

STUDY III

Shyness as Basis for Friendship Selection and Socialization in a Youth Social Network

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Abstract

Shy children and adolescents have previously been found to have friends with similarly shy, withdrawn behavioral characteristics. How peers might socialize shyness over time has, however, not been thoroughly investigated before. Our network included 834 youths (339 girls, and 495 boys; $M = 14.29$), followed for three years. We used the social network analysis software, SIENA, to analyze the data. The results show that those youths who are shy are less popular and choose fewer friends in the network. They also tend to choose friends who are shy, and over time they will influence each other into becoming more shy – over and above other effects. Finally, girls' shyness is more influenced than boys' by their friends' shyness levels. These results show the significance of looking at shy youths' friendships over time, and embedded in social networks.

Keywords: shyness, friendships, selection, influence, socialization, social networks

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Human beings are social animals, and social relationships are generally considered important. Most people look forward to spending time with family and friends. In fact, to be completely isolated from others is one of the worst punishments in many of today's societies. For children and adolescents, some of the most important social interactions are with peers. By middle childhood, more than a third of their social interactions involve peers (Gifford-Smith & Brownell, 2003), and most adolescents spend more time with peers than they do with their families (Bukowski, Gauze, Hoza, & Newcomb, 1991; Fuligni, Eccles, Barber, & Clements, 2001). Not everyone is equally comfortable in social interactions, however. Some have enduring characteristics that make social contacts and relationships difficult. One of those characteristics is shyness.

Shyness has been defined as wariness in new social encounters, novel places, and with unknown people (Asendorpf, 1991; Cheek & Buss, 1981; Cheek & Watson, 1989). It shows overlap with such related constructs as behavioral inhibition, social anxiety, social withdrawal, and social reticence (Crozier, 2000). Childhood shyness typically emerges during the 1st year of life and is believed to be influenced by temperamental characteristics linked with wariness and emotionality (Bruch, Giordano, & Pearl, 1986; Buss, 1980; Buss, 1986; Kagan & Reznick, 1986; Schmidt & Robinson, 1992). Adolescent shyness, on the other hand, seems to be rooted in self-conscious concerns, based on thinking of oneself as a social object (Buss, 1986). This type of shyness is thought to emerge during middle childhood or early adolescence (Bruch et al., 1986; Buss, 1980; Buss, 1986; Schmidt & Robinson, 1992), perhaps stimulated by the changes that occur during puberty (Cheek, Carpentieri, Smith, Rierdan, & Koff, 1986). Theoretically, however, there is no reason why temperamentally shy children could not develop self-conscious shyness later on. Empirical studies show that from middle childhood onward, shy adolescents have poor self-esteem, social self-confidence, and social skills (Cheek & Melchior, 1990; Crozier, 1981; Crozier, 1995; Jones & Russell, 1982; Lawrence & Bennett, 1992; Miller, 1995), and adolescent shyness has also been linked to depressive symptoms, low life satisfaction, poor self-esteem, less positive affect, and less favorable attitudes regarding one's appearance (Kerr, 2000). For adolescents, then, shyness might be particularly problematic in peer relationships, and it might also be easily influenced, or socialized, by any kind of peer interactions that make self-conscious concerns salient.

Theoretically, however, there are at least two possible processes through which adolescents' closest friends might influence their shyness. One is similar to a process that has been identified in depressed youths. The process, known as co-rumination, involves dwelling on and discussing problems together (Rose, 2002), and it seems to explain why adolescent girls influence each other into becoming more depressed over time (Prinstein, Borelli, Cheah, Simon, & Aikins, 2005). In an analogous process, adolescents might influence each other's shyness by disclosing to each other and discussing their feelings of social self-consciousness, fears of others' negative evaluation, and desires to avoid specific social situations. These discussions might encourage adolescents to focus more on social fears than

they would otherwise. Because fear of negative evaluation by others is a central aspect of shyness (Bruch, 1989; Schneider, 1999), and shyness can be induced solely by the expectation of social evaluation (Asendorpf, 1989), focusing on social fears could result in increased trepidation about social situations for both friends involved. In other words, adolescents' shyness might be influenced by the shyness of their closest friends. Second, in a reinforcement process, sharing fears about social situations might validate and reinforce these fears, and friends might even encourage each other's shy, avoidant behaviors, so they can feel better about their own shyness. In addition, interacting with shy friends might make one more shy over time, because there is no one to model or scaffold more effective social interactions. Hypothetically, then, there are a number of reasons to expect that shyness might be influenced in adolescent friendships. To our knowledge, there has been no research on this, but there is suggestive evidence from research on children's social withdrawal, which is related but not identical to shyness. Specifically, having a withdrawn friend during the transition to middle school has been shown to increase social withdrawal (Oh et al., 2008). It is unknown, however, whether adolescent shyness can be increased by having friends who are shy.

