

Longitudinal Effects of Sibling Relationship Quality on Adolescent Problem Behavior: A Cross-Ethnic Comparison

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The aim of the present study was to examine whether adolescents of Moroccan and Dutch origin differ concerning sibling relationship quality and to examine whether the associations between quality of the sibling relationship and level and change in externalizing and internalizing problem behavior are comparable for Moroccan and Dutch adolescents. Five annual waves of questionnaire data on sibling support and conflict as well as externalizing problems, anxiety and depression were collected from 159 ethnic Moroccan adolescents ($M_{\text{age}} = 13.3$ years) and from 159 ethnic Dutch adolescents ($M_{\text{age}} = 13.0$ years). Our findings demonstrated significant mean level differences between the Moroccan and Dutch sample in sibling relationship quality, externalizing problems, and depression, with Moroccan adolescents reporting higher sibling relationship quality and less problem behavior. However, effects of sibling relationship quality on externalizing problems, anxiety, and depression were similar for the Moroccan and Dutch samples. Sibling support was not related to level of externalizing problems, nor to changes in externalizing problems, anxiety, and depression. Additionally, more sibling conflict was related to a higher starting level of and faster decreases in problem behaviors. Our results support the ethnic equivalence model, which holds that the influence of family relationships is similar for different ethnic groups. Moreover, sibling support and conflict affect both the level and the fluctuations in problem behavior over time in specific ethnic groups similarly. Implications for future studies and interventions are subsequently discussed.

Keywords: cross-ethnic differences, sibling relationship, internalizing problems, externalizing problems, latent growth curve modeling

The sibling relationship is a unique relationship in an individual's life course. It is an emotionally ambivalent relationship, which simultaneously incorporates both warmth as well as conflict. Moreover, for most individuals, it is one of the most enduring relationships, which starts at the birth and ends with the death of the sibling. The sibling relationship also strongly influences psy-

chosocial functioning because sibling relationships form a unique and important context in which children develop social and emotional skills. In previous research it has been found that positive sibling relationships stimulate healthy emotion regulation skills (Kennedy & Kramer, 2008), as well as prosocial behavior (Pike, Coldwell, & Dunn, 2005), and may therefore decrease the risk for

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developing emotional and behavioral problems. Indeed, earlier studies and a recent meta-analysis (Buist, Deković, & Prinzie, 2013) have shown that sibling relationship quality is an important concomitant of child and adolescent externalizing and internalizing problems.

Evidence suggests that warm sibling relationships result in less internalizing (East & Rook, 1992; Kim, McHale, Crouter, & Osgood, 2007) and less externalizing problem behaviors (Branje, van Lieshout, van Aken, & Haselager, 2004; Dunn, Slomkowski, Beardsall, & Rende, 1994). Negative sibling relationships, on the other hand, may form a risk factor for emotional and behavioral problems. Social learning theory predicts that conflict and hostility in the sibling context may generalize to other contexts (e.g., the peer context) resulting in aggression (Stauffacher & DeHart, 2006). Indeed, several studies have suggested that sibling conflict is a risk factor for developing externalizing problem behavior (Bank, Patterson, & Reid, 1996; Kim, Hetherington, & Reiss, 1999; Natsuaki, Ge, Reiss, & Neiderhiser, 2009) and have also related sibling conflict to higher levels of internalizing problem behaviors (Kim et al., 2007; Pike, McGuire, Hetherington, Reiss, & Plomin, 1996; Stocker, 1994; Vogt Yuan, 2009).

Most of these studies have, however, been conducted in Western societies with mostly ethnically European, middle class samples. Moreover, these studies did not focus on the question to what extent sibling relationship quality influences children from different ethnic backgrounds in similar or different ways.

Cross-Ethnic Differences

So, most of the studies on sibling relationship quality and its effects on problem behavior have been performed in Western societies, which are generally characterized by individualism. Individuals with a Western background value a person as a unique and separate individual, whereas individuals with a non-Western and more collectivistic background tend to focus more on interpersonal relationships and consider people as dependent on the social order (Killen & Wainryb, 2000; Raeff, Greenfield, & Quiroz, 2000). Because interpersonal relationships are valued differently in Western and non-Western societies, the processes by which family, and therefore sibling, relationships affect adolescent problem behavior may be different in significance and strength between groups of different ethnic and cultural origin.

Earlier studies have shown that cultural differences in sibling relationships exist between Western and non-Western societies, specifically concerning the importance of siblings in an individual's life as well as the degree to which sibling relationships are characterized by warmth and conflict (Cicirelli, 1994; Nuckolls, 1993; Updegraff, McHale, Killoren, & Rodriguez, 2011; Weisner, 1993). Previous definitions of the sibling relationship as a love-hate, emotionally intense, relationship (Deater-Deckard, Dunn, & Lussier, 2002; Noller, 2005), may actually be a reflection of Western society's emphasis on competition and individuation (Nuckolls, 1993). In more collectivistic cultures, however, siblings play an even more prominent role in a child's life. In addition, norms concerning sibling interdependence may receive a stronger emphasis in the child's

upbringing (Updegraff et al., 2011). In more collectivistic societies the sibling relationship is better characterized by self-evident mutual responsibilities and social obligations (Nuckolls, 1993), and solidarity is more strongly encouraged. Furthermore, rivalry between siblings is more strongly discouraged than in more individualistic societies (Seymour, 1993). Therefore, these relationships may be warmer and less conflictive in collectivistic (non-Western) than in individualistic (Western) societies (Beals & Eason, 1993). Research has indeed shown significantly higher levels of companionship, intimacy, and satisfaction and lower levels of conflict for Indonesian children as compared to American children (French, Rianasari, Pidada, Nelwan, & Buhrmester, 2001). Hence, it would be expected that siblings from more collectivistic countries of origin would display more warmth and less conflict to one another than siblings from more individualistic countries of origin.

However, the fact that there may be differences in quality of the sibling relationship between adolescents from different ethnic groups does not automatically mean that the impact of sibling relationship quality on adolescent psychosocial functioning is different. Two models have been suggested as to ethnic differences in the family relationships on child problem behavior: the cultural values model and the ethnic equivalence model (Lamborn & Felbab, 2003). The *cultural values model* predicts that ethnic differences in family relationship quality produce different effects of these relationships. Families that differ in ethnicity from the main culture are embedded in alternative value structures, which may cause similar experiences in the family context to have a different meaning within these ethnic minority families. For example, physical discipline was related to higher levels of externalizing behavior for European American adolescents, but to lower levels of externalizing problem behavior for African American adolescents (Lansford, Deater-Deckard, Dodge, Bates, & Pettit, 2004). Conversely, the *ethnic equivalence model* would suggest that the impact of family relationships on child outcome surpasses ethnic boundaries and reflect universality of influence. Following this model, no differences are to be expected between different ethnic groups.

In several studies concerning ethnic differences in the effect of parent-child relationships on externalizing problems within one particular country, the cultural values model has been confirmed. For example, parent-child attachment has been found to have a significant effect on delinquent behavior for white and African American adolescents, but not for Hispanic adolescents (e.g., Smith & Krohn, 1995). However, other studies have found evidence confirming the cultural equivalence model, indicating that whereas there may be differences in quality of parent-child relationship as well as problem behavior, the processes by which parent-child relationship quality (closeness, support, conflict) affects problem behavior are similar for different ethnic groups (e.g., Eichelsheim et al., 2010; Vazsonyi, Trejos-Castillo, & Huang, 2006). Taken together, concerning parenting and the parent-child relationship, there seems to be more empirical support for the cultural equivalence model. However, the cultural values model and ethnic equivalence model have not been systematically tested for the following factors: (1) sibling relationship quality, (2) internalizing problem behavior, and (3) longitudinal patterns.

Moroccan Adolescents

The present study focuses on adolescents from a Moroccan versus a Dutch ethnic background living in the Netherlands. In the Netherlands, Moroccan immigrants belong to one of the largest migrant groups. Migration began in the 1960s when Moroccan men were recruited for working in the Dutch labor market. Most men left their families behind in Morocco, but when their temporary stay became more permanent, wives and children joined their husbands and fathers by immigrating to the Netherlands (Hiemstra, 2003). In 2012, 356,000 persons of the total Dutch population of 16.6 million were of Moroccan origin (Statistics Netherlands, 2012). Someone is considered to be of Moroccan origin if he or she was born in Morocco or if one or both parents were born in Morocco (Bengi-Arslan, Verhulst, van der Ende, & Erol, 1997; Eichelsheim et al., 2010; Stevens, Vollebergh, Pels, & Crijnen, 2005). Moroccan families in the Netherlands are known to be collectivistic and have traditional hierarchical family structures in which the father is typically head of the family (Stevens, Vollebergh, Pels, & Crijnen, 2007). Compared with other adolescents living in the Netherlands, Moroccan adolescents also have more frequent police difficulties (Beekink, 2006). Based on these considerations, it seems fruitful to study whether there are differences or similarities between Moroccan and Dutch adolescents in the processes affecting problem behavior.

The Present Study

In conclusion, the first aim of the present study is to examine whether adolescents of Moroccan and Dutch origin differ concerning sibling relationship quality. The second aim of the study is to examine whether the processes by which sibling relationship quality affects externalizing and internalizing problems over time is different (suggesting the cultural values model) or similar (suggesting the ethnic equivalence model) for adolescents with different ethnic origins. Examining the importance of sibling relationships for adolescent development in different ethnic contexts is an important next step to identify ethnic, cultural, and psychological variations and generate more universal theories that are applicable to a broader range of cultures and ethnicities.

Based on earlier research, we expect more sibling warmth and less sibling conflict for ethnic Moroccan adolescents compared to ethnic Dutch adolescents. However, expectations concerning cross-ethnic differences in the impact of sibling relationship quality on problem behavior are difficult to make, due to lack of studies in this specific field.

Method

Participants and Procedure

The 318 adolescent participants that took part in this study (Research on Adolescents Development And Relationships study [RADAR], a longitudinal study in the Netherlands) filled in questionnaire data over five consecutive annual waves. After written informed consent was given by the adolescent, as well as his or her parents, adolescents were visited at their homes by a trained interviewer to administer the questionnaires. In the total sample, there were fewer ethnic Moroccan adolescents ($N = 165$) than

ethnic Dutch adolescents ($N = 497$). To reach two ethnic subsamples of roughly similar size, we attempted a matched selection of adolescents of Dutch origin, based on socioeconomic status (SES), age, and gender. This resulted in a total sample of 318 boys and girls of Moroccan (75 boys, 84 girls) and Dutch origin (75 boys, 84 girls). The sibling dyads consisted of 27.4% brother-brother pairs, 30.2% sister-sister pairs, 20.1% brother-sister pairs, and 22.3% sister-brother pairs. Of the adolescents, 30% reported about the relationship with a younger sibling, and 70% about the relationship with an older sibling. There were no ethnic differences for adolescent gender distribution or for sibling dyad gender composition. The mean age for Moroccan adolescents was 13.3 years ($SD = 0.55$), and the mean age for Dutch adolescents was 13.0 years ($SD = 0.50$).

SES scores were based on the neighborhood in which families lived. For each neighborhood, information was made available by the Netherlands Institute for Social Research concerning the mean income, the percentage of people with a low income, the percentage of people with little education and the percentage of unemployed people in that particular neighborhood. This information resulted in a factor score with a range from 0 to 4, with higher scores indicating lower SES. Mean SES scores were 3.6 for the Moroccan adolescents and 3.1 for the Dutch adolescents.

The Moroccan adolescents were significantly older than the Dutch adolescents, $t(314) = 5.02, p < .01$, and had a significantly lower SES, $t(308) = 7.687, p < .01$. Despite these significant differences, controlling for age and SES did not alter the results of any of our analyses. For reasons of parsimony, we report the uncontrolled results.

Measures

Ethnicity. Adolescent ethnicity was based on the country of birth of the adolescent and the country of birth of both parents. If the adolescent and both parents were born in The Netherlands, the adolescent was considered to be of Dutch origin. If either the adolescent and/or his (or her) father or mother was born in Morocco, the adolescent was considered to be of Moroccan origin. In Dutch studies on ethnic minority groups, this is an often-used way to determine ethnicity (Bengi-Arslan et al., 1997; Eichelsheim et al., 2010; Stevens, Vollebergh, Pels, & Crijnen, 2005).

Sibling support. Perceived sibling support at Time 1 was measured by eight items from Network of Relationship Inventory (NRI; Furman & Buhrmester, 1985). Adolescents rated the degree of support between themselves and their sibling on a 5-point Likert scale (1 = *little to none* and 5 = *could not be more*). A sample item is: "How much does your brother/sister really care about you?" Cronbach's alpha was .87 for the Moroccan and .85 for the Dutch adolescents.

Sibling conflict. Perceived sibling conflict at Time 1 was measured by the Conflict and Antagonism subscales of the NRI (Furman & Buhrmester, 1985). Adolescents rated the degree of conflict between themselves and their sibling on a 5-point Likert scale (1 = *little to none* and 5 = *could not be more*). A sample item is: "How much do you and your brother/sister disagree and quarrel?" On the basis of all six items a mean was computed to reflect Sibling conflict. Cronbach's alpha was .89 for the Moroccan and .93 for the Dutch adolescents.

Externalizing problems. Externalizing problems at Time 1 through Time 5 were measured with the 30-item Externalizing problems scale of the Youth Self Report (YSR; Achenbach, 1991; Verhulst, van der Ende, & Koot, 1997). Adolescents indicated their externalizing problems over the past 6 months on a 3-point Likert scale (1 = *not true*, 2 = *somewhat or sometimes true*, and 3 = *very true or often true*). Sample items are: “I use drugs or alcohol” and “I fight a lot.” Sum scores were calculated, with higher scores indicating greater externalizing problems. Cronbach’s alpha across all measurement waves ranged from .90 to .95 for the Moroccan and .87 to .89 for the Dutch adolescents.

Anxiety. Adolescent anxiety at Time 1 through Time 5 was measured with 18 items from the Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997; Hale, Raaijmakers, Muris, & Meeus, 2005). Items from the Social anxiety, Generalized anxiety and Separation anxiety scales were summed to reflect total anxiety. Adolescents rated their anxiety on a 3-point Likert scale (1 = *almost never*, 2 = *sometimes*, and 3 = *often*). A sample item is: “I am afraid to be home alone.” Cronbach’s alpha across all measurement waves ranged from .85 to .91 for Moroccan and .88 to .91 for Dutch adolescents.

Depression. The Reynolds Adolescent Depression Scale – 2nd Edition (RADS-2; Reynolds, 2000) was used to measure adolescent depression at Time 1 through Time 5. All 30 items were summed to reflect total depression. Adolescent rated their depressed feelings on a 4-point Likert scale (1 = *almost never* and 4 = *most of the time*). A sample item is: “I feel like nobody cares about me.” Cronbach’s alpha across all measurement waves ranged from .87 to .93 for Moroccan and .90 to .95 for Dutch adolescents.

Analytic Strategy

First, significant differences between the Moroccan and Dutch sample on sibling relationship quality and problem behavior were tested. For sibling relationship quality multiple analyses of variance (MANOVAs) were performed and for problem behaviors repeated measures MANOVA’s were performed.

Second, we used latent growth curve modeling (LGM) to examine level and change in adolescent externalizing and internalizing problems (LISREL 8; Jöreskog & Sörbom, 1993). In LGM, two factors describe development in a particular concept. The first factor, the *level factor*, describes the level (level mean) and individual differences in the level (level variance). The latent factor “level” is a constant for any given individual across time. Therefore, the factor loadings for problem behavior measures are set at 1 for each point in time. The second factor, the *slope factor*, describes the growth or rate of change (slope mean) and individual differences in rate of change (slope variance). We tested univariate growth models to examine level and slope mean and variance for the Moroccan and Dutch sample.

Third, we formulated a multivariate multigroup growth model in which sibling support and conflict assessed at T1 were related to level and slope of problem behaviors (Figure 1). We did this separately for externalizing problems, anxiety and depression. For reasons of clarity, parsimony and comparability, we assumed linear growth for all three problem behaviors and fixed factor loadings of the T1, T2, T3, T4, and T5 problem behavior variables on the latent slope factor at 0, 1, 2, 3, and 4. In addition, intercept

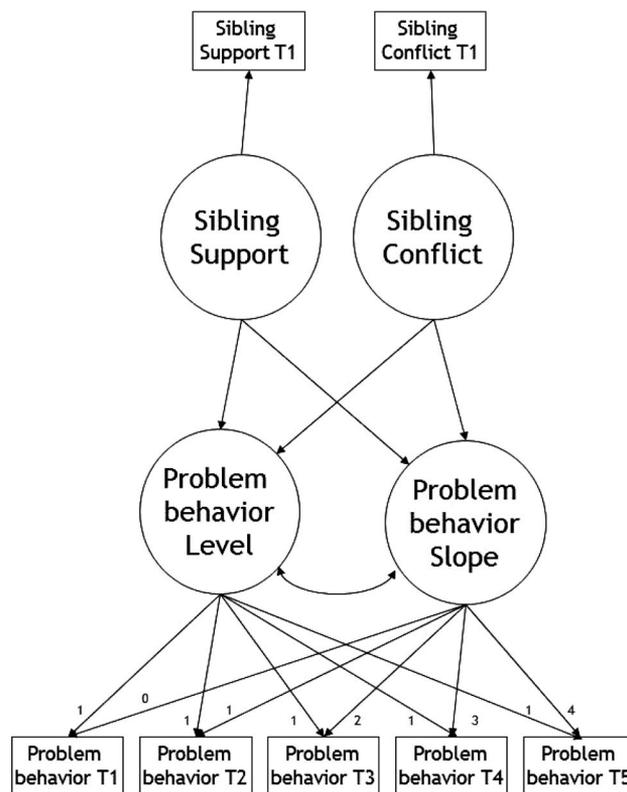


Figure 1. Hypothesized model of the associations between sibling relationship quality and level and slope of problem behavior.

and slope were allowed to covary. To examine similarities and differences between the Moroccan and Dutch sample, we tested five multigroup multivariate models for each type of problem behavior: (a) an unconstrained model, in which all parameters were estimated separately for the Dutch and Moroccan group; and four constrained models: (b) all parameters (alpha’s, psi’s and beta’s) constrained to be equal; (c) level and slope means (alpha’s) constrained to be equal; (d) level and slope variances (psi’s) constrained to be equal; (e) paths (beta’s) constrained to be equal between these two groups. Model comparison (χ^2 difference tests) was used to examine whether these four constrained models have a significantly worse model fit compared with the unconstrained model.

Results

Cross-Ethnic Differences in Sibling Relationship Quality and Problem Behavior

As expected, the results of the difference tests indicate that Moroccan youths report more support and less conflict with their sibling (Table 1). In addition, the Moroccan sample reported less externalizing problems and depression than the Dutch sample. No significant difference was found for anxiety.

Table 1

Means of Measures of Sibling Relationship Quality, Externalizing and Internalizing Problems, and Differences Between The Moroccan ($N = 159$) and Dutch Sample ($N = 159$)

	Moroccan					Dutch					<i>F</i>
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	
Sibling relationship											
Support	3.48	—	—	—	—	3.19	—	—	—	—	9.91**
Conflict	2.01	—	—	—	—	2.48	—	—	—	—	22.88***
Externalizing problems											
Total externalizing	37.06	37.15	36.79	35.42	35.16	40.84	39.27	41.07	40.61	40.08	20.34***
Internalizing problems											
Anxiety	25.16	22.90	23.51	22.67	22.52	25.73	23.88	24.27	24.25	23.87	2.68 ^{ns}
Depression	33.66	30.39	32.88	32.72	30.71	39.23	37.28	36.73	37.01	36.56	16.91***

Note. ns = nonsignificant.

** $p < .01$. *** $p < .001$.

Associations Among and Between Sibling Relationship Quality and Problem Behaviors

Sibling relationship quality was significantly related to problem behaviors at Time 1 (Table 2). In addition, the associations between sibling relationship quality and problem behaviors were of similar size and direction for the Moroccan and Dutch sample, indicating that more sibling support and less sibling conflict were associated with less externalizing problems, anxiety, and depression.

Only two significant differences between the Moroccan and Dutch sample were found concerning strength of association: Fisher's z tests showed that the correlation between sibling support and conflict was significantly stronger for the Moroccan than for the Dutch adolescents ($z = -2.42$, $p < .05$). Conversely, the correlation between externalizing problems and depression was significantly stronger for the Dutch as compared to the Moroccan adolescents ($z = 2.07$, $p < .05$). None of the other correlations were significantly different between the two samples.

Longitudinal Patterns of Problem Behavior

We estimated level and slope means and variances in externalizing problems, anxiety, and depression for the Moroccan as well as the Dutch sample (Table 3). Both the level means and the variances for externalizing problems were significant for both

samples. For the Moroccan sample, the slope means for externalizing problems and anxiety were significant and the slope variance for anxiety was significant. For the Dutch sample, slope variances for externalizing problems and anxiety were significant. Slope means indicate that for the Moroccan as well as the Dutch sample, externalizing problems, anxiety, and depression decrease over time.

Cross-Ethnic Comparisons of Longitudinal Effects of Sibling Relationship Quality on Problem Behavior

Separately for externalizing problems, anxiety, and depression, we tested the multivariate multigroup models concerning the effects of sibling relationship quality on problem behaviors to examine similarities and differences between the Moroccan and Dutch samples. For each type of problem behavior, we compared five models (Table 4), and found that for all three types of problem behavior the unconstrained model (in which all parameters were estimated separately for the Moroccan and Dutch group) provided a good fit. This model was compared to a second model, in which all growth parameters and paths constrained to be equal. Model comparison showed significant differences between the fully constrained model and the unconstrained model for all three types of

Table 2

T1 Correlations of Sibling Relationship Quality and Externalizing and Internalizing Problems

	1	2	3	4	5
Sibling relationship					
1. Support	—	-.58***	-.22*	-.32**	-.36***
2. Conflict	-.35***	—	.49***	.32***	.40***
Externalizing problems					
3. Total externalizing	-.15	.41***	—	.31**	.51***
Internalizing problems					
4. Anxiety	-.26**	.24**	.19*	—	.66***
5. Depression	-.24**	.32**	.30**	.64***	—

Note. Correlations below the diagonal for the Moroccan sample ($N = 147$), correlations above the diagonal for the Dutch sample ($N = 127$).

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3

Parameter Estimates of the Univariate Multigroup Latent Growth Models, for the Moroccan and Dutch Group

Parameters	Univariate Multigroup Model		
	Externalizing problems	Anxiety	Depression
Moroccan			
Level mean	36.99**	24.53**	33.03**
Level variance	24.48*	17.51**	60.37*
Slope mean	-0.44*	-0.45*	-0.28 ^{ns}
Slope variance	0.03 ^{ns}	1.18*	0.32 ^{ns}
Dutch			
Level mean	40.94**	24.94**	38.33**
Level variance	46.29**	23.37**	75.40**
Slope mean	-0.10 ^{ns}	-0.25 ^{ns}	-0.47 ^{ns}
Slope variance	1.78*	1.30*	2.79 ^{ns}

Note. ns = nonsignificant.

* $p < .05$. ** $p < .01$.

Table 4

Model Comparison Multivariate Growth Curve Models Sibling Support and Conflict

	<i>df</i>	χ^2	<i>p</i>	Δdf	$\Delta\chi^2$	<i>p</i>
Sibling relationship and externalizing problems						
a Parameters estimated separately	29	53.91	.00			
b All parameters equal	43	115.70	.00			
Model b vs. model a				14	61.79	<.001
c Means of level and slope (alpha) equal	33	79.51	.00			
Model c vs. model a				4	25.60	<.001
d Variances of level and slope (psi) equal	35	72.03	.00			
Model d vs. model a				6	18.13	<.05
e Beta's equal	33	62.16	.00			
Model e vs. model a				4	8.25	>.05
Sibling relationship and anxiety						
a Parameters estimated separately	30	40.00	.11			
b All parameters equal	44	82.95	.00			
Model b vs. model a				14	42.95	<.001
c Means of level and slope (alpha) equal	34	57.66	.01			
Model c vs. model a				4	17.66	<.001
d Variances of level and slope (psi) equal	35	60.91	.01			
Model d vs. model a				5	20.91	<.001
e Beta's equal	34	43.51	.13			
Model e vs. model a				4	3.51	>.05
Sibling relationship and depression						
a Parameters estimated separately	27	44.64	.02			
b All parameters equal	41	89.03	.00			
Model b vs. model a				14	44.39	<.001
c Means of level and slope (alpha) equal	31	61.85	.00			
Model c vs. model a				4	17.21	<.001
d Variances of level and slope (psi) equal	33	64.13	.00			
Model d vs. model a				6	19.49	<.001
e Beta's equal	31	47.52	.03			
Model e vs. model a				4	2.88	>.05

problem behavior, $\Delta\chi^2(14) = 61.79$, $p < .001$ for externalizing problems; $\Delta\chi^2(14) = 42.95$, $p < .001$ for anxiety; and $\Delta\chi^2(14) = 44.39$, $p < .001$ for depression. This indicates that not all parameters were equal for the Moroccan and Dutch groups.

Next, we tested three additional alternative models for each type of problem behavior, in which respectively level and slope means (alpha's), level and slope variances (psi's) and paths (beta's) were set equal between the Moroccan and Dutch sample. Model comparison showed that for externalizing problems, anxiety, as well as depression, constraining level and slope means or variances provided a significantly worse fit (Table 4; Models c and d). However, constraining beta's to be similar between the Moroccan and Dutch sample did not significantly worsen the model fit. As a result, for each type of problem behavior we used the model in which beta's were constrained to be equal between the Moroccan and Dutch adolescents.

Paths Between Sibling Relationship Quality and Problem Behavior Level and Slope

Table 5 shows the significant paths between sibling support and conflict and level and slope of externalizing problems, anxiety and depression. Concerning effects on *level* of externalizing problems, for Moroccan as well as Dutch youths, sibling support did not have a significant effect. Sibling conflict, however, showed a significant positive effect indicating that a high level of sibling conflict is associated with a high starting level of externalizing problems. Concerning effects on *slope* of externalizing problems, more sib-

ling support was not significantly associated with rate of change in externalizing problems for the Dutch, nor for the Moroccan sample. Conversely, more sibling conflict was significantly associated with faster decrease in externalizing problems for both ethnic groups.

For anxiety and depression, the paths were identical for the Moroccan and Dutch sample. Less sibling support and more sibling conflict were significantly associated with more anxiety and depression at T1. In addition, we found a negative association of sibling conflict with the anxiety and the depression slope. This means that more sibling conflict was significantly linked to a faster

Table 5
Standardized Effects of Sibling Relationship Quality on Problem Behavior (Beta's)

	Sibling support	Sibling conflict
Externalizing problems		
Level	.08 ^{ns}	.53 ^{**}
Slope	-.11 ^{ns}	-.36 ^{**}
Anxiety		
Level	-.16 [*]	.19 [*]
Slope	.06 ^{ns}	-.21 [*]
Depression		
Level	-.19 [*]	.37 [*]
Slope	.07 ^{ns}	-.37 [*]

* $p < .05$. ** $p < .01$.

decrease in anxiety and depression for the Moroccan sample, as well as the Dutch sample.

Discussion

The aim of the present study was to examine whether adolescents of Moroccan and Dutch origin differ concerning sibling relationship quality and whether the degree to which sibling relationship quality affects externalizing and internalizing problems over time are different (suggesting the cultural values model) or similar (suggesting the cultural equivalence model) for adolescents of Moroccan and Dutch origin.

Mean Level Differences

As expected, we found that adolescents of Moroccan origin reported more support and less conflict than adolescents of Dutch origin. These findings are consistent with earlier cross-cultural studies comparing sibling relationship quality (e.g., French et al., 2001). In more collectivistic cultural groups, such as ethnic Moroccan, sibling harmony is more strongly emphasized whereas sibling rivalry and hostility is discouraged, resulting in more sibling support and less sibling conflict compared to more individualistic cultural groups such as ethnic Dutch.

In addition, compared with Dutch adolescents, Moroccan adolescents also reported significantly less externalizing problems as well as depression. The lower mean levels of self-reported externalizing behavior in Moroccan adolescents as compared to Dutch adolescents is consistent with previous studies among Moroccan adolescents in the Netherlands (Stevens et al., 2003; Veen, Stevens, Doreleijers, Van der Ende, & Vollebergh, 2010; Zwirs, Burger, Schulpen, & Buitelaar, 2006). Several mechanisms have been put forward to explain these lower scores (Stevens et al., 2003). First of all, they may reflect true differences in behavior. Second, they may be a result of social desirable answering, because of the negative image Moroccan adolescents are faced with in Dutch media and society. Third, these differences could also be explained by a different perspective on which kind of behavior is considered appropriate or normal in particular situations (Stevens et al., 2003). There may be cultural and ethnic differences in expectations and beliefs concerning appropriate adolescent behavior that causes the same type of behavior to be considered problematic by Dutch adolescents but nonproblematic by Moroccan adolescents.

Cross-Ethnic Differences in Associations With Externalizing Problems

For the Moroccan as well as the Dutch sample, sibling support was not related to level or to change in externalizing problems. Additionally, for both samples, more sibling conflict was related to a higher starting level of externalizing problems and faster decreases in externalizing problems. These results support the ethnic equivalence model. Despite differences between the two ethnic groups in sibling relationship quality as well as externalizing problems, the relationships between these two were similar. In both ethnic groups, sibling support does not seem to have strong protective effects on externalizing problems, but sibling conflict appears to be a risk factor for externalizing problems. These

findings are largely consistent with previous findings, indicating stronger overall effects on child and adolescent psychopathology of sibling conflict than of sibling warmth (Buist et al., 2013).

The fact that more sibling conflict was associated with faster decreases in externalizing problems over time may reflect a regression toward the mean. Adolescents with higher initial sibling conflict also reported higher levels of externalizing problems to begin with. These results suggest that patterns of longitudinal influence of sibling relationships may be different for adolescents with more pronounced problem behaviors. Therefore, it seems important to examine these patterns of sibling influence in clinically referred samples to further explore these possibilities. Studying clinically referred adolescents would add to existing knowledge about sibling influence based on normative samples and may provide insight into risk and protective functions of the sibling system concerning adolescent psychopathology.

Cross-Ethnic Differences in Associations With Internalizing Problems

For anxiety and depression, we found that less sibling support and more sibling conflict were associated with higher levels of internalizing problems, which is consistent with earlier studies (East & Rook, 1992; Kim et al., 2007; Pike et al., 1996; Stocker, 1994; Vogt Yuan, 2009). However, we found no significant effects of sibling support on over time changes in anxiety or depression. Again, sibling support does not seem to be a protective factor for continuing problem behaviors. Sibling conflict, however, was associated with a faster decrease of anxiety. In addition, more sibling conflict was also associated with a faster decrease in depression for both ethnic groups. Again, these results may reflect a regression toward the mean, because adolescents with higher scores of sibling conflict also reported much higher levels of anxiety and depression.

Results concerning internalizing problems were similar for the Moroccan and Dutch sample, supporting the ethnic equivalence model, in which effects are similar between different ethnic groups. Apparently the effects of sibling relationship quality on anxiety and depression are relatively universal (Buist et al., 2013). Adolescents whose sibling relationships are characterized by a high degree of warmth and support experience positive interactions and consequently develop more positive images of themselves (Sherman, Lansford, & Volling, 2006), resulting in less anxious and depressive symptoms.

Strengths and Limitations

A valuable strength of the present study is that we used longitudinal data to examine overtime effects of sibling relationship quality on externalizing and internalizing problems. Furthermore, externalizing problems, anxiety and depression were examined separately, enabling us to examine and show differences in the associations with sibling support and conflict. Some limitations of the present study should also be noted. First, for sibling relationship quality we were only able to use cross-sectional data. This was dictated by the study design. Another limitation is that only adolescent self-report data was used. However, a recent meta-analysis has indicated that type of informant (adolescent, sibling, parent, etc.) does not impact effect size of the association between

sibling relationship quality and internalizing or externalizing problems (Buist et al., 2013). Second, when studying differences between ethnic or cultural groups it is important to consider the possibility that the same questionnaire items may have different meanings in different ethnic groups. For example, in families from more collectivistic backgrounds in which sibling harmony is very important, even small amounts of sibling conflict may seem like a lot and may therefore be overestimated. However, in our study, this does not seem to be the case because Moroccan adolescents actually reported significantly less conflict than Dutch adolescents. In addition, reliability (as indicated by Cronbach's alpha) of the measures was highly similar between the Moroccan and Dutch adolescents, which seems to indicate that these questionnaires do reliably measure similar concepts in both groups. A third limitation is that results concerning prediction of overtime changes in depression have to be interpreted cautiously, because the slope variances were not statistically significant. A final limitation is that in our study, ethnicity may be confounded with SES because the Moroccan community in the Netherlands is characterized by a disadvantaged position in the Dutch society, expressed by poverty, unemployment and poor housing conditions (Dagevos, Gijsberts, & Van Praag, 2003). We attempted to match the two samples on SES, age, and gender, but the Moroccan group was still significantly older and had a significantly lower SES than the Dutch group. However, controlling for SES and age in the analyses did not alter the associations so our findings cannot be explained by differences between the two ethnic groups in SES and age. In addition, compared with SES scores in the general Dutch society (mean is 1.7; NISR, 2013), the SES scores of our Dutch and Moroccan samples (both with means above 3.0) reveal that they are both from a disadvantaged background (lowest tenth percentile).

Conclusions and Implications

Our study is one of few to study cross-ethnic differences concerning the longitudinal associations between adolescent sibling relationship quality and externalizing and internalizing problem behaviors. It is also one of the first studies to test the cultural values model and ethnic equivalence model (Lamborn & Felbab, 2003) for longitudinal effects of sibling relationship quality on internalizing as well as externalizing problems. For externalizing problems, anxiety, as well as depression, our findings support the ethnic equivalence model. The cultural values model was not supported by any of our findings. So the degree to which sibling support and sibling conflict are connected to level and change in externalizing problems, anxiety, and depression symptoms is similar for Moroccan and Dutch adolescents. This seems to indicate that these processes may be similar for adolescents of different ethnic backgrounds.

On the other hand, our results did show significant differences between the Moroccan and Dutch sample concerning sibling support and conflict and for externalizing problems and depression. To further illuminate these ethnic differences, other background variables could be taken into account. In a study on very young Moroccan offenders, one of the main risk factors for reoffending was being a younger brother with older brothers (Paalman, van Domburgh, Stevens, & Doreleijers, 2011). Being an older brother comes with responsibilities and might prevent delinquent behavior.

In contrast, being a younger brother comes with fewer responsibilities and therefore might be a risk factor for delinquent behavior. In the present study, we were not able to include sibling gender combination as a background variable due to lack of statistical power, but it seems a potentially interesting approach for future research.

The results of our study clearly show that sibling support and conflict have an effect on level and changes in problem behavior over time in different ethnic groups. These findings also have potential implications for clinical practice. Especially lowering the level of sibling conflict seems a promising possibility to improve the effectiveness of existing interventions for problem behavior and thereby ameliorate adolescents' quality of life.

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