siblings or married couples, develop a performance ecology in which each member of the pair assumes particular roles or niches. This issue is relevant to the aspect of the SEM model known ‘continuing the activity’. Mendolia, Beach and Tesser (1996) showed that responsiveness to the self-evaluation needs of a close other versus one’s own needs affected the interactions of married couples. Being responsive to the partner’s needs was associated with more positive interaction, whereas responsiveness to one’s own needs was associated with more negative interaction.

Beach, Tesser, Mendolia, Anderson et al. (1996) argue, again in the context of married couples, that in order to work well together, partners need to focus on unique strengths and capabilities relevant to the partner, and to develop performance niches or a performance ecology. For example, in today’s society where traditional gender roles are less relevant, one partner may do the family accounting and the other may focus on meal planning and food preparation. These authors note that

“Any theory of ‘teamwork’, however, should make the prediction that a well-differentiated and complementary set of performance niches would be facilitative of coordinated and positive interaction” (p.380).

In fact, it could be argued that traditional roles provided these niches.

The studies to be reported here involve four samples of same-sex sibling pairs: adolescent siblings and twins, and young adult siblings and twins. The aims of this series of studies were to assess the reactions to comparison and competition of each

group of sibling pairs in terms of the variables of the SEM model (performance, closeness and relevance), to assess the effects of birth order on these reactions, and to explore their implications for psychological adjustment.

Data for the SEM comparisons were collected retrospectively. Each member of the sibling pair was asked to describe eight situations involving competition or comparison. Four of the situations were to involve being compared with friends and four with siblings; in each set of four, two situations were to involve their performance being better than their sibling or friend and two were to involve their performance being worse. In addition, in each pair of situations, one was to involve an activity of high relevance to the self and low relevance to the competitor, and the other was to involve a situation of low relevance to the self and high relevance to the partner. Participants then recorded how they had felt about the competitor in terms of positivity and negativity and rated the likelihood that they would downplay the significance of their performance on that activity, and the likelihood that they would continue participating in that activity.

These four variables are all central to the SEM model. The first two assess the individual's emotional reactions to the situations of comparison and competition in terms of their positivity and negativity. We expected that individuals would be more positive and less negative when they outperformed their close other (sibling or twin) in an activity of high relevance to the self and low relevance to the partner, and less positive and more negative if they were outperformed by their close other in an activity of high relevance to the self and low relevance to the partner. We also expected that siblings would be less positive and more negative when outperformed by their sibling than when outperformed by their friend. In line with Tesser's (1980)

finding, we also expected stronger negative reactions when older siblings were outperformed by younger siblings, at least for nontwin siblings.

Downplaying the significance of one's performance involves seeing that performance as unimportant. Downplaying success would involve acting as though the good performance was a lucky fluke and not dependent on one's skill or ability. A sibling might be expected to downplay success when they outperformed their sibling on an activity of high relevance to that sibling, and thus protect their sibling's self-evaluation. Downplaying failure would involve acting as though one's failure was unimportant. It is also interesting that younger twins seem to find it easier to bask in the reflected glory of the older twin.

A sibling might be expected to downplay their failure on a task of high relevance to him or herself and thus protect their own self-evaluation, perhaps attributing their failure to some external factor such as the weather, or to some internal unstable factor such as tiredness or ill health. With regard to the measure of continuing the activity, we expected that those who were outperformed by their close other on an activity of high self-relevance would be less likely to continue engaging in the activity than those who outperformed their sibling on an activity of high self-relevance.

We were also interested in whether the quality of the relationship between the siblings would impact their reactions to competition and comparison. Because social comparisons can have serious implications for emotional wellbeing (Lyubomirsky & Lee, 1997), we also tested the relations between emotional reactions to the comparison situation and psychological adjustment. Using the scales of the Sibling Relationship Questionnaire (Furman & Buhrmester, 1985) we also tested whether the

quality of the sibling relationship mediated this association between emotional reactions and psychological adjustment.