For any of these influence processes to work, some degree of selection of friends according to shyness would also have to take place. Although there is no direct empirical evidence that adolescents select their friends based on similarity of shyness, studies of younger children show that shy or withdrawn children tend to be similar to their friends in terms of socially fearful, withdrawn characteristics (Gazelle & Spangler, 2007; Güroglu, Van Lieshout, Haselager, & Scholte, 2007; Haselager, Hartup, Van Lieshout, & Riksen-Walraven, 1998; Rubin, Wojslawowicz, Rose-Krasnor, Booth-LaForce, & Burgess, 2006). In addition, children's peer groups tend to be similar in shyness-sensitivity (Chen, Chen, & Kaspar, 2001). In one study including adolescents, parallel results were found, as youths with withdrawn characteristics had friends similar to themselves on these characteristics (Güroglu et al., 2007). There are several problems with this research, however. First, these studies are mostly about socially withdrawn children, or other constructs such as anxious-solitude, shyness/dependency, and shyness-sensitivity. None of these constructs, however, necessarily entirely reflect shyness. Second, the studies report results regarding friendship similarity. Similarity, also known as homophily, can be a result of two possible processes: selection or influence over time (Kandel, 1978). Even though most of the abovementioned studies were longitudinal, the distinction between selection and influence processes in friendships was not attended to. Third, most studies are conducted with children, and only one study has focused on adolescents (Güroglu et al., 2007). Thus, the question remains whether shyness might be a basis for adolescent friendship selection and influence.

Generally speaking, the majority of studies of friendship selection and influence involve dyadic relationships—reciprocated best friendships in the school or classroom. Limiting friendship nominations to the school or classroom allows reports of friends' behavior that are independent of the individual who named them as friends. Independent reports are important, because youths tend to overestimate the degree to which their friends are similar to themselves (Furnham & Henderson, 1983; Morry, 2005), and this can inflate estimates of selection and influence. When friendship nominations are limited to school grades or

classrooms, all youths report on their own behavior, so the reports are independent of those who name them as friends. Focusing on reciprocated best friendships also insures that there are no dependencies in the data. Dependencies would occur if, for instance, Sara were included both as a target youth and as a friend named by Linda, or if both Linda and Jenny named Sara as a friend. Either way, Sara's behavioral measures would be counted twice in the analyses. The statistical techniques commonly used to assess peer selection and influence assume there are no dependencies in the data. Thus, focusing on reciprocated best friends in school allows for independent ratings of friends' behavior and for each youth to appear only once in the dataset, which is assumed by the statistical techniques.

In reality, adolescents often have more than one close friend at a time, and not all of them in the school or classroom. To the extent that these friends add information about selection and influence, limiting the focus to dyadic school or classroom friendships will interfere with getting valid estimates of peer selection and influence. This may be especially true for characteristics such as shyness. To begin, research has shown that youths who are rejected by classmates or are unpopular among peers have friends outside of the classroom (George & Hartmann, 1996), and shy youths might fall into this category. If so, then focusing on peers in the classroom might underestimate both selection and influence. In addition, several studies offer empirical support for including more than one friend in analyses of selection and influence. They show that friends tend to befriend each other's friends, forming triadic relationships (Huisman & Snijders, 2003; Snijders, 2001), and when youths name three close friends, each additional friend's behavior adds significantly to explaining the behavior of the youth who named them (Kiesner, Kerr, & Stattin, 2004). These results argue for considering more than dyadic relationships. Finally, research has shown that youths can be influenced by friends who do not reciprocate their nominations (Kiesner, Cadinu, Poulin, & Bucci, 2002). In this study, peer group influence was not modified by the number of group members who reciprocated the target youth's nominations. In other words, youths were as much influenced by friends they named who did not name them back as by those who did name them back. Thus, there is mounting empirical evidence that focusing on reciprocated dyads ignores important sources of similarity and influence. This implies that methods must be used to include multiple friends and friends outside of school.

In this study, we examine shyness as a basis for adolescent friendship selection and influence. We use longitudinal data in which youths nominated up to three close friends either in or outside of school. Because nearly all 10- to 18-year-old youths in the community were included in the study, most friends participated and reported on their own shyness. Thus, we have independent reports of friends' behaviors without limiting friendship nominations to the school or classroom. We use statistical software designed to assess selection and influence in social relationships while controlling for the dependencies created by multiple friendship nominations (Snijders, 2001). We ask whether youths select friends with similar levels of shyness, and whether friends, in turn, might influence each other's shyness. In addition, we look at whether these processes differ for boys and girls. This question arises because: (a) gender differences on shyness are well-documented (La Greca & Lopez, 1998); (b) scholars have suggested that shyness in girls is more socially accepted than shyness in boys

(Bruch & Cheek, 1995), which might make girls' shyness more prone to influence than boys'; and (c) socially anxious girls have been found to be more susceptible than boys to influence from their best friends on depression (Prinstein, 2007). Finally, we control for the effects of depression on the selection and influence of shyness, as depression is a well-known correlate of shyness or social anxiety (Elovainio et al., 2004; Smith & Betz, 2002; Stednitz & Epkins, 2006) and should be taken into account when examining friendships of socially anxious, shy individuals (Romero & Epkins, 2008). In so doing, we exclude the possibility of depression being a reason for apparent selection and influence on shyness. Thus, the questions for this study are: Controlling for the effects of gender and depression on friendship selection and influence, and following a large sample of youths over time, (a) Do adolescents choose friends similar to them in shyness? (b) Do friends influence each others' shyness over time? and (c) Is there a difference between boys and girls in shyness socialization?

Method

Participants

Participants were from a community-based, cohort-sequential study in a medium-sized community (with a population of about 26,000) in Western Europe. The initial data collection took place during the 2001-02 school year, with annual follow-ups at roughly one-year intervals. At the onset of the study, the percentage of single-parent households was comparable to that in the rest of the country, as was the unemployment rate in the community. The mean incomes were, however, about 4.0% lower than in the rest of the country. Five waves of data were collected, and at each wave more than 90% of all youths in the community in grades 4 through 12 participated (roughly ages 10 through 18). Shyness and depression measures were included at Waves 3, 4, and 5, so they are used in this study and referred to as Time 1, Time 2, and Time 3.

In the method of analyses used in this study, the analytic sample—called a network—is selected from a longitudinal database by first starting with a limited group of youths at the first wave, and then adding their friends at that and subsequent waves. To form the network that would be included in these analyses, we began with all 8th graders at Time 1, which were 329 participants (148 girls and 181 boys; $M_{\text{age}} = 14.28$). We focused on 8th graders because they were already attending their 2nd year of junior high school, and as such had established their social positions in their schools and other environments. Thus, we avoided including youths who had just started a new school, which would mean a disruption in school friendships. The 8th graders would have had the time to establish friendships by this point in the study as junior high school starts in 7th grade in Sweden. At Time 3, the 8th graders had started high school. As there was only one high school in the community, however, the entire target sample was attending the same high school at Time 3. To be included in the analyses, the participants needed to have at least two subsequent waves of friendship nominations present. There were 38 youths (15 girls and 23 boys; $M_{\text{age}} = 14.29$) who did not name any friends, and these youths were excluded from the target sample. They did not, however, differ from the target sample on measures of shyness ($M_{\text{target}} = 1.38$, $M_{\text{excluded}} = 1.36$, $t = -.31$, $df = 324$, $p < .10$) or depression

($M_{\text{target}} = 1.84$, $M_{\text{excluded}} = 1.93$, $t = .93$, $df = 325$, $p < .10$) at Timepoint 1. The final target sample was, thus, 291 youths (153 girls and 158 boys; $M_{\text{age}} = 14.28$). After including the nominations of their friends at each of three waves, the network consisted of 834 students (339 girls and 495 boys; $M_{\text{age}} = 14.29$), in 32 classrooms, and in 13 different schools, across which they were evenly distributed. The final analytic sample, then, includes youths in 8th grade at Time 1 followed up one and two years later with their friends at each time point included as well.

We looked at the overall missingness of the friendship variables in the target sample. All of the target participants had all friendship nominations present across the three timepoints. Regarding other missingness (such as e.g., shyness and depression), the program imputes or estimates information about covariates based on other information available for the participants (Huisman & Snijders, 2003). At Time 1, 28% of the target participants' friends were someone they spent time with out of school. The rest of their friends they either spent time with in school, or both in school and out of school. At Times 2 and 3, the out-of-school friends were 35% and 28%, respectively. At Time 1, approximately 8% of the participants in the sample were first generation immigrants. Sixty-four percent of the youths lived in households with both biological parents; 17% lived with one stepparent and one biological parent; 19% lived in single-parent households.

Procedure

Youths were recruited in their classrooms during school time. They were told about the types of questions they would answer, and the time it would take to finish the questionnaires. They were also informed that their participation was voluntary, and that if they chose not to participate, they could do something else instead. They were guaranteed that if they did participate in the study, their answers would never be shown to their parents, teachers, or anyone else. Before the study took place, parents were informed about the study through community-based meetings and via letters. With the letter, they received a pre-paid card to return to us if they did not want their child/children to participate in the study. Only 1% of the parents did so. Finally, the parents were told that they could withdraw their child from the study at any time.

Youths filled out the questionnaires during regular school hours in sessions administered by trained research assistants. The teachers were not present. No participant was paid for taking part in the study, but for each of the classes in grades 4 through 6 we donated money to the class fund, and in each of the classes in grades 7 through 12 we held a drawing for movie tickets. Whether or not youths chose to participate, they were eligible for the drawing. Participation rates were over 90% each year. The procedures and measures used were all approved by the University's Ethics Review Board at the beginning and at the mid-point of the longitudinal study.

Measures

Friendship nominations. Youths were asked to identify up to three friends, which we defined as "someone you talk with, hang out with, and do things with" (Kerr, Stattin, & Kiesner, 2007). Youths were told that these should

be very important persons in their lives, but not their parents or other adults. We also told them that these important persons could be boