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Parents' Social Comparisons of Siblings and Youth Problem Behavior: A Moderated Mediation Model

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Abstract

Parents compare their children to one another; those comparisons may have implications for the way mothers and fathers treat their children, as well as their children's behavior. Data were collected annually for three years with parents, firstborns, and secondborns from 385 families (Time 1 age: firstborns, 15.71, $SD = 1.07$, 52% female; secondborns, 13.18, $SD = 1.29$, 50% female). Parents' beliefs that one child was better behaved predicted differences in siblings' reports of parent-child conflict. Additionally, for siblings close in age, mothers' comparisons at Time 1 predicted youth's problem behavior at Time 3 through siblings' differential conflict with mothers. The results support and extend tenets from Social Comparison and Expectancy Value theories in regards to social comparison within families.

Keywords

siblings; parental differential treatment; adolescent problem behavior; parenting; conflict; social comparison

Introduction

From the earliest ages, siblings play an important role in shaping youth's socialization and development (Samek et al. 2015; Stocker et al. 2002). Although research on siblings is sparse in comparison to studies of other family processes (McHale et al. 2012), the literature shows that sibling influences are multifaceted and linked to larger family dynamics (Campione-Barr et al. 2015). In this article we examined a set of processes at the intersection of parent and sibling influences, namely links between mothers' and fathers' perceptions of differences in their children's conduct, or parents' social comparisons, and youth's problem behavior. In doing so, we assessed the potential mediating roles of differences between siblings in the frequency of their conflicts with mothers and with fathers (hereafter, differential conflict) and differences between siblings in mothers' and fathers' knowledge about siblings' daily lives (hereafter, differential knowledge). We also tested the moderating role of siblings' individual and dyadic characteristics, specifically gender constellation, age spacing, birth order, and gender.

The Intersection of Parent and Sibling Influences

Beyond siblings' direct influences in the context of their daily exchanges, siblings influence one another's development and adjustment indirectly by virtue of their impacts on the larger family system (Downey 2001; Scholte et al. 2007). Serving as targets of parental social comparisons is one such indirect influence. Parents may be reticent to acknowledge that they see one child in a more positive light than the other because they believe that they should strive for fairness and equality and they may think that comparisons are unfair (Haidt and Joseph 2004). Although avoiding sibling comparisons may be a western cultural ideal, Social Comparison Theory and empirical research suggest that social comparisons are common (Gibbons and Buunk 1999; Zell and Alicke 2009), including comparisons of siblings (Jensen and McHale 2015; Litt et al. 2015). Social comparisons, in turn, have implications for development and adjustment: they are central to the development of self-concept (Zell and Alicke 2009) and factor into individuals' judgments and choices regarding their investments in goals, interpersonal relationships, and daily activities (Dvash et al. 2010; Wu et al. 2012). Family contexts provide everyday opportunities for making social comparisons—particularly parents' comparisons of their children.

Implications of Parents' Comparisons of Siblings

In addition to Social Comparison Theory, we also drew on Expectancy Value Theory (Wigfield and Eccles 2000) in developing hypotheses about the role of parents' social comparisons in their children's adjustment. Research based on Expectancy Value Theory has shown that parents' beliefs and expectations about their children *as individuals*, in particular, their ideas about their children's academic capabilities, predict their children's academic performance and outcome. Between-family comparison studies show that, when parents have higher expectations for their children, their children go on to exhibit higher levels of achievement relative to children from other families (Bhanot and Jovanovic 2005; Tan 2017). Importantly, because parents' beliefs may derive in part from their children's behavior and characteristics (Yan and Ansari 2016), child characteristics must be taken into account in examining the role of parental beliefs in predicting youth outcomes.

Moving beyond parental beliefs regarding their *individual* children, Jensen and McHale (2015) examined within-family comparisons, namely, parents' beliefs about *differences between their two children's* academic competencies as predictors of differences between siblings' school grades over a three-year period in adolescence. Findings revealed that, controlling for average school grades in year 1, parents' ratings of differences between siblings' academic ability predicted differences between siblings' school grades the next year; differences between siblings' grades, however, did not predict parents' ratings of differences between their children's academic abilities.

More work is needed, however, to examine the role of parents' expectations and comparisons in relation with other outcomes that are important to adolescent-aged youth. Problem behavior is particularly important because it increases in frequency through adolescence and is linked with future development (Henry et al. 2012). Thus, the current study examined parents' perceptions of differences between their children's conduct as a predictor of youth problem behavior in adolescence.

We also expanded on prior work to explore potential processes through which parents' social comparisons may be linked to youth outcomes, focusing on parents' differential treatment. Differential treatment has been linked in prior studies to a range of youth adjustment outcomes, including both internalizing and externalizing problems (Jensen and Whiteman 2014; Scholte et al. 2007). For example, Scholte et al. (2007) found that youth who received less affection from their mother relative to a sibling, were more likely to engage in vandalism, violence, and theft because less favorable treatment compared to the sibling was damaging to their self-perceptions. Drawing on the literature we reasoned that, when parents believe that there are differences between their children, they may treat them accordingly, with implications for their children's adjustment.