### *Results for Adolescent Nontwin Siblings*

#### *Emotional Reactions*

When outperformed on an activity of high personal relevance, siblings reported more positive reactions when competing with their sibling than when competing with their friend, although the SEM model would predict less positive reactions when outperformed by their sibling. Siblings also reported significantly more negative reactions when competing on tasks of high self-relevance than on tasks of low self-relevance. Thus when self-evaluation was threatened because of being outperformed on a highly self-relevant task, siblings responded more negatively as the negative comparison process came into play. On tasks of low self-relevance, however, the reflection process seems to have come into play and their reactions were less negative. These findings are in line with the SEM model.

Birth order also affected reactions to being outperformed by one's sibling. Older siblings reported more positive and less negative reactions when outperformed by their younger sibling on low relevance than high relevance activities. When outperformed by their younger siblings on high relevance tasks, older siblings were less positive and more negative than were younger siblings outperformed by their older siblings on such tasks. Younger siblings reported more negative reactions to being outperformed by their older sibling on tasks of low personal relevance rather than on tasks of high personal relevance. These findings suggest that younger siblings cope better with being outperformed by their sibling than do older siblings.

#### *Downplaying the Significance of One's Performance*

Siblings reported being more likely to downplay their success on tasks of low self-relevance (and hence of high relevance to their sibling) than tasks of high self-relevance. When competing on activities high in self-relevance, siblings were more likely to downplay the significance of their failure than to downplay the significance of their success when they performed better. This finding is in line with the SEM model, with siblings preserving their positive self-evaluations by downplaying failure and by playing up the importance of their success on self-defining tasks.

In terms of birth order, whereas older siblings were more likely to downplay the significance of their failure when outperformed by their younger sibling, irrespective of the relevance of the task, younger siblings tended to play down the significance of their success on tasks of high relevance to the older sibling.

#### *Likelihood of Continuing the Activity*

When siblings performed better, they reported being more likely to continue the activity, if it was of high personal relevance. It would be expected that siblings would continue activities that helped maintain a positive self-evaluation, and discontinue activities likely to have a negative impact on their self-evaluations. Given that there were no effects related to being outperformed, however, it seems that winning has a stronger effect on deciding to continue an activity than does losing. It is also interesting that there were no effects for closeness, suggesting that outperforming siblings or friends has a similar impact on the decision to continue an activity. With regard to birth order, older siblings were more likely to continue the activity than younger siblings when the activity was highly self-relevant.

#### *Sibling Relationship Quality*

When siblings performed worse than their sibling, they reported more positive reactions when their relationships were higher in warmth and lower in conflict and

more negative reactions when the relationship was lower in warmth. When they performed better than their sibling, their reactions were more positive when the relationship was lower in conflict and higher in warmth, and more negative when the relationship was characterized by higher levels of conflict. Warmth and perceived maternal and paternal partiality were correlated with self-esteem, but there was no evidence that sibling relationship quality mediated the relations between emotional reactions and self esteem. Thus, the quality of the relationship seems to have an important impact on siblings' reactions to situations involving comparison and competition.

### *Results for Adolescent Twins*

#### *Emotional Reactions*

Self evaluation and the resulting emotional reactions were affected by relevance of the task and performance on the task, but not closeness of the competitor. Twins showed self-enhancing reactions as predicted by the SEM model, reporting stronger positive feelings when they performed better than their close other (i.e., their twin) on tasks of high self-relevance. In addition, the reporting twin reported feeling more positive and less negative about being outperformed when the task was not self-defining and to feel happy for their competitor's success on the task in this situation. Thus, they were able to bask in the reflected glory of their twin's successful performance. There was also evidence of self-protective reactions because twins, reported more negative feelings towards their siblings when outperformed on self-defining tasks where their self-concept was threatened.

Zygoty also affected the level of positive emotion experienced, with monozygotic twins reporting more positive reactions to situations of competition and comparison than dizygotic twins, irrespective of performance or relevance of the task.

Thus, although closeness did not interact with performance and relevance in the way defined by the model, monozygotic or identical twins, who are generally seen as closer than dizygotic or fraternal twins, tended to react more positively in these competitive situations, irrespective of performance or relevance. Perhaps monozygotic twins see their close relationship as buffering them against any negative effects that competition might have on their closeness.

In line with the findings for nontwin sibling relationships, younger twins reported more positive and less negative emotional reactions when they had been outperformed by their older twin on tasks of high personal relevance/low twin relevance than older twins who had been outperformed by their younger twin on such tasks. This finding suggests that even in twin relationships, where the siblings are essentially the same age, they seem to define themselves as younger or older. The younger twins seem to cope with their poorer performance by attributing the superior performance of their twin to their older age.

Younger twins reported more positive and less negative emotional reactions when outperformed by their twin on high personal relevance/low partner relevance tasks rather than when outperformed by their friend on similar tasks. Hence younger twins may find it easier to bask in the glory of their older twin's success due to the closeness of their relationship, whereas they may find it more damaging to their self evaluation to be outperformed by their friend. Older twins, on the other hand, reported more negative feelings when outperformed on tasks of high personal/low twin relevance by their younger twin rather than by their friend. Older twins seem to find it easier to be beaten by their friend of the same age, than by their twin who has been designated as younger.

Although these findings tended to apply across the sexes, we did find one sex difference for negative emotional reactions. Males (but not females) reported more negative reactions when competing with their twin, rather than with their friend, suggesting that male twins may be particularly competitive when engaging in activities with their twin, whether that twin is older or younger.

#### *Downplaying the Significance of One's Performance*

The tendency of twins to downplay the importance of their performance was affected by performance and relevance but not the interaction of these variables. Twins were more likely to downplay the significance of their performance if they performed worse rather than better than their twin, and if the activity was unimportant to them and hence important to their twin.

Birth order also affected the extent to which siblings played down the significance of their performance. Older twins were more likely than younger twins to downplay the significance of their poor performance (that is, their failure), irrespective of the relevance of the task or whether they were competing against their twin or their friend. As suggested earlier, downplaying their failure tends to protect their own self-evaluation, and older twins seem to act in self-protective ways regardless of type of activity or closeness of the competitor.

Younger twins were more likely to downplay the significance of their success when they performed better than their older twin on activities of high self-relevance and low twin relevance, rather than to play down their failure when they were outperformed by their twin on activities high in self-relevance and low in twin relevance.

#### *Likelihood of Continuing the Activity*

Twins were more likely to continue the activity if it was of high rather than low personal relevance, and if they performed better on the task, rather than worse. Older twins were more likely to continue the activity when it was of high self-relevance and low twin relevance, regardless of performance, than were younger twins. Thus older twins seem to maintain a position of power in the relationship, and continue their favoured activities, irrespective of the impact that might have on their younger sibling. Younger twins reported being more likely to continue the activity when they had performed better than their friend than when they had performed better than their twin.

#### *Twin Relationship Quality*

Emotional reactions to situations of competition and comparison were affected by the quality of the relationship between the twins. As for the nontwin siblings, those whose relationships were high in warmth and low in conflict reacted less negatively and more positively to competition and comparison.

In addition, the extent to which twins' reactions to competition and comparison were related to their self-esteem depended on the quality of their relationship. The self-esteem of those whose relationships were high in warmth and low in conflict was less likely to be affected by negative reactions to competition and comparison than was true for those whose relationships were low in warmth and high in conflict.

Zygoty also had an impact on the associations between emotional reactions, relationship quality and self-esteem. For monozygotic twins, the link between emotional reactions to being outperformed and self-esteem was largely mediated by the conflict in their relationship. For dizygotic twins, the link between emotional reactions to being outperformed by their twin and self-esteem was largely mediated

by the warmth in their relationship with their twin. Thus conflict in the relationship seems to be more salient for monozygotic twins, and warmth seems to be more salient for dizygotic twins, in terms of the impact of competition and comparison on their self-esteem.

### *Results for Young Adult Nontwin Sibling Sample*

#### *Emotional Reactions*

Positive reactions were affected by closeness, relevance, performance and sex, with the expected closeness by relevance by performance interaction predicted by the SEM model only occurring for females. On high relevance activities, females were more positive when they performed better than their sibling than when they performed worse than their sibling or friend. They were also more positive on high relevance activities when they performed better than their friend than when they performed better than their sibling.

The predicted three-way interaction was not found for negative emotions for either sex. Negative reactions were affected by closeness, with more negativity reported against a sibling than a friend, and by the interaction of performance and relevance. Participants were particularly negative when they performed worse on a high relevance activity than on a low relevance activity. These findings fit with the original SEM model with negative reactions being particularly strong when participants were outperformed by their sibling on a task of high personal relevance.

#### *Downplaying the Significance of One's Performance*

Participants were significantly more likely to downplay the importance of their performance on a low relevance than on a high relevance activity, whether they performed better or worse. Thus for these young adults, downplaying the importance of success or failure on an activity was restricted to low relevance activities that tend

to be more important to the sibling or friend than to the self. Downplaying success on such activities would suggest empathy for the sibling and concern for his or her self-evaluation needs. Downplaying failure, on the other hand, tends to suggest the need to bolster one's own self-evaluation.

#### *Likelihood of Continuing the Activity*

Older males were significantly more likely to continue the activity when they performed better than their friend as opposed to when they performed worse than their friend. However, when they competed against their sibling, their likelihood of continuing the activity was the same, regardless of whether they had performed better or worse. Again, we see evidence that being the older sibling seems to give a person more choice about whether to continue an activity.

#### *Relationship Quality*

The relation between emotional reactions and self-esteem was mediated by warmth and conflict in the sibling relationship, but not by parental partiality. In addition, the relation between emotional reactions and depression was mediated by warmth and conflict, but only the relation between negativity and depression indicated any mediation by parental partiality. Thus the quality of their relationship has important implications for the association between siblings' reactions to situations of competition and comparison and their psychological adjustment as assessed with both self esteem and depression. It is interesting to note that the levels of warmth and conflict were important predictors, but perceptions of parental favouritism were not. Sheehan and Noller (2002) found that parental favouritism had a negative impact on the disfavoured sibling in terms of their adjustment and their attachment security. In that study, we were not focusing directly, as here, on situations of comparison and competition.

### *Results for Young Adult Twins*

#### *Emotional Reactions*

The expected three-way interaction of closeness, relevance and performance was found for both positivity and negativity. When twins performed better against their twin, they were significantly more positive on a high relevance than a low relevance activity, whereas there was no such difference when they performed better against a friend. Also, when the activity was of high relevance, twins were significantly more positive when they performed better against their twin than when they performed better against their friend, whereas there was no such difference on low relevance activities. When twins performed worse against their twin, they were significantly more negative on a high than on a low relevance activity, while there was no such difference between high and low relevance activities when they performed worse against a friend. All of these findings are in line with the original SEM model and there is little indication of these young adult twins either having empathy for their twins when they outperformed them or basking in reflected glory when their twin outperformed them.

The only effect for birth order involved an interaction with attachment security. Older twins who were fearful in terms of their attachment style (negative perception of both self and others) were less positive than other attachment styles when outperformed by their younger twin on high but not low relevance activities.

#### *Downplaying the Importance of One's Performance*

Twins were significantly more likely to downplay the significance of their performance when they performed worse than when they performed better. This main effect for performance occurred irrespective of whether twins were competing

against their twin or friend, and regardless of whether the activity was of high or low relevance

#### *Likelihood of Continuing the Activity*

When twins performed worse against their twin, they were less likely to continue high relevance activities than low relevance activities. In contrast, when twins performed worse against their friend, there was no difference in the likelihood that they would continue the activity regardless of whether it was of high or low relevance. Thus twins were likely to give up activities in which they performed worse against their twin, but performance had no impact on their decision to continue competitive activities involving friends.

#### *Relationship Quality and Psychological Adjustment*

Regardless of whether they performed better or worse than their twin, twins with higher self-esteem tended to be more positive and less negative, whereas twins with lower self-esteem tended to be more negative and less positive. In addition, irrespective of whether they performed better or worse than their twin, more depressed twins were inclined to be more negative and less positive, while less depressed twins were inclined to be more positive and less negative. Thus twins who were lower in self-esteem and higher in depression responded more negatively to competitive situations, even when they performed better.

As with the nontwin siblings, we also tested whether the relation between emotional reactions and self-esteem was mediated by sibling relationship quality and found that warmth, conflict and parental partiality all mediated the relationship between emotional reactions and self-esteem. Results for depression were similar to those for self-esteem, with sibling warmth, conflict and parental partiality mediating the association between emotional reactions and depression. Here we see a similar

effect as for the young adult nontwin siblings, except that parental favouritism seems to be having an impact along with sibling warmth and conflict. It is difficult to understand why parental favouritism might be more of an issue for twins than for nontwin siblings in this young adult sample. Perhaps parental favouritism is harder for twins to deal with than for nontwins, because differences in parental behaviour cannot be accounted for by age or genetic differences, particularly for the monozygotic twin pairs.

### Discussion

In general, our findings provided support for the relevance of the Self Evaluation Maintenance Model for the same-sex sibling relationships of adolescents and young adults, although findings were not always fully consistent with the model. For example, adolescent siblings tended to be more positive when outperformed by their sibling than their friend, although the model would predict that they would be less positive when outperformed by their closer sibling. One possible explanation is that adolescents see their friend as closer than their sibling. Alternatively, it may be that they are working at preserving their relationship with their sibling, with whom they are living, rather than with their friend with whom they do not have to live.

Other evidence that they may be working at preserving their relationship with their sibling comes from the finding that they were more negative when they performed better than their sibling than their friend, perhaps because they were concerned about their superior performance disrupting their relationship with their sibling, in line with the extended SEM model (Beach & Tesser, 1993). Siblings were also more negative when outperformed on tasks of high self-relevance than on tasks of low self-relevance in line with the SEM model.

Siblings reported being more likely to downplay their success on tasks of high relevance to their sibling. On tasks high in self-relevance, on the other hand, they tended to downplay the significance of their failure rather than their success when they performed better. For young adults, downplaying was restricted to low relevance activities, and for young adult twins was restricted to when they performed worse.

### *Birth Order*

Birth order tended to play a part in reactions to competition and comparison, even to some extent for twins. In the adolescent sample, older siblings were more positive and less negative when they were outperformed on low relevance tasks than high relevance tasks. When older siblings were outperformed by their younger sibling on high relevance activities, however, they reacted more negatively than younger siblings did when they were outperformed by the older sibling. Although the more sanguine reactions of the younger siblings could be explained in terms of the age difference, the effect was similar for twins where the age difference would generally be in terms of a few minutes. It is also interesting that younger twins seemed to find it easier to bask in the reflected glory of the older twin. It is important to keep in mind that in his early study, Tesser (1980) found more friction between sibling dyads when the younger sibling outperformed the older sibling. Many years later and in a different culture this finding can still be replicated, at least for the adolescents.

The findings for adolescent twins suggest that even in twin relationships where they are essentially the same age, they seem to define themselves as older or younger. Younger twins may cope with their poorer performance by attributing the superior performance of their twin to their older age. In addition, as with sibling relationships, being outperformed by one's younger twin seems to be more damaging

to the older than the younger member of the dyad. For the young adult twins, it is interesting to note, it was only the older twins who were insecure in attachment who reacted negatively to being outperformed by their younger twin.

Given the finding that younger siblings were also less positive about outperforming their older sibling on activities of high relevance to that sibling, it seems likely that they perceive their superior performance as potentially damaging to the sibling bond and feel empathy with their older siblings in this context, in line with the extended SEM model (Beach & Tesser, 1993). This possibility is reinforced by the finding that younger siblings downplayed the significance of their success when they outperformed their older sibling on tasks of high relevance for the sibling, suggesting that younger siblings are somewhat protective of their older sibling in this type of context. It also suggests that the superiority of older sibling is taken for granted by both members of the sibling pair. Beck, Burnett and Vosper (2006) found in their studies that older siblings tended to be more dominant and younger siblings tended to be more prosocial and, presumably, less achievement-oriented.

#### *Niche-Building*

Winning seemed to have a stronger effect than losing on deciding to continue engaging in activities high in self-relevance. In addition, older siblings and twins were more likely than younger ones to continue engaging in activities high in self-relevance, as were older males. These findings suggests that older siblings have more power in the relationship than their younger siblings, and that younger siblings cede areas of activity to them, even when those areas are highly self-relevant. These younger siblings are likely to find other areas of activity that do not involve competition with their older sibling, in line with the niche-building or performance ecology aspect of the SEM model (Beach et al., 1996).

Young adult twins were less likely to continue a high relevance activity than a low relevance activity, if they performed worse against their twin. However, performance had no impact on activities with friends. Being outperformed by their twin is likely to have particularly negative effects on their self-evaluations, so the best thing to do is to cede those activities to the twin and find a new niche for themselves.

### *Sex*

There were few differences in our studies related to the sex of the sibling pair. Males but not females reported more negative reactions when competing with their twin rather than their friend, suggesting that male twin dyads may be particularly competitive with each other. This finding was unrelated to birth order.

In the young adult nontwin sibling sample, the expected three-way interaction of performance, closeness and relevance on positive reactions occurred only for females. Females were more positive when they performed better than their sibling than when they performed worse than their sibling or friend on high relevance activities. They were also more positive when they performed better than their friend than when they performed better than their sibling. This finding suggests empathy for the sibling rather than the friend when they outperform them and is in line with the extended SEM model (Beach & Tesser, 1993).

### *Zygoty*

In the twin samples, monozygotics tended to be more positive in situations of competition than were dizygotics, suggesting that the monozygotics see their close relationship with their twin as buffering them against any problems that might be created because of competition and comparison. Alternatively, it may be that because they are so similar genetically, situations of comparison are less salient.

### *Sibling Relationship Quality*

One of the most interesting aspects of our findings was the strong effect of sibling relationship quality on reactions to competition and comparison: When the relationship was high in warmth and low in conflict, the effects of negative performance on emotional reactions was less important. In addition, for both the adolescent and young adult samples, the self-esteem of those whose relationships were high in warmth and low in conflict was less likely to be affected by negative reactions to competition and comparison. Thus it seems that having a high quality sibling relationship has implications for one's reactions to competition and comparison as well as for one's psychological adjustment. There was also some evidence that psychological adjustment was associated with more negative reactions to competition, given that those with high self-esteem were more likely to react positively, irrespective of performance, and those who were depressed were more likely to react negatively, even when they performed better. This 'vicious cycle' illustrates the importance of sibling relationships to individuals' psychological adjustment.

#### *Limitations and Suggestions for Future Research*

This series of studies is limited in several ways. First, the situations described by the participants had all occurred in the past, and it is possible that emotional reactions to those situations had lessened over time. Also, there was no control on how long ago the situation occurred. This procedure probably meant that the situations used were ones that were highly salient to the sibling who reported them, but we may have been comparing situations that occurred very recently with others that occurred a long time (even years) ago.

It would be interesting to try to put sibling pairs into in vivo situations of comparison and competition and to have them report their emotional reactions as they

occurred. The problem would be to devise situations that would be highly salient and equally salient for all sibling pairs.

It would also be interesting, whether using retrospectively-reported situations or in vivo situations, to assess siblings' attributions processes directly. For example we do not really know whether younger siblings attribute the older sibling's superior performance to the age difference between them, although the data are in line with such a proposition.

It would also be important to compare the reactions of siblings and twins directly to see the extent of differences between them. At this point we have explored the different ways that their responses are affected by the variables of the SEM model, but need to compare the intensity of their reactions. It could also be important to compare the reactions of adolescents and young adults and explore developmental changes.

### *Conclusions*

The findings from this series of studies has provided an interesting insight into the relationships of siblings and twins in two age groups. The main focus has been on exploring their reactions to competition and comparison, a ubiquitous aspect of their daily lives. The findings have provided convincing support for both the SEM model and the extended SEM model. Other factors, however, such as birth order and the quality of the relationship between the siblings has also been shown to be important. More needs to be known about the attributions siblings make for their performance and the way that they react to success and failure in interactions with their sibling or twin. Focusing on the relationships of twins as well as siblings ahs provided important information about how these relationships work, particularly when self-evaluation in threatened.

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