EMPIRICAL RESEARCH

Adolescents with Few Friend Alternatives are Particularly Susceptible to Influence from Friends

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Abstract

Friend influence in adolescence is well-documented, but the characteristics that contribute to individual differences in susceptibility to influence are not well understood. The present study tests the novel hypothesis that within a friend dyad, having fewer friends than one's partner (i.e., relative lack of alternatives) increases susceptibility to influence as it reduces dissimilarity and thereby promotes compatibility. Drawn from diverse California (USA) public middle schools, participants were 678 adolescents (58% girls) in reciprocated friendships that were stable from the fall to the spring of sixth grade ($M = 11.53$ years old). Longitudinal Actor-Partner Interdependence Models assessed peer influence, operationalized as individual change in the direction of increased friend similarity. Consistent with the hypothesis, partners with fewer friends were influenced by partners with relatively more friends in self-reported social anxiety and somatic complaints, as well as teacher-reported academic engagement and prosocial behavior. Academic engagement was the only domain wherein partners with more friends were also influenced by partners with relatively fewer friends. For those with few friends, conformity (i.e., becoming more similar to a partner) can be an important strategy to promote compatibility for strengthening existing friendships.

Keywords Friendship · Susceptibility to influence · Friend influence · Adolescence

Introduction

Peer influence is pervasive. Across a variety of adaptive and maladaptive domains, children and adolescents yield to their friends and affiliates (Giletta et al., 2021). But why? According to the influence-compatibility model (Laursen & Veenstra, 2021), conformity fosters similarity, making it easier to get along, which promotes relationship stability. Strong evidence indicates that friends in successful relationships increasingly resemble one another, but in many

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dyads influence and behavioral change are not evenly apportioned (e.g., Hiatt et al., 2017). In some instances, conformity can be traced to characteristics that make one member of the dyad particularly influential; in other instances, conformity can be traced to characteristics that make one member of the dyad particularly susceptible to influence. The focus here is on the latter. The present study is designed to test the recently proposed hypothesis (Laursen & Faur, 2022) that having relatively few friends increases individual susceptibility to influence. Youth with few friends are inclined to conform, because conformity is less risky than potentially affronting a friend and losing access to the exclusive benefits the relationship provides. To this end, the current study examines the role of relative friend alternatives in susceptibility to influence over several areas of adjustment in a diverse community sample of young adolescent friends followed across a single academic year.

A few definitions are in order. *Peer influence* occurs when individuals act or think in ways they might not otherwise act or think, in response to experiences with friends (Laursen, 2018). Building on classic work (Kandel, 1978), influence is assumed to be reflected in increased friend similarity. One friend, an actor, who is the agent of

influence, does or says something that affects the behavior of the other friend. In response, the target, the other friend, alters their behavior to resemble the actor. *Conformity* describes responses by the target that increase similarity to the actor. Some friends are more apt to conform than others. *Susceptibility to peer influence* describes characteristics or circumstances that increase the likelihood that the target will conform to the actor (Laursen & Faur, 2022). Peer influence is neither inherently positive nor negative. Although much attention has focused on the maladaptive consequences of conformity, a host of beneficial correlates have been identified (Laursen & Veenstra, 2022).

The argument that friend alternatives (i.e., the number of other friendships in which an individual is involved) motivates conformity in partners who have relatively fewer friends rests on two compelling assumptions. First, according to investment theory, the partner who reaps the most benefits and is most dependent on a relationship for resources has the greatest incentive to conform to their counterpart (Rusbult & Buunk, 1993). Although typically applied to romantic relationships, the argument is well suited to friendships. The partner with fewer friends, whose peripheral status and lack of close ties may deter others from becoming their friend, grows increasingly reliant on one or two friends for the provision of interpersonal resources (Laursen, 2017). Dissimilarities may likely be sources of dissatisfaction, escalating the odds of friendship dissolution (Hartl et al., 2015). Under these circumstances, conformity may be less risky than jeopardizing a potentially difficult to replace relationship. Second, according to disequilibrium theories, imbalanced states motivate individuals to conform to the behaviors and wishes of others (Bukowski et al., 2008). *Intrapersonal disequilibrium* arises when youth perceive a discrepancy between who they really are and who they desire to be. Youth with few friends may experience (or be concerned about) loneliness, a reminder of the gap between a desired social state and a current social state (Laursen & Hartl, 2013). *Interpersonal disequilibrium*, in turn, arises when youth perceive a discrepancy between themselves and others. Youth with fewer friends relative to a partner are likely to be reminded of their diminished status, particularly if their limited number of friends is not a choice (e.g., Dijkstra et al., 2013). Conformity can function to preserve existing resources, avoiding further imbalance from the loss of a relationship.

Indirect evidence aligns with claims that a relative lack of friends fosters susceptibility to influence. In adult romantic relationships, partner dependence is linked to the availability and quality of alternatives; those with fewer relationship alternatives demonstrate greater conformity than those with more relationship alternatives (Leonard & Mudar, 2004). Studies of romantic relationships are important, but suggestive, because commitment in romantic

relationships alters exchanges to resemble those between involuntary affiliates (i.e., family members; Laursen & Jensen-Campbell, 1999) and because most individuals are involved in only one romantic relationship at a time, meaning that imbalances (typically) concern prospects for other partners, not participation in actual relationships. Although no studies of friendships have examined perceived friend alternatives, research has examined partners who differ in terms of peer acceptance, which describes the number of peers who claim to like an individual (and might therefore be construed as potential relationship partners). Several studies indicate that relatively lower accepted partners are susceptible to the influence from relatively higher accepted partners but not the reverse, in domains such as alcohol abuse (DeLay et al., 2022), depression (Prinstein, 2007), and school achievement (Rambaran et al., 2017). Studies of relative peer acceptance are important, but suggestive, because aside from the number of other friendships in which an individual is involved, attributes associated with being liked by few in the peer group include a host of traits potentially aligned with being susceptible to influence, such as diminished self-esteem (van Zalk & van Zalk, 2015), higher rates of depression (Allen et al., 2006), rejection and low popularity (Lessard & Juvonen, 2022), friendship participation (Conway et al., 2011), and younger age (Popp et al., 2008). In sum, findings that susceptibility is a function of low peer acceptance have been attributed, in part, to the assumption that low accepted youth have few friends and youth with few friends are inclined to conform in ways that heighten resemblances to friends. The present study puts this assumption to an empirical test.