Current research suggests that youth problem behavior is closely linked to both conflict with parents and parental knowledge (Fosco et al. 2012). Accordingly, in this study, we examined sibling differences in both parent-youth conflict and parental knowledge as possible mediators of links between mothers' and fathers' comparisons of siblings' conduct and youth problem behavior. Importantly, this process may be driven by both parents and youth. For example, a parent who sees one child as better behaved than the other may give that child the benefit of the doubt when potential discipline situations arise or may spend more time with that child and consequently know more about his or her daily life. Moreover, seeing themselves as subject to stricter discipline may give rise to negativity in youth and correspondingly greater conflict with parents and to secrecy about their behavior in an effort to avoid parental sanctions.

Both Social Comparison Theory (Dvash et al. 2010; Zell and Alicke 2009) and Expectancy Value Theory (Wigfield and Eccles 2000) suggest that those differences in conflict and knowledge, in turn, may lead to more problem behavior. From a Social Comparison perspective, such comparisons will be harmful to the self-concept of the sibling who experiences relatively more conflict with parents or less parental knowledge. From an Expectancy Value perspective, parents' communicate their beliefs about their children via their differential treatment and those become self-fulfilling prophecies in the form of (increasing) differences between siblings' behavior. To test these ideas we examined both parents' differential conflict and parents' differential knowledge of their children's daily experiences as potential mediators of the longitudinal link between parents' perceptions of differences in their children's conduct and youth problem behavior.

The link between parents' social comparisons and youth's problem behavior also may vary as a function of family context and sibling characteristics. Both Social Comparison Theory (Dvash et al. 2010; Zell and Alicke 2009) and prior research on parents' differential treatment (Meunier et al. 2012; Scholte et al. 2007) suggest that objective similarity between siblings may exacerbate the effects of social comparisons because similarity makes for more accurate and salient comparisons. Most commonly, research on sibling comparisons has focused on dyad gender constellation, suggesting that social comparisons are more salient for same-gender dyads (Jensen et al. 2013; Scholte et al. 2007). Although less commonly studied, age spacing also marks similarity. Close-in-age adolescent-aged siblings may be more similar, such as attending the same school and sharing a peer group, whereas siblings who are farther apart in age have less in common. Beyond similarity, past research on

parents' differential treatment also provides some evidence of birth order effects: Social comparisons may be more salient for younger siblings who are striving to achieve competencies that their older siblings, given their more advanced development, have already achieved (Jensen et al. 2015; Litt et al. 2015). Lastly, youth gender may play a role such that youth are more sensitive to the influences of their same gender parent (Maccoby, 1998).

To explore the possible roles of these structural factors, we tested sibling gender constellation, age spacing, birth order, and youth gender as potential moderators of the longitudinal links between parents' perceptions of differences in their children's conduct, their differential conflict and knowledge, and youth problem behavior. Additionally, these structural factors may work in concert. For example, a younger sibling may be more sensitive to comparisons with a same-gender sibling or one close in age. Thus, we also examined possible two-way combinations of these potential moderators. Because effects on siblings' outcomes may be based on either parents' social comparisons or their differential treatment, interaction effects were tested on paths leading toward and from each mediator.

Current Study and Hypotheses

The purpose of this study was to examine whether and how parents' comparisons of their two children's conduct predicted youth's problem behavior over a three-year period. Adolescent-aged youth were studied because problem behavior increases during this period and has important developmental implications (Henry et al. 2012). Based on the ideas that social comparisons between siblings may have implications for development (Jensen et al. 2015; Tan 2017), we predicted that, controlling for prior problem behaviors, youth who were perceived by their mother or father as being better behaved relative to their sibling would engage in less problem behavior two years later. We expected that this link would occur through the mediators of differential conflict and/or differential knowledge such that perceptions of better behavior would lead to more favorable parental treatment relative to the sibling, and in turn, lower levels of problem behavior. We explored whether these hypothesized linkages would be stronger for same gender dyads, those closer in age, for secondborns, and for boys in the case of fathers and girls in the case of mothers' comparisons and treatment. Finally, in addition to controlling for each dependent variable at the previous time point, we also controlled for factors shown in past research to be linked to sibling dynamics and youth problem behavior, including age, family size, and parents' education (Downey 2001; Martin et al. 2010).

Methods

Participants

The data came from a larger longitudinal study of family processes and youth development. The participants included mothers, fathers, firstborns, and secondborns from 385 families ($N = 770$ youth). The data were collected annually over three years (hereafter, T1, T2, and T3). Families included at least two children in the targeted age range who were no more than four years apart in age (M number of siblings per family = 2.56, $SD = .85$). The participating families resided in small cities, towns, and rural areas; similar to the ethnic background of the region (85% European American; US Census Bureau, 2000), families were almost

exclusively European American (> 99%). Moreover, reflecting the educational (> 80% of adults completed high school) and financial (median income = \$49,184, for married-couple families) backgrounds of the targeted population (U.S. Census Bureau, 2000), at T1, average education was 14.58 ($SD = 2.16$) for mothers and 14.55 ($SD = 2.39$) for fathers, and median family income was \$76,000 ($SD = \$38,109$). Although family income was higher than the median for the region, all participating families had two parents and in the majority of cases, both parents were employed. Recruitment was completed by sending home letters from schools in 17 school districts. Over 90% of families that responded and met the inclusion criteria participated in the study. At the first wave of data the sample consisted of 400 families, thus the waves used in the current study reflect a 94.5% retention rate. At T1, firstborns averaged 15.71 years of age ($SD = 1.07$), 16.65 ($SD = 1.02$) at T2, and 17.67 ($SD = 1.03$) at T3. At T1, secondborns averaged 13.18 years of age ($SD = 1.29$), 14.12 ($SD = 1.26$) at T2, and 15.13 ($SD = 1.25$) at T3. Sibling pairs were 2.53 years apart in age ($SD = .91$), on average, and were evenly distributed by gender (firstborns, 52% female; secondborns, 50% female) and dyad gender constellation: two sisters (24%), two brothers (26%), older sister/younger brother (24%), and older brother/younger sister (26%). At T1 mothers ($M = 41.08$, $SD = 4.14$) and fathers ($M = 43.17$, $SD = 4.89$) were in their early 40s and had on average completed some post-high school education (mothers, $M = 14.58$, $SD = 2.16$; fathers, $M = 14.55$, $SD = 2.39$). Annual family income averaged \$73,861 ($SD = \$38,109$).

Procedure

At each time point, interviewers conducted home interviews with each family member. Interviews for each family member were conducted separately and privately, lasting about one hour for youth and three hours for parents. In the following 2–3 week period, a set of seven nightly phone diary interviews were also conducted with parents and youth during which information on youth's daily experiences was collected. Phone calls lasted approximately 15 minutes for each family member. Information on parental knowledge was collected in the phone calls, and all other measures were collected in the home interviews. The home interviews began with informed consent (parents) and assent (youth) procedures, and depending on the year of the study, families received an honorarium of \$100 to \$200. The university's Institutional Review Board approved all procedures.

Measures

Parents' comparisons of siblings' conduct—Parents reported on the conduct of the two siblings at T1 using one item using the format of the Sibling Inventory of Differential Experience (Daniels and Plomin 1985). Mothers and fathers were each asked, "To what extent are (siblings' names) different when it comes to their conduct, such as whether they follow directions or conform to family rules? Would you say (firstborn) is a lot better behaved, (secondborn) is a lot better behaved, or are they somewhere in between?" Ratings were made on a 5-point scale: 1 (*secondborn a lot more*), 2 (*secondborn a little more*), 3 (*both the same*), 4 (*firstborn a little more*), 5 (*firstborn a lot more*). For the analyses, these ratings were centered at zero so that each youth received a score of -2 through $+2$ with a score of zero indicating the same conduct, negative values indicating that their sibling was

better behaved and positive values indicating that the youth was better behaved than the sibling. Reports from mothers and fathers were moderately correlated ($r = .64$).

Conflict with parents—To distinguish the effects of parents' differential conflict we controlled for individual levels of conflict as measured by youth's T1 ratings of the frequency of conflict they had with both their mother and their father in 12 different domains, including chores, school work, behavior, and appearance. The measure was adapted from Smetana (1988); given our focus on sibling processes and adolescence, two additional items were added, one regarding sibling dynamics and one regarding romantic relationships. All items were based on a 6-point scale ranging from 1 (*not at all*) to 6 (*several times a day*). Ratings of conflict were averaged to create a total score (firstborns, $\alpha = .81$; secondborns, $\alpha = .82$). Reports of conflict with mothers and fathers were highly correlated (firstborns, $r = .73$; secondborns, $r = .77$).

Differential conflict—At T1 and T2, first- and secondborns each rated the extent to which they differed from their sibling in conflict with their mother and with their father using the single conflict item from the Sibling Inventory of Differential Experience (Daniels and Plomin 1985). Youth were asked to respond to the question, "Who does your mother/father argue or fight with?" using a 5-point scale: 1 (*me a lot more*), 2 (*me a little more*), 3 (*both of us the same*), 4 (*my sibling a little more*), 5 (*my sibling a lot more*). For the analyses, these scores were centered at equal treatment so that for each sibling, a score of zero indicated equal treatment, negative values reflected less favored treatment (i.e., relatively more conflict with parent) and positive values reflected favored treatment (i.e., relatively less conflict). Reports of differential conflict with mothers and fathers were correlated at T1 (firstborns, $r = .45$; secondborns, $r = .45$) and T2 (firstborns, $r = .47$; secondborns, $r = .50$).

Parental knowledge—Parental knowledge was assessed via data collected in the (firstborns, $\alpha = .81$; secondborns, $\alpha = .82$) nightly phone interviews. Youth were interviewed on five weeknights and two weekend nights, and mothers and fathers were each interviewed on three weeknights and one weekend night. During the calls, parents were interviewed first and asked six questions about each child's experiences during that day (e.g., did the child get a good grade on a test; make a purchase; engage in an extracurricular activity; have a conflict with a sibling?). If the parent said the event occurred, a follow up question asked for details about the event. Youth were interviewed next and responded to the same set of questions, and parental knowledge was indexed in terms of whether parents' answers matched those of their children. Questions differed for each call so family members could not prepare in advance. Each question was scored on a 3-point scale: 0 = disagreement that the event occurred; 1 = agreement that the event occurred but mismatch on the details (e.g., child received a good grade but parent reported a good grade on an English test and child reported that there was no English test but that she received a good grade on a History paper); 2 = agreement on the occurrence and the details of the event. Item scores were averaged across days such that higher scores reflected greater parental knowledge of the youth's activities. The correlations between mothers' and fathers' knowledge scores were positive, though low (firstborns, $r = .21$; secondborns, $r = .22$).

Using the data on mothers' and fathers' knowledge, differential knowledge scores were created for parents for each sibling such that positive values reflected a parent having more knowledge of the youth relative to the sibling, negative values reflected a parent having less knowledge about the youth relative to the sibling, and a score of zero reflected the same level of knowledge for both siblings. As with absolute knowledge, the correlations between mothers' and fathers' scores were positive, but low (T1 firstborns, $r = .17$; T1 secondborns, $r = .17$; T2 firstborns, $r = .17$; T2 secondborns, $r = .17$).

Problem behavior—At T1, T2, and T3 youth reported on their problem behavior during the past year using an 18-item measure (e.g., smoked cigarettes, got into fights, skipped a day of school) developed by Eccles and Barber (1990). Items were rated on a 4-point scale: 1 (*never*), 2 (*once*), 3 (*2–10 times*), 4 (*more than 10 times*). Item ratings were averaged, and the measure showed adequate reliability at each time point (T1–T3, $\alpha = .89$). Although the frequency of problem behavior was low, the distribution was approximately normal (skewness = 1.23; kurtosis = 1.43).

Results

Analytic Strategy

We first examined patterns of missing data. No variable had more than 10.1% missing values and 19 of the 24 variables used in the analysis had fewer than 4% missing values. Little's MCAR Test supported the assumption that data were missing completely at random ($\chi^2 = 204.73$, $df = 180$, $p = .10$). We then used the procedures recommended by Howard and colleagues (Howard et al. 2015) to impute the missing values. Specifically, we used variables with no missing values (gender composition, age difference, birth order, conflict with mother, conflict with father, gender, and age), and interactions between these variables, to conduct a principle components analysis (PCA). Five orthogonal factors with eigenvalues greater than one were extracted. The PCA factors were used as auxiliary variables to impute 100 new data sets in Mplus 8 (Muthén and Muthén 2017).

Following imputation of missing values, analyses were conducted via structural equation modeling in Mplus 8 (Muthén and Muthén 2017) using the cluster option to account for the nesting of siblings within families. Separate models were tested, one for mothers and one for fathers. The model is presented in Figure 1. In addition to the paths shown in the figure, each dependent variable was regressed on the following controls: gender (0 = female; 1 = male), birth order (0 = firstborn; 1 = secondborn), sibling dyad gender constellation (0 = same gender; 1 = mixed gender), family size, parents' average education at T1, youth age at T1, and sibling dyad age spacing. As shown in Figure 1, controls from the prior time point were included for each dependent variable (i.e., youth perception of differential conflict with mothers/fathers at T2; mothers'/fathers' differential knowledge at T2; youth problem behavior at T3). All continuous independent and control variables were grand mean centered to aid interpretation of moderated effects.

The separate models for mothers and fathers were tested in an identical fashion. Models were tested hierarchically in order to assess lower order interactions. In Step 1, we tested the model without any interactions. In Step 2, we regressed T3 problem behavior, T2 differential

conflict, and T2 differential knowledge on each of the two-way interaction terms necessary for the final three-way interactions. In Step 3, we added the three-way interaction terms. For T3 problem behavior as the dependent variable, the three-way interactions included T1 mothers'/fathers' comparison of conduct X age spacing X birth order, T2 differential conflict X age spacing X birth order, and T2 differential knowledge X age spacing X birth order. For T2 differential conflict and T2 differential knowledge as dependent variables, the three-way interaction tested was T1 mothers'/fathers' comparison of conduct X age spacing X birth order. All significant interactions were followed up with testing of the simple slopes. Non-significant interactions were removed to improve model fit; tables only report significant interactions. Indirect effects were assessed via the INDIRECT command in Mplus.

Additional models included both gender constellation and gender as moderators. Neither variable on its own or in combination with other moderators, however, was significant. For parsimony, these interactions were excluded from the presentation of analyses.

Preliminary Analyses

Means and correlations for study variables are shown in Table 1. Although parents rated firstborns as better behaved at T1, firstborns reported more problem behavior than secondborns at T3. For both siblings, bivariate correlations were generally consistent with the study hypotheses; in the case of both firstborns and secondborns, parental perceptions that they were better behaved at T1 were related to youth's reports of relatively less conflict with parents at T2 and lower levels of problem behavior at T3. Differential parental knowledge, however, was related to neither parental comparisons nor problem behavior at the bivariate level.

Linkages between Mothers' Sibling Comparisons, Differential Treatment and Youth Problem Behavior

The findings from the model with mothers' comparisons and treatment are presented in Table 2. Several effects emerged regarding youth problem behavior at T3. Youth who were older ($\beta = .07$), whose parents had less education ($\beta = -.05$), who had more conflict with their mother at T1 ($\beta = .06$), and who engaged in more problem behavior at T1 ($\beta = .73$), engaged in more problem behaviors at T3. In addition, youth who reported less conflict with their mother relative to their sibling at T2, engaged in less problem behavior at T3 ($\beta = -.06$). No significant two- or three-way interactions emerged on the paths from T2 differential conflict or T2 differential knowledge to T3 problem behavior.

Regarding mothers' differential conflict, the findings revealed a negative main effect of T1 conflict with mother ($\beta = -.19$): When youth reported more conflict with their mothers at T1, they reported relatively more maternal conflict compared to their siblings at T2. A main effect of mothers' comparisons of conduct also emerged ($\beta = .40$): When mothers viewed youth as being better behaved than their siblings at T1, youth reported less conflict with their mother relative to their sibling at T2. This effect, however, was qualified by an interaction with age spacing ($\beta = -.13$), and simple slopes testing revealed that this effect was significant only for youth who were close in age to their sibling. Examination of the indirect

effects (Table 3) showed further, that the indirect effect was only significant for youth who were 2.53 years apart in age or less (average age spacing, $\beta = -.02$; $-1\ SD$, $\beta = -.03$; $-2\ SD$, $\beta = -.03$): For siblings close in age only, the findings suggested that mothers' belief that youth were better behaved than their siblings at T1 led to youth perceptions of less maternal conflict relative to the sibling at T2, and in turn, less problem behavior at T3.

Additional significant effects indicated that maternal differential knowledge at T1 predicted differential knowledge at T2 ($\beta = .12$), and that mothers were relatively more knowledgeable about secondborns ($\beta = .16$).

Linkages between Fathers' Sibling Comparisons, Differential Treatment and Youth Problem Behavior

The findings from the model with fathers' comparisons and treatment are presented in Table 4. Several main effects emerged regarding youth problem behavior at T3. Again, youth with more highly educated parents engaged in less problem behavior at T3 ($\beta = -.05$), and they reported more problem behavior if they had more conflict with their father at T1 ($\beta = .07$) or engaged in more problem behavior at T1 ($\beta = .74$). No significant two-way interactions emerged, and though the three-way interaction of father's T1 comparisons X birth order X age spacing was significant ($\beta = -.10$), simple slopes testing, however, showed no significant effects for any groups (firstborns closer in age to their sibling, firstborns farther in age from their sibling, secondborns closer in age to their sibling, and secondborns farther in age from their sibling).

The results regarding T2 differential conflict also revealed several significant effects. Youth who reported more T1 paternal conflict perceived relatively more paternal conflict than their siblings at T2 ($\beta = -.15$). Additionally, secondborns ($\beta = .13$) and youth whom fathers saw as better behaved than their sibling at T1 ($\beta = .31$) perceived relatively less paternal conflict than their sibling at T2. There were no significant two-way or three-way interactions.

Additional significant effects revealed that fathers were relatively more knowledgeable about sons at T2 ($\beta = .08$) and that fathers' relative knowledge at T1 predicted their relative knowledge at T2 ($\beta = .24$). No significant two-way or three-way interactions emerged.

Discussion

In the course of their everyday interactions, the presence of siblings gives rise to larger family dynamics through which siblings influence one another's development and adjustment. Those influences may arise because of actual or perceived sibling differences. In this study, we integrated tenets from Expectancy Value (Wigfield and Eccles 2000; Tan 2017) and Social Comparison theories (Zell and Alicke 2009) to test whether parents' beliefs about *differences between their children* had unique implications for youth's adjustment. Specifically, focusing on adolescent-aged siblings, we tested whether mothers' and fathers' comparisons of siblings' problem behavior predicted youth's problem behavior two years later, and whether sibling differences in parent-youth conflict and parental knowledge accounted for this linkage. We also explored the moderating roles of gender constellation, age spacing, birth order, and gender.

Parents' Social Comparisons and Differential Treatment

We hypothesized that when mothers and fathers believed one of their children to be better behaved than a sibling, that child would later reported more favorable parental treatment in the forms of relatively less parent-youth conflict and relatively more parental knowledge--as compared to the sibling. This hypothesis was supported in the case of siblings' differential conflict with both mothers and with fathers. Mothers and fathers may be less reactive to minor infractions by the child they see as better behaved and this favored status may result in relatively less conflict with that child. Youth may also play a role in this process. Consistent with Expectancy Value Theory (Wigfield and Eccles 2000), youth may be motivated to achieve their parents' expectation that they are the "good child" in the family. In addition, consistent with Social Comparison Theory (Zell and Alicke 2009) youth's self-concept may be enhanced by their favored-child status, with implications for their compliance and prosocial behavior. The findings regarding mothers provide the strongest support for social comparison tenets in that the effect was stronger for siblings closer in age, because similarity is expected to heighten the effects of social comparisons. In addition to their theoretical import, the findings of longitudinal links between parents' comparisons and differential conflict contribute to the literature on parents' differential treatment, which thus far has paid limited attention to its antecedents (Padilla et al. 2017).

We hypothesized similar patterns with respect to parental knowledge, but our hypotheses were not supported. Past work highlights that parental knowledge arises through a range of processes (Kerr et al. 2010; Stattin and Kerr 2000). In some cases, parents may gain knowledge through active solicitation or monitoring. In other cases, youth may choose to share information about their daily lives with their parents. This body of research suggests that the source of parental knowledge has implications for youth outcomes such that knowledge gained via parental solicitation is positively linked, but knowledge gained via youth's voluntary disclosure is negatively linked to behavior problems (Kerr et al. 2010; Racz & McMahon 2011; Stattin and Kerr 2000). Similar patterns may be evident in the case of parents' differential knowledge, and thus, future work on siblings' differential family experiences should include assessments of the sources of parental knowledge.

Parents' Differential Treatment and Youth's Problem Behavior

We also hypothesized that parents' T2 differential conflict would predict youth's T3 problem behavior, such that, after controlling for their reports of parent-child conflict, youth who perceived *relatively* less conflict compared to their sibling would engage in less problem behavior. This pattern emerged only for treatment from mothers' differential conflict, but is consistent with the idea that their less favored status may lead youth to engage in problem behavior as a way to gain attention or to seek approval elsewhere such as from deviant peers. This pattern, however, did not emerge for differential conflict with fathers. Adolescent-aged youth, on average, spend more time with mothers than fathers (Larson et al. 1996) and as a result, have more conflict with mothers (Maccoby, 1998). This pattern was evident in our sample as well; youth had more conflict with mothers. Thus, maternal differential conflict may be more salient than paternal differential conflict.

We hypothesized similar links between differential knowledge at T2 and youth's problem behavior at T3, but this hypothesis was not supported. Again, the sources of parental knowledge may be more important than the knowledge itself (Stattin and Kerr 2000) in explaining youth outcomes. Additional research is needed to measure the sources of differential knowledge in order to understand its potential effects on siblings' problem behavior.

Differential Treatment as a Mediator Linking Parents' Comparisons and Youth's Problem Behavior

We hypothesized that significant indirect effects would emerge for differential conflict as a mediator connecting parents' social comparisons at T1 to youth's problem behavior at T3. This hypothesis was supported for mothers' comparisons and differential conflict when their children were close in age: When mothers saw one of their children as better behaved than the other, that child reported experiencing relatively less maternal conflict than their sibling in the following year, and engaged in less problem behavior the year after that. The mediation effect size was modest, but importantly, emerged in the face of controls for the cross-time stability of each of the constructs. In other words, the indirect effect reflected residualized change.

We also hypothesized that the indirect effect would vary as a function of factors including sibling dyad gender constellation, age spacing, birth order, and youth gender as well as their interactions, and that moderating effects would emerge for paths leading to the differential treatment mediator and from the mediator to youth problem behavior. Moderating effects were generally nonsignificant, however, with the exception of an effect for age spacing. Here, as predicted, the links from maternal comparisons to differential conflict and youth's problem behavior were stronger for siblings who were closer in age. From a social comparison perspective, objective similarity increases the salience of comparisons and their effects (Dvash et al. 2010; Scholte et al. 2007). Our findings suggest that in adolescence, age spacing may be a particularly salient marker of similarity. For example, siblings who are closer in age are more likely to attend the same school and participate in similar activities, providing many opportunities for parents to form and act on their social comparisons and for youth to react to them. That this moderation effect was limited to just one index of sibling similarity, however, suggests caution in interpreting this result and that future research include a more detailed look at the role of siblings' objective similarity in parents' social comparisons and their implications.

Limitations

In the face of its contributions to theory and research, limitations of this study provide directions for future research. First, the sample was homogeneous in demographic characteristics and from a single geographic region. The extent and correlates of parental comparisons may vary across family structure, culture and context, and thus future research should include samples that are more diverse. In addition, although parents' comparisons likely extend to all of their children, our study was limited to two siblings in each family, and the sample was confined to families with firstborns and secondborns who were less than four years apart in age. This limited the generalizability of the findings and our ability to

illuminate moderators of the processes of interest such as the effects of wide age spacing and birth order. Future studies should incorporate information on the entire sibling subsystem. Third, our measure of parents' knowledge was limited to how much parents knew about their children's daily experiences and did not reflect the sources of their knowledge. Future research on differential treatment in this domain should take into account how parents learn about their children's experiences. Further, the measure of differential knowledge was based on a sibling difference score, whereas differential conflict was measured as youth's perceptions of parents' differential treatment. Such perceptions may be more closely linked to youth well-being outcomes than are difference scores (Jensen and Whiteman 2014). Lastly, although our hypotheses were aimed at establishing negative effects of differential treatment, research has shown that factors such as siblings' understanding of the reasons for their parents' differential treatment, their perceptions that differential treatment is fair, and cultural values that highlight family solidarity can mitigate negative differential treatment effects on youth well-being (Kowal and Kramer, 1997; McHale, et al., 2012). Future work should include measures of siblings' understanding and subjective evaluations of parents' social comparisons.

Conclusion

Drawing on concepts from Social Comparison Theory (Gibbons and Buunk 1999; Zell and Alicke 2009) and Expectancy Value Theory (Wigfield and Eccles 2000), the findings of this study provide new insights about family influences on youth adjustment. Moving beyond a focus on parent-child dyads, results documented that parents' comparisons of their children's problem behavior predicted youth's perceptions of differential treatment relative to their siblings; in turn, mothers' differential conflict predicted youth's problem behavior. In keeping with Social Comparison Theory, the mediation pattern was significant for siblings who were more similar in age. Our conclusions about the role of parents' social comparisons are strengthened by our use of longitudinal data collected from multiple reporters. More generally, most prior research on families' role in adolescent adjustment has focused on the experiences of only one child per family. Our findings, however, highlight the importance of including siblings in research on family socialization and influences on youth adjustment and development. In addition to its implications for Expectancy Value and Social Comparison Theories, our work has practical implications for parents and practitioners in directing attention beyond parents' dyadic relationships with one child to encompass the multiple offspring who comprise the family system.

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Figure 1. Conceptual Model

Dark lines signify hypothesized paths, dotted lines signify effects of controls. Omitted controls that were regressed on each dependent variable were: birth order, age, age spacing, gender, gender constellation, family size, and parents' education at Time 1.

Table 1

Correlations, means, and standard deviations for main study variables (N = 385 firstborn and 385 secondborn youth from 385 families).

	1	2	3	4	5	6	7
1. T1 MSC	--	.64***	.42***	.37***	-.07	-.04	-.12*
2. T1 FSC	.64***	--	.39***	.35***	-.02	-.04	-.11*
3. T2 MDC	.42***	.41***	--	.50***	-.06	-.03	-.30***
4. T2 FDC	.32***	.31***	.47***	--	-.05	-.09	-.17**
5. T2 MDK	-.08	-.02	-.09	-.07	--	.17***	.05
6. T2 FDK	-.05	-.05	-.07	-.08	.17***	--	-.02
7. T3 Youth Problem Behavior	-.13*	-.14**	-.12*	-.11	-.08	-.05	--
Firstborns							
<i>M</i>	.23 ^a	.25 ^a	.03 ^a	-.04 ^a	-.04 ^a	-.03 ^a	1.59 ^a
<i>SD</i>	1.12	1.13	.96	.90	.18	.17	.46
Secondborns							
<i>M</i>	-.23 ^b	-.25 ^b	-.09 ^b	.02 ^b	.04 ^b	.03 ^b	1.44 ^b
<i>SD</i>	1.12	1.12	.96	.90	.18	.18	.44

Note: Correlations for firstborns are below and correlations for secondborns are above the diagonal.

M/FSC = Mothers'/fathers' social comparisons of siblings; M/FDC = Youth's perception of mothers'/fathers' differential conflict; M/FDK = Mothers'/fathers' differential knowledge.

T1 = Time 1; T2 = Time 2; T3 = Time 3.

Firstborn and secondborn means in each column that do not share the same superscript differ significantly, $p < .05$.

* $p < .05$,

** $p < .01$,

*** $p < .001$

Summary of effects from the model testing links between mothers' comparisons of siblings' conduct and youth's problem behavior through the mediators of mothers' differential conflict and mothers' differential knowledge (N = 770 siblings from 385 families).

Table 2

	Dependent Variable					
	T2 MDC		T2 MDK		T3 Youth problem behavior	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Family size	-.01	.03	-.01	.03	.00	.00
Parents' education	.02	.01	.02	.01	.00	.00
Gender constellation	-.01	.05	-.01	.05	.00	.01
Age spacing (AS)	.00	.03	.00	.03	-.00	.00
Birth order (Birth)	.10	.10	.12	.10	.06**	.02
Gender	.04	.07	.03	.07	.00	.01
T1 Age	.02	.03	.02	.03	-.00	.00
T1 Conflict with mother	-.39***	.07	-.38***	.07		
T1 MDC	.01	.03	.01	.03		
T2 MDC					-.03*	.01
T1 Mothers' knowledge					.04	.06
T1 MDK					.12*	.05
T2 MDK					.09	.06
T1 Problem behavior	-.07	.09	-.07	.09	-.02	.02
T2 Problem behavior					.77***	.04
T1 MSC	.34***	.03	.25***	.05	-.01	.01
T1 MSC X AS			-.08*	.04		

Note: T1 = Time 1; T2 = Time 2; T3 = Time 3; MDC = Mothers' differential conflict; MDK = Mothers' differential knowledge; MSC = Mothers' comparisons of siblings' conduct. Steps two and three for T2 MDK and T3 Youth problem behavior, and step three for T2 MDC were omitted because there were no significant interactions in those steps. The model showed good fit ($\chi^2 = 23.69$, $df = 10$, $p < .05$; RMSEA = .04; CFI = .99; SRMR = .01).

* $p < .05$.

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Summary of indirect effects of mothers' comparisons of siblings' conduct on youth's problem behavior through the mediator of mothers' differential conflict as moderated by age spacing between siblings (N = 770 siblings from 385 families).

Table 3

	First path effect		Second path effect		Total indirect effect	
	T1 MSC→ T2 MDC		T2 MDC→ T3 Problem behavior		T1 MSC→ T2 MDC→ T3 Problem behavior	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Age spacing groups						
Siblings closest in age (<i>M</i> – 2 <i>SD</i>)	.48***	.07	–.03*	.01	–.01*	.01
Siblings closer in age (<i>M</i> – 1 <i>SD</i>)	.40***	.04	–.03*	.01	–.01*	.01
Siblings average in age spacing	.33***	.03	–.03*	.01	–.01*	.00
Siblings farther in age (<i>M</i> + 1 <i>SD</i>)	.25***	.05	–.03*	.01	–.01	.00
Siblings farthest in age (<i>M</i> + 2 <i>SD</i>)	.18*	.08	–.03*	.01	–.01	.00

Note: T1 = Time 1; T2 = Time 2; T3 = Time 3; MDC = Mothers' differential conflict; MSC = Mothers' comparisons of siblings' conduct. Only the first path effect and the total indirect effect varied by age spacing. *Mean age spacing* = 2.53, *SD* = .91.

* $p < .05$,

** $p < .01$,

*** $p < .001$

Table 4

Summary of effects of the model testing links between fathers' comparisons of siblings' conduct and youth's problem behavior through the mediators of fathers' differential conflict and fathers' differential knowledge (N = 770 siblings from 385 families).

	Dependent Variable											
	T2 FDC			T2 FDK			T3 Youth problem behavior					
	Step 1	b	SE	Step 1	b	SE	Step 1	b	SE	Step 2	b	SE
Family size	-.02	.04		.00	.00		-.01	.01		-.01	.01	
Parents' education	.00	.01		.00	.00		-.01*	.01		-.01*	.01	
Gender constellation	.01	.05		.00	.01		.01	.02		.01	.02	
Age spacing (AS)	-.01	.03		.00	.00		-.02	.01		-.01	.02	
Birth order (Birth)	.23*	.10		.04	.02		.03	.03		.03	.03	
Gender	-.08	.07		.03*	.01		-.03	.02		-.03	.02	
T1 Age	.01	.03		.00	.00		.02	.01		.02	.01	
T1 Conflict with father	-.26***	.07					.07*	.03		.07*	.03	
T1 FDC	-.02	.04										
T2 FDC							-.01	.01		-.01	.01	
T1 Fathers' knowledge				-.01	.02		.05	.06		.05	.06	
T1 FDK				.23***	.04							
T2 FDK							-.04	.07		-.04	.07	
T1 Problem behavior	-.07	.10		-.03	.02							
T2 Problem behavior							.77***	.04		.77***	.04	
T1 FSC	.24***	.03		-.01	.01		.00	.01		-.01	.02	
T1 FSC X Birth										.01	.02	
T1 FSC X AS										.00	.01	
AS X Birth										-.02	.03	
T1 FSC X AS X Birth												
										-.06**	.02	

Note: T1 = Time 1; T2 = Time 2; T3 = Time 3; FDC = Fathers' differential conflict; FDK = Fathers' differential knowledge; FSC = Fathers' comparisons of siblings' conduct. Steps two and three for T2 FDC and T2 FDK were omitted because there were no significant interactions in those steps. The model showed good fit ($\chi^2 = 31.48$, $df = 18$, $p < .05$; RMSEA = .03; CFI = .99; SRMR = .01).

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