Current Study

Friend influence processes are not well understood, particularly factors that contribute to individual differences in susceptibility to influence. There are several reasons why youth may be particularly susceptible to influence. The focus here is on vulnerabilities arising from having relatively few friends and the need to protect these friendships through conformity. Dyadic analyses with a large diverse community sample of young adolescent friends test the novel hypothesis that youth with relatively fewer friend alternatives (i.e., partners with fewer friends) are particularly susceptible to influence. Additionally, to gauge influence, a wide range of outcomes ranging from self-reported social anxiety and somatic complaints to teacher-reported academic engagement and prosocial behavior are examined over across two time points during the same academic year.

Partners with fewer friends are presumed to be particularly susceptible to influence because of their relatively higher level of investment in the relationship, but this

putative motive could not be directly assessed. Instead, alternative explanations were tested and rejected. First, levels of conformity among youth with no other friends were contrasted to those with one or two other friends, to discount the possibility that heightened conformity among partners with fewer friends is driven by youth with no friend alternatives, who have no competing sources of influence. The latter addresses the possibility that youth with multiple friends are not necessarily less invested in a relationship, but are instead subject to influence from many actors, which dilutes the influence of any one particular source. Second, analyses controlling for peer status (i.e., acceptance, rejection, and popularity) and individual attributes (i.e., self-esteem, depression, and age) examined whether potential confounding variables accounted for elevated conformity among partners with relatively fewer friends. Discounting these alternative explanations serves to bolster the conclusion that having relatively few friends heightens susceptibility to peer influence because youth with few friends adopt conformity as a strategy to preserve their existing friendships.

Method

Participants

Participants were drawn from the UCLA Middle School Diversity Project (Graham, 2018), a longitudinal investigation that started during the first year of middle school. Students attended 26 urban public schools in California that varied in terms of ethnic composition (Juvonen et al., 2018). The present study focused on 678 sixth-grade students (396 girls, 282 boys) in stable, reciprocated, same-sex friendships ($N = 339$ dyads) with partners who differed in friend alternatives (i.e., the number of other friendships in which an individual was involved). At the outset, participants were 11.53 ($SD = 0.36$) years old. Self-reports of ethnicity indicated that this sample was 30% Latino/a, 28% Caucasian/White, 15% East/Southeast Asian, 15% Multiethnic/Biracial, 6% African American/Black, 2% Filipino/Pacific Islander, 1% Middle Eastern, and 3% South Asian.

Measures

Friendship

In the fall and spring of sixth grade, participants were asked to nominate same-school, same-grade friends by listing the names of all "good friends". Participants could make an unlimited number of same- and other-sex friend nominations. *Reciprocated friends* were defined as dyads in which both partners concurrently nominated each other as friends.

Friend alternatives describes the number of other reciprocated friendships in which an adolescent participated (aside from the target friendship), separately calculated at Time 1 ($M = 1.49$, $SD = 1.28$, range = 0–6) and Time 2 ($M = 1.56$, $SD = 1.26$, range = 0–6). *Stable friends* were defined as dyads in which both partners reciprocally nominated one another as friends at both time points.

All items for each measure are listed in Table S1.

Self-reported social anxiety

At both time points, students completed six items from the Social Anxiety Scale for Adolescents (La Greca & Lopez, 1998) used to measure fear of negative evaluation (e.g., "I worry about what others say about me") and social avoidance (e.g., "It's hard for me to ask others to do things with me"). Responses were rated on a scale ranging from 1 (*not at all*) to 5 (*all of the time*). Item scores were averaged. Internal reliability was acceptable ($\alpha = 0.77$–0.81).

Self-reported somatic complaints

At each time point, students completed a seven-item checklist adapted from the National Longitudinal Study of Adolescent Health (Udry & Bearman, 1998) measure of somatic symptoms (e.g., headaches, poor appetite). Responses were rated on a scale ranging from 1 (*not at all*) to 4 (*almost every day*). Item scores were averaged. Internal reliability was acceptable ($\alpha = 0.76$–0.77).

Teacher-rated academic engagement

At both time points, homeroom teachers rated each student's academic engagement (e.g., "This student concentrates on doing his/her schoolwork") with the six-item short form of the Teacher Report of Engagement Questionnaire (Connell & Wellborn, 1991). Responses were rated on a scale ranging from 1 (*never*) to 4 (*always*). Item scores were averaged. Internal reliability was acceptable ($\alpha = 0.89$–0.90).

Teacher-rated prosocial behavior

During both fall and spring of sixth grade, homeroom teachers assayed each student's prosocial behavior with two items drawn from the Interpersonal Competence Scale (Cairns et al., 1995): "Kind and considerate of others" and "Standing up for others". Following recommendations (Eisinga et al., 2013), reliability for this two-item scale was estimated with a Spearman-Brown coefficient (0.50–0.58). Responses were rated on a scale ranging from 1 (*always*) to 7 (*never*). Items were reverse coded (so that higher scores represented more prosocial behavior), then averaged.

Potential Confounds

Self-reported self-esteem

At Time 1, students completed a six-item subscale ($\alpha = 0.79$) from the Self-Perception Profile Scale (Harter, 1982) used to measure self-esteem. For each item, students were asked to choose one of two options (e.g., "Some kids are happy with themselves as a person BUT other kids are often unhappy with themselves as a person) and then rated the degree to which the chosen state was 1 (*really true for me*) to 4 (*sort of true for me*). Items were averaged, with higher scores reflecting higher self-esteem.

Self-reported depression

At Time 1, students completed a 10-item ($\alpha = 0.60$) depressive symptoms scale (Radloff, 1977). Students indicated how often they experienced each item in the past week. Responses were rated on a 4-point scale, from 1 (*rarely or none of the time*) to 4 (*almost all the time*). Items were averaged, with higher scores reflecting greater depressive symptoms.

Teacher-rated popularity

At Time 1, homeroom teachers assayed each students popularity with two items (Spearman Brown = 0.69) drawn from the Interpersonal Competence Scale (e.g., "popular with girls" and "popular with boys"; Cairns et al., 1995). Responses were rated on a scale ranging from 1 (*very popular*) to 7 (*not popular*). Items were reverse coded (so that higher scores represented higher popularity), then averaged.

Peer nominations

At Time 1, students completed a standard sociometric inventory in which they were asked to nominate same-school, same-grade peers who fit each descriptor. *Rejection* represents the sum of all negative ("do not like to hang out with") nominations received. *Acceptance* represents the sum of all positive ("like to hang out with") nominations received. Nomination scores were standardized within school and grade: The number of nominations a student received was summed and divided by the number of potential nominators to create a proportion score (Cillessen & Bukowski, 2018).

Procedure

Participation in the study required signed parental consent and written student assent. Parent consent rates averaged 81.4%; of this total, student assent rates averaged 83.1%

($n = 5991$). The number of participating students in each school ranged from 78 to 445 ($M = 281.57$, $SD = 111.68$). Questionnaires were administered in classroom settings by researchers who read instructions aloud. Students received cash or gift certificate compensation ($5 in the fall and spring of sixth grade) after participation. The study was approved by the University of California, Los Angeles Institutional Review Board (11-002066, 2019).

A total of 4185 participants reported at least one reciprocated friendship with another study participant at Time 1, creating a total of 4128 reciprocal friend dyads. Of this total, 1924 friend dyads were stable from Time 1 to Time 2. Each partner in each stable friend dyad was classified into distinct roles on the basis of Time 1 friend alternatives: A partner with relatively fewer friend alternatives and a partner with relatively more friend alternatives. Of the stable friend dyads, 292 were omitted from analyses because partners did not maintain the same friend alternative roles (i.e., had fewer or more friends than the other) across the two time points. An additional 611 dyads were omitted because both partners had the same number of friend alternatives at Time 1 and 354 stable friend dyads were omitted from the analyses because both partners had the same number of friend alternatives at Time 2. Because the overwhelming majority (96%) of stable reciprocated friend dyads were same-sex, the analyses were restricted to these dyads. As a result, 29 other-sex dyads were omitted. Most adolescents (88.0%) involved in other friendships maintained the same friend alternative role in these other friendships (i.e., they were either the partner with more friend alternatives or the partner with fewer friend alternatives in all of their friendships). Adolescents who occupied a different role in their other friendships ($n = 129$) were excluded from analyses to focus on youth hypothesized to be particularly susceptible to friend influence. In the absence of rankings, the reciprocated friend dyads included in the analyses were randomly selected, such that participants were restricted to a single same-sex dyad to prevent unequal individual contributions to the data (i.e., bias arising from results weighted toward those with many friends). As a result, 227 students were omitted from the analyses because their friends participated in other stable friendships.

The final sample included 678 adolescents involved in 339 stable reciprocated same-sex friendships ($n = 198$ female dyads, $n = 141$ male dyads). To examine whether susceptibility findings were driven by partners with no friend alternatives, all friend dyads were divided into two groups on the basis of the number of alternatives for the partner with relatively fewer friends. *Exclusive friends* were dyads in which the partner with fewer alternatives had no other friends ($n = 174$). *Nonexclusive friends* were dyads in which the partner with fewer alternatives had one ($n = 127$) or two other friends ($n = 38$).
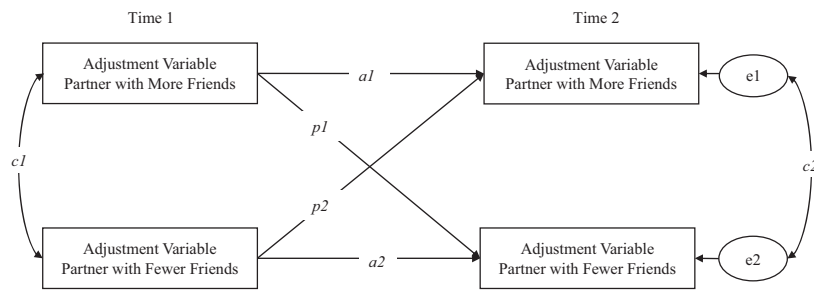
Fig. 1 Friend Influence over Adjustment: Longitudinal Actor-Partner Interdependence Model for Dyads Distinguished by Friend Alternatives (Number of Other Friendships). Separate analyses were conducted for each adjustment variable: social anxiety, somatic complaints, academic engagement, and prosocial behavior. Stability (actor) paths: $a1$ = stability of adjustment from Fall to Spring (partner with more other friends); $a2$ = stability of adjustment from Fall to Spring (partner with fewer other friends). Influence (partner) paths: $p1$ = influence of partner with more other friends on adjustment of partner with fewer other friends from Fall to Spring; $p2$ = influence of partner with fewer other friends on adjustment of partner with more other friends from Fall to Spring. Concurrent correlations = $c1$ and $c2$

Plan of Analysis

To examine influence within friend dyads, Actor Partner Interdependence Models (APIM; Kenny et al., 2006) for distinguishable dyads were conducted, modified for longitudinal data (Popp et al., 2008), in a structural equation model framework with Mplus v8.0 (Muthén & Muthén, 1998). The longitudinal APIM assesses influence between partners, controlling for selection similarity, by estimating the effect of each partner's predictor variable on their own outcome and on their friend's outcome variable, partitioning the variance that is shared by members of a dyad from the variance that is unique to associations between and within partners. The longitudinal APIM is akin to a residual change model, such that autoregressive effects represent the stability of a variable (Popp et al., 2008). By accounting for stability and within-time correlations, the cross-lagged partner paths predict residual change.

The analyses proceeded through six steps. At each step, separate analyses examined relative friend influence over four adjustment variables: social anxiety, somatic complaints, academic engagement, and prosocial behavior. To compare the strength of influence across partners, paths were constrained to be equal and model fit compared. A significant χ^2 value indicates that the partner paths are significantly different.

In the first step, partners were distinguished on the basis of other friends (i.e., friend alternatives: the number of additional reciprocated friendships in which the individual participated). Each friend in each dyad was classified as either the partner with relatively more other friends ($M = 2.36$ other friends, $SD = 1.13$, range = 1–6) or the partner with relatively fewer other friends ($M = 0.60$ other friends, $SD = 0.69$, range = 0–2). To confirm that dyads should be distinguished on the basis of other friends, a chi-square test of distinguishability (Kenny et al., 2006) was conducted.

In the second step, longitudinal APIM analyses were conducted to measure friend influence on social anxiety, somatic complaints, academic engagement, and prosocial behavior. Figure 1 depicts the measurement model. Concurrent correlations at Time 1 ($c1$) represent initial similarity between partners. Residual correlations at Time 2 ($c2$) represent the association that remains after accounting for partner similarity at Time 1, individual stability over time, and partner influence in the form of residualized behavioral change. Actor paths represent the within person stability of individual behavior that is estimated across the two time points for the partner with a *greater number of other friends* ($a1$) and the partner with *fewer other friends* ($a2$). Partner paths represent influence effects and describe associations from the Time 1 behavior of the partner with a *greater number of other friends* to the Time 2 behavior of the partner with *fewer other friends* ($p1$) and from the Time 1 behavior of the partner with *fewer other friends* to the Time 2 behavior of the partner with a *greater number of other friends* ($p2$).

In the third step, multiple group APIM analyses compared influence paths for dyads in which the partner with fewer friends had no other friends (exclusive friendships $n = 174$) and dyads in which the partner with fewer friends had one or two other friends (nonexclusive friendships $n = 165$). The purpose of these analyses was to examine whether exclusive friendships were uniquely influential and/or youth with only one friend were uniquely susceptible to influence. In so doing, the analyses also explored whether, in nonexclusive friendships, partner influence was diluted by competing sources of input from other friends. Chi-square difference tests determined whether there were statistically significant differences between groups of dyads on influence paths.

In the fourth step, multiple group APIM analyses compared influence paths for dyads in which the partner with a greater number of other friends had only one friend more than the partner with fewer other friends ($n = 187$ dyads)

and dyads in which partners differed by two or more other friends ($n = 152$ dyads). The purpose of these analyses was to examine whether susceptibility is driven by a social skills or social status gap reflected in differences in friendship participation. Chi-square difference tests determined whether there were statistically significant differences between groups of dyads on influence paths.

In the fifth step, multiple group APIM analyses compared influence paths for dyads in which the partner with a greater number of other friends had only one other friend ($n = 91$) and dyads in which the partner with a greater number of other friends had two or more other friends ($n = 248$). Additional analyses compared dyads in which the partner with a greater number of other friends had only one other friend ($n = 198$) and dyads in which the partner with a greater number of other friends had two or more other friends ($n = 141$). The purpose of these analyses was to examine whether partner influence was diluted by competing sources of input from other friends, such that influence from the partner with fewer friends weakened as the number of other friendships among partners with more friends increased. Chi-square difference tests determined whether there were statistically significant differences between groups of dyads on influence paths.

Sixth, longitudinal APIM analyses were rerun to include control variables as Time 1 covariates to isolate results to friend alternatives and to rule out the possibility that findings were driven by peer status (popularity, acceptance, and rejection), network centrality (number of reciprocated friends and number of nominated friends), and other attributes (self-esteem, depression, and age) known to contribute to differences between friends in susceptibility to influence. Two sets of analyses were conducted. The first set included correlation paths between each partner's score on the predictor variable at Time 1 and the same partner's Time 1 score on a potential confounding variable. The second set included a single score that reflected the difference between partners on a potential confounding variable (e.g., Time 1 self-esteem of the partner with more friend alternatives minus the Time 1 self-esteem of the partner with fewer friend alternatives), entered as a correlate of each partner's Time 1 predictor variable.

Finally, two sets of supplemental analyses were conducted. First, analyses were rerun to include dyads that were excluded from the primary analyses: (1) friend dyads who differed on friend alternatives at Time 1 but not Time 2; (2) friend dyads where one or both partners occupied different friend alternative roles (i.e., partner with more friends or partner with fewer friends) in other friendships; and (3) other sex friend dyads. Second, multiple group longitudinal APIM analyses were conducted to examine differences in patterns of association as a function of sex (boy or girl) and ethnicity (same or other).

Power

Monte Carlo simulations (Muthén & Muthén, 2002) with 1000 replications were conducted to determine the number of dyads needed to provide adequate power (i.e., 80%) to detect statistically significant partner paths and to detect group differences in partner paths. The results indicated that all analyses were adequately powered. Specifically, a minimum sample of 348 dyads was necessary to detect small ($B = 0.15$) partner effects, a minimum sample of 82 dyads was necessary to detect medium ($B = 0.30$) partner effects, and a minimum sample of 27 dyads was necessary to detect large ($B = 0.50$) partner effects. A minimum sample of 290 dyads was necessary to detect statistically significant differences between groups on partner paths in multiple-group comparisons.

Missing data

All participants completed friend nominations. For other variables, missing item-level data averaged 4% at Time 1 and 17% at Time 2. Little's MCAR test (Little & Rubin, 1987) revealed that the data were missing completely at random, $\chi^2(869) = 907.80$, $p = 0.175$. Missing data at the item level was imputed using an EM algorithm with 25 iterations. Full information maximum-likelihood estimation (FIML) was applied to wave-level missing data.

Results

Table 1 presents bivariate correlations between the main study variables. Unless otherwise indicated, the same pattern of results emerged in the Fall and Spring semesters. Friend alternatives was positively correlated ($p < 0.05$) with academic achievement and prosocial behavior, and negatively correlated with social anxiety and somatic complaints (Fall only). Academic engagement was positively correlated with prosocial behavior and negatively correlated with somatic complaints. Social anxiety was positively correlated with somatic complaints. All autocorrelations were statistically significant.

Separate 2 (friend alternatives: more other friends vs. fewer other friends) × 2 (time) repeated measures ANOVAs were conducted with social anxiety, academic engagement, prosocial behavior, and somatic complaints as the dependent variable. A main effect of time on social anxiety, $F(1, 640) = 15.03$, $p < 0.001$, was qualified by an interaction between time and friend alternatives, $F(1, 640) = 5.13$, $p = 0.024$. Follow-up t tests revealed a statistically significant ($p < 0.05$) increase in social anxiety among partners with fewer other friends ($d = 0.23$), but not among partners with more other friends ($d = 0.07$). There was also a main

Table 1 Interclass correlations, means, and standard deviations

Variable	1	2	3	4	5	M	SD
1. Friend Alternatives	0.70** [0.66, 0.74]	−0.08* [−0.16, −0.01]	−0.09* [−0.16, −0.01]	0.17** [0.09, 0.24]	0.11** [0.03, 0.19]	1.48	1.28
2. Social Anxiety	−0.08* [−0.15, −0.004]	0.46** [0.40, 0.52]	0.32** [0.25, 0.39]	0.04 [−0.03, 0.12]	−0.01 [−0.09, 0.06]	2.04	0.71
3. Somatic Complaints	0.01 [−0.09, 0.10]	0.23** [0.14, 0.32]	0.56** [0.49, 0.63]	−0.17** [−0.25, −0.10]	−0.07 [−0.15, 0.01]	1.70	0.55
4. Academic Engagement	0.11** [0.03, 0.18]	0.05 [−0.02, 0.13]	−0.15** [−0.24, −0.06]	0.72** [0.68, 0.76]	0.50** [0.44, 0.55]	2.91	0.71
5. Prosocial Behavior	0.16** [0.08, 0.23]	−0.05 [−0.13, 0.02]	−0.10 [−0.19, 0.001]	0.53** [0.47, 0.59]	0.53** [0.48, 0.58]	5.20	1.14
M	1.56	2.14	1.70	2.85	5.17		
SD	1.26	0.60	0.53	0.73	1.21		

$N = 678$. Social anxiety was rated on a scale from 1 (*not at all*) to 5 (*all of the time*). Somatic complaints was rated on a scale from 1 (*not at all*) to 4 (*almost every day*). Teacher rated academic engagement ranged from 1 (*never*) to 4 (*always*). Teacher-rated prosocial behavior ranged from 1 (*always*) to 7 (*never*). Friend alternatives ranged from 0 to 6. Autocorrelations are presented on the diagonal. Intercorrelations at Time 1 (Fall) are presented above the diagonal. Intercorrelations at Time 2 (Spring) are presented below the diagonal

*$p < 0.05$, **$p < 0.01$, two-tailed

effect of friend alternatives on academic engagement, $F(1, 638) = 4.80$, $p = 0.029$. Teacher-reported academic engagement was higher among partners with more other friends than among partners with fewer other friends ($d = 0.17$). There were no statistically significant main effects or two-way interactions for prosocial behavior and somatic complaints.

Step 1: Susceptibility to Friend Influence: Distinguishability Analyses

Statistically significant distinguishability analyses revealed poor fit for each model, indicating that, within dyads, partners should be distinguished on the basis of relative number of other friends: social anxiety, $\chi^2(6, N = 339) = 21.81$, $p < 0.01$; somatic complaints, $\chi^2(6, N = 339) = 12.76$, $p < 0.05$; academic engagement, $\chi^2(6, N = 339) = 13.09$, $p < 0.05$; and prosocial behavior, $\chi^2(5, N = 339) = 11.03$, $p = 0.05$.

To determine whether the relative number of other friends was confounded with peer status (i.e., popularity, acceptance, and rejection), three separate 2 (friend alternatives: higher vs. lower) × 2 (peer status: higher vs. lower) chi-square analyses were conducted. Table S2 presents the results. There were no statistically significant results (Cramer's $V = 0.04$ to 0.07), indicating that the partner with fewer other friends was equally likely to be the higher status as the lower status partner.

Step 2: Susceptibility to Friend Influence: Primary Analyses

Social anxiety

Figure 2 depicts results from the distinguishable dyad longitudinal APIM analyses of social anxiety. Partners with fewer other friends were influenced by partners with more other friends such that higher levels of social anxiety on the part of the partner with more friend alternatives predicted greater increases in social anxiety from the Fall to the Spring in the partner with fewer friend alternatives. In contrast, partners with more other friends were not influenced by partners with fewer other friends.

Somatic complaints

Figure 3 depicts results from the distinguishable dyad longitudinal APIM analyses of somatic complaints. Partners with fewer other friends were influenced by partners with more other friends such that higher levels of somatic complaints on the part of the partner with more friend alternatives predicted greater increases in somatic complaints from the Fall to the Spring in the partner with

Fig. 2 Friend Influence over Social Anxiety: Results from a Longitudinal Actor-Partner Interdependence Model with Friends Distinguished on the Basis of Friend Alternatives (Number of Other Friendships). $N = 339$ dyads (678 participants). Standardized beta weights are reported with 95% confidence intervals in brackets. *$p < 0.05$, **$p < 0.01$, two-tailed
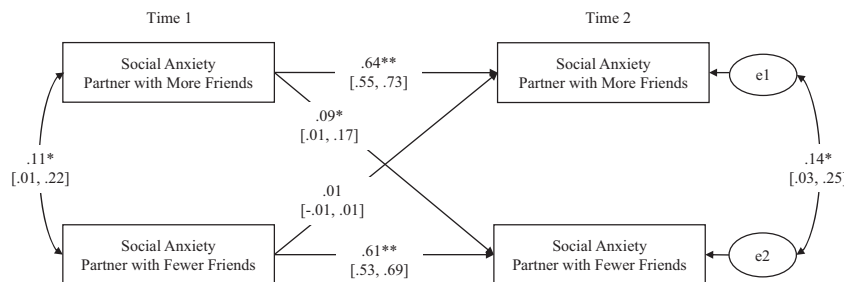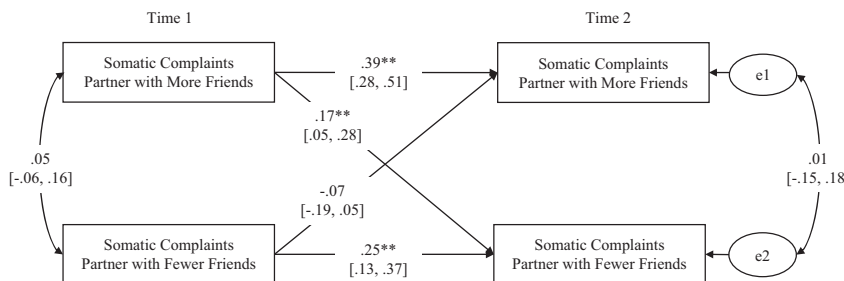

Fig. 3 *Friend Influence over Somatic Complaints: Results from a Longitudinal Actor-Partner Interdependence Model with Friends Distinguished on the Basis of Friend Alternatives (Number of Other Friendships). $N = 339$ dyads (678 participants). Standardized beta weights are reported with 95% confidence intervals in brackets. *$p < 0.05$, **$p < 0.01$, two-tailed*

fewer friend alternatives. In contrast, partners with more other friends were not influenced by partners with fewer other friends.

Academic engagement

Figure 4 depicts results from the distinguishable dyad longitudinal APIM analyses of academic engagement. Partners with fewer other friends were influenced by partners with more other friends such that higher levels of academic engagement on the part of the partner with more friend alternatives predicted greater increases in academic engagement from the Fall to the Spring in the partner with fewer friend alternatives. In addition, partners with more other friends were influenced by partners with fewer other friends such that higher levels of academic engagement on the part of the partner with fewer friend alternatives predicted greater increases in academic engagement from the Fall to the Spring in the partner with more friend alternatives.

Prosocial behavior

Figure 5 depicts results from the distinguishable dyad longitudinal APIM analyses of prosocial behavior. Partners with fewer other friends were influenced by partners with more other friends such that higher levels of prosocial behavior on the part of the friend with more friend alternatives predicted greater increases in prosocial behavior from the Fall to the Spring in the partner with fewer friend alternatives. In contrast, partners with more other friends were not influenced by partners with fewer other friends.

Summary

Across all four domains (social anxiety, somatic complaints, academic engagement, and prosocial behavior), partners with fewer other friends were susceptible to influence from partners with more friends. Academic engagement was the only domain with reciprocal influence; partners with more other friends were also influenced by partners with fewer other friends.

Step 3: Susceptibility to Friend Influence: Comparing Exclusive and Nonexclusive Friendships

To address the possibility that exclusive friendships (i.e., dyads in which the partner with fewer alternatives has no other friends) are uniquely influential and/or that youth who have only one friend are uniquely susceptible to influence, separate sets of multiple groups analyses contrasted patterns of influence for otherwise friendless partners with fewer relationship alternatives (exclusive friendships; $n = 174$) and partners with fewer relationship alternatives who were involved in one or two other friendships (nonexclusive friendships; $n = 165$). There were no statistically significant differences between dyads in which the partner with fewer alternatives had no other friends and those in which the partner with fewer alternatives had other friendships on susceptibility to influence from the partner with more friends (path *p1*): social anxiety, $\chi^2(1) = 0.01$, $p = 0.929$; academic engagement, $\chi^2(1) = 0.96$, $p = 0.757$; prosocial behavior, $\chi^2(1) = 0.06$, $p = 0.807$; and somatic complaints, $\chi^2(1) = 0.60$, $p = 0.440$. The lack of differences between

Fig. 4 *Friend Influence over Academic Engagement: Results from a Longitudinal Actor-Partner Interdependence Model with Friends Distinguished on the Basis of Friend Alternatives (Number of Other Friendships).* N = 339 dyads (678 participants). Standardized beta weights are reported with 95% confidence intervals in brackets. *p < 0.05, **p < 0.01, two-tailed
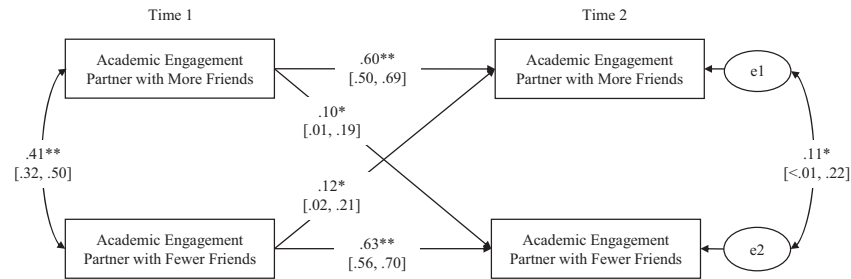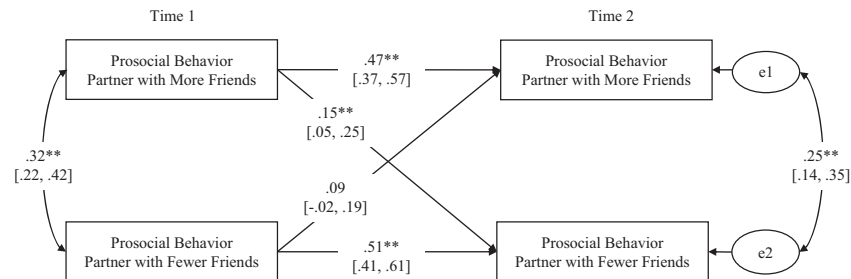

Fig. 5 *Friend Influence over Prosocial Behavior: Results from a Longitudinal Actor-Partner Interdependence Model with Friends Distinguished on the Basis of Friend Alternatives (Number of Other Friendships).* N = 339 dyads (678 participants). Standardized beta weights are reported with 95% confidence intervals in brackets. *p < 0.05, **p < 0.01, two-tailed

those who did or did not participate in other friendships suggests that susceptibility results are not driven by youth with no competing sources of influence. The findings also rule out the possibility that the findings are a product of dilution, in that the strength of partner influence on youth with fewer friends was the same for those with and without other friends who might potentially serve as competing sources of influence.

Step 4: Susceptibility to Friend Influence: Comparing Dyads that Differ by One Other Friendship and Those that Differ by Two or More Other Friendships

To address the possibility that susceptibility is driven by a gap in social skills or social status that is reflected by differences in the number of other friendships in which each partner is involved, separate multiple groups analyses contrasted patterns of influence for dyads in which the partner with fewer friends had only one friend less than the partner with more friends ($n = 187$ dyads) and dyads in which partners differed by two or more friend alternatives ($n = 152$ dyads). There were no statistically significant differences between dyads in which partners differed by one other friend and dyads in which partners differed by two or more other friends on susceptibility to influence from the partner with more friends (path *p1*): social anxiety, $\chi^2(1) = 0.02$, $p = 0.881$; academic engagement, $\chi^2(1) = 0.54$, $p = 0.462$; prosocial behavior, $\chi^2(1) = 0.97$, $p = 0.325$; and somatic complaints, $\chi^2(1) = 3.38$, $p = 0.066$. The lack of differences

between groups that varied in the magnitude of the gap in other friends suggests that susceptibility results are not a product of a deficit of status or social skills on the part of the friend with fewer alternatives.

Step 5: Susceptibility to Friend Influence over Adjustment: Dilution Effect Comparisons

To address the possibility that dilution is responsible for the finding that partners with more friends are not susceptible to influence from partners with fewer friends because influence is weakened by other competing sources of influence, separate multiple groups analyses contrasted patterns of influence for dyads in which the partner with more friends had only one other friendship ($n = 91$) and dyads in which the partner with more friends had two or more other friendships ($n = 248$). There were no statistically significant differences between dyads in which the partner with more friends had one other friend and those involved in two or more friendships on susceptibility to influence from the partner with fewer friends (path *p2*): social anxiety, $\chi^2(1) = 0.48$, $p = 0.489$; academic engagement, $\chi^2(1) = 0.12$, $p = 0.728$; prosocial behavior, $\chi^2(1) = 0.01$, $p = 0.980$; and somatic complaints, $\chi^2(1) = 2.86$, $p = 0.091$. In addition, there were no statistically significant differences between dyads in which the partner with more friends had one or two other friends ($n = 198$) and those involved in three or more friendships ($n = 141$) on susceptibility to influence from the partner with more friends (path *p1*): social anxiety, $\chi^2(1) = 0.50$, $p = 0.479$; academic

engagement, $\chi^2(1) = 1.03$, $p = 0.311$; prosocial behavior, $\chi^2(1) = 0.01$, $p = 0.932$; and somatic complaints, $\chi^2(1) = 0.95$, $p = 0.331$. The absence of differences (here and in step 3) suggests that dilution (apportioning influence across multiple potentially competing sources) is not responsible for the fact that partners with fewer friends failed to influence partners with more friends.

Step 6. Susceptibility to Friend Influence over Adjustment: Removing the Contribution of Potential Confounds

Three sets of analyses were conducted to rule out the possibility that results are driven by attributes associated with susceptibility to influence (see Table S4). The same pattern of statistically significant results emerged in analyses that included peer status (popularity, acceptance, and rejection), network centrality (number of reciprocate friends and number of nominated friends), and other attributes known to contribute to difference between friends in influence (self-esteem, depression, and age) as Time 1 covariates. The absence of differences suggests that susceptibility should be attributed to relative friend alternatives and not to other characteristics that are correlated with influence and friendship participation.

Supplemental Analyses

Additional analyses (summarized in the supplementary text) included dyads that were excluded from the primary analyses. In all but two instances [when significant findings became borderline ($p < 0.10$)], the same pattern of statistically significant results emerged. Additionally, multiple group contrasts (summarized in the supplementary text) revealed no statistically significant differences in patterns of influence between female and male dyads, and between same-ethnicity and different-ethnicity dyads on social anxiety, somatic complaints, academic engagement and prosocial behavior.

Discussion

That friends influence adjustment is undisputed. It is often the case, however, that influence is not equally apportioned between friends. Considerable attention has focused on who influences whom; much less is known about why one partner is more prone to be influenced than the other. The present study was designed to test the hypothesis that within a friend dyad, the partner with fewer friends is particularly susceptible to influence and therefore is apt to change to resemble the partner with more friends, using conformity strategically to preserve a valued relationship.

Drawing on a diverse sample of young adolescents, dyadic analyses investigated friend influence over behaviors (prosocial and academic engagement) as well as under-studied indicators of well-being (social anxiety and somatic symptoms) across the fall and spring of sixth grade. Consistent with findings from married couples (Leonard & Mudar, 2004), susceptibility to friend influence was greatest among partners with relatively fewer alternatives. Specifically, partners with fewer other friends were influenced by partners with a greater number of other friends. The findings were robust across all outcomes examined. Academic engagement was the only domain in which partners with more friends were also influenced by partners with relatively fewer friends, suggesting convergence (both partners change to resemble one another).

The findings are consistent with claims that disequilibrium drives susceptibility such that a perceived deficit of friends incentivizes conformity (Laursen & Faur, 2022). There are several reasons why this might be the case. Disequilibrium may arise for youth with relatively fewer friends who desire a larger network of affiliates and experience a discrepancy between their desired and actual social standing. To be sure, some youth prefer to keep only one or two friends. For those with greater aspirations, however, interactions with interpersonally successful partners may serve as reminders of their relatively peripheral social status (Bukowski et al., 2008). Reliant on staying in the good graces of a partner with multiple affiliate choices, they may fear the loss of resources, both in absolute terms and in terms of gains that flow from affiliation with successful peers. Within a friend dyad, the partner with fewer affiliate options is disadvantaged by virtue of heightened dependence; partners with fewer friends have limited or no alternatives for support, companionship, and instrumental assistance. Compared to the partner with relatively more friends, the partner with fewer friends has more to fear from the loss of the relationship and is therefore more invested in its success. Hence conformity helps to preserve existing friendships by strengthening similarities that serve as a foundation for shared enjoyment and by reducing potential sources of conflict that may disrupt exchanges (Laursen & Veenstra, 2021). Friendship dissolution may be particularly distressing for those who wish for more friends but have few because they find it challenging to make new friends (Bukowski et al., 2010).

Alternative explanations were tested and eliminated, including that partners with fewer other friends appear to be more susceptible because they have fewer other friends to influence them. There was no evidence, however, to support the idea that influence is diluted by participation in many friendships. First, when comparing partners with fewer friend alternatives, susceptibility did not differ for those involved in exclusive (i.e., those with no other friends)

friendships and those involved in nonexclusive friendships (i.e., those with one or two other friends), suggesting that children with only one friend did not conform more than those with additional friendships. Susceptibility was not restricted to those who lacked competing sources of influence. Second, partners with fewer other friends were not more susceptible by virtue of the magnitude of the difference between partners in friend alternatives. Such findings suggest that susceptibility was not driven by a trait deficit on the part of the partner with fewer friends. Third, with the exception of academic engagement, partners with fewer friends did not influence partners with more friends, and these patterns of influence did not differ based on the number of other friends that either reported. Partners with the greatest number of friends were not the most influential; nor were partners with the fewest friends the most susceptible to influence. Perhaps the clearest evidence on this point is that youth with only one other friend were susceptible to influence from partners who had relatively more friends but not from partners who had relatively fewer friends.

Other alternative explanations that might have accounted for the results were considered and eliminated. Partners with fewer relationship alternatives were not more susceptible simply by virtue of being younger, having low self-esteem, being depressed, being peripheral, or being unpopular or rejected; neither could the results be attributed to the fact that the partner with more friends was older, better adjusted, or of higher status.

The goal of testing alternative explanations was to demonstrate that susceptibility is a product of relative friend alternatives. Replication across behaviors and indices examined should inspire confidence in the results: The same pattern of results emerged, in teacher and peer reports, on positive and negative indicators of adjustment. Of course, eliminating alternative explanations does not provide definitive proof for the mechanism hypothesized to be responsible for heightened susceptibility among partners with fewer friends. Absent data on conformity motives, it is not possible to demonstrate that relationship maintenance goals drive behavioral change among youth with relatively fewer friends. It is possible to assert, however, that there are no viable competing hypotheses. Until one emerges, it is reasonable to conclude that the evidence is consistent with claims that youth with few friends are susceptible to influence from partners with more friends because they have more invested in the relationship and more to lose from its dissolution.

Previous findings indicate that lower accepted friends are influenced by higher accepted friends but not the reverse (e.g., Laursen et al., 2012). The mechanisms underlying influence in most of these studies are opaque; it difficult to determine whether influence occurs because better accepted partners have characteristics that make them especially influential or whether lesser accepted partners have characteristics that make them especially susceptible to influence. Although some may raise similar concerns about the present study, results from the supplemental analyses cast doubt on the prospect that the results are a product of attributes that make partners with relatively more friends particularly influential. Given the absence of trait explanations, what remains is the state-based conclusion that conformity arises when youth are at a perceived social disadvantage and so feel that they must act to preserve a high-value, potentially difficult to replace friendship. Of course, an even stronger test of the hypothesis that conformity is a function of relative friend alternatives would be focus on children who occupy different roles in different friendships. However, almost all adolescents in the sample (95%) had the same role (relatively more or relatively fewer friend alternatives) in all of their friendships. Within-person comparisons of conformity to partners with relatively more friends and conformity to partners with relatively fewer friends were not possible and, if they were, would describe only a small proportion of youth.

One unexpected finding emerged: Partners with relatively more friends were influenced by the academic engagement of partners with relatively fewer friends. Post-hoc explanations should be interpreted with caution. Compared to the other outcomes examined in this study, academic engagement is competence based. Others have reported that higher achieving partners influence lower achieving partners and not the reverse (e.g., DeLay et al., 2015). In the present study, partners with relative more friends and partners with relatively fewer friends did not differ in terms of their academic achievement, which suggests that findings of mutual influence may reflect the equal distribution of ability across friend alternative groupings. What makes a friend influential, or susceptible to influence, over academic related behaviors may be driven by motives and interests. For instance, one study found that the degree to which higher accepted partners influence the academic performance of their lower accepted friends depended on the degree to which each was interested in academics (DeLay et al., 2016).

The findings have important implications. First, previous research indicates that something as simple as seat assignment changes can prompt new friendship formation (Faur & Laursen, 2022). Such findings suggest that teachers could relocate students with few friends to facilitate the formation of new friendships in an effort to mitigate negative peer influence. Second, parents can serve as a critical buffer against untoward peer influence (e.g., Marion et al., 2014). Supportive parent-child relationships may protect children who are vulnerable to peer influence because they lack friend alternatives. Finally, most current interventions assume susceptibility to peer influence stems from diminished peer status (e.g., see Yeager et al., 2018). The present

findings suggest that a different tack may be in order, given that states, as well as traits, are important drivers of susceptibility to peer influence. One possibility may be interventions aimed at enhancing peer influence resistance skills in ways that minimize threats to relationship continuity (e.g., cooperative learning approaches; see Van Ryzen & Roseth, 2018).

The study is not without limitations. Some studies suggest that influence effects are most pronounced among best friends (e.g., Giletta et al., 2011). Lacking friendship rankings, randomly selected reciprocated friend dyads were utilized, rather than top ranked friends. The magnitude of influence effects may have been underestimated as a consequence. Influence is also apt to differ as a function of the quality of the relationship (Hiatt et al., 2015). Better quality friendships are apt to be more influential than poor quality friendships. Information on when friendships began was not available. Friend influence is most pronounced during the initial stages of friendship formation (Popp et al., 2008), so presumably the effects identified herein would be greatest during this interval. The likely inclusion of longstanding friend pairs suggests that these findings underestimated the magnitude of peak influence. Some indices utilized were suboptimal. Teacher ratings of popularity are only weakly correlated with peer ratings (see Cillessen & Marks, 2011) and the two-item teacher rated assessment of prosociality had poor internal reliability (as is typical of two item scales; Marsh et al., 1998). Stronger assessments would increase confidence in the results. The analytic strategy utilized herein restricts individuals to participation in one friendship. As a consequence, it was not possible to separate variance attributable to the peer group from variance attributable to the dyad. Supplemental analyses that revealed the same level of friend influence after controlling for the size of each friend's network only partially mitigates these concerns. Characteristics of the peer group to which the dyad belongs may still account for partner influence effects (DeLay et al., 2021). Also, it should be noted that in the current sample, about one third of dyads did not differ in terms of relative friend alternatives. In these dyads, other forces will determine who influences whom. Further, influence processes almost certainly differ as a function of the salience of the topic to partners (Block & Grund, 2014). Clearly, friend alternatives are not the only factor that shapes susceptibility to friend influence. Equally clearly, friend alternatives are an important factor that should not be overlooked when unpacking conformity tendencies.

Conclusion

What gives one friend influence over another? Previous research has overwhelmingly focused on traits that heighten susceptibility to influence. Although undoubtedly important, the results described herein suggest that attention should also be given to states or contexts that create conditions that increase the likelihood of conformity. In the case of the present study, an imbalance between partners in affiliate alternatives heightened vulnerability to influence for those with relatively fewer other friends. Under such circumstances, the incentives for conformity are substantial. Much lies on the success of the relationship for partners with few or no other friends. Resistance to influence may provoke conflict, which can threaten relationship stability. For those with few alternatives, conformity may be an important strategy to strengthen friendship ties, promoting compatibility by reducing dissimilarity. There may be costs associated with conformity but many youth are willing to bear them, apparently to stay in the good graces of a friend.

Data availability

The datasets generated and/or analyzed during the current study are not publicly available.

Authors' Contributions S.F. conceived of the current study, participated in its design, participated in analysis and interpretation of the data, and helped to draft the manuscript; B.L. conceived of the current study, participated in its design, participated in interpretation of the data, and helped to draft the manuscript; J.J. conceived of the current study, participated in its design, and helped to draft the manuscript, and was one of the principal investigators on the larger project from which the present analyses were conducted. All authors read and approved the final manuscript.

Compliance with Ethical Standards

Conflict of Interest The authors declare no competing interests.

Ethical Approval This study met established ethical standards and was approved by the University of California, Los Angeles North Campus Institutional Review Board (IRB). All procedures performed were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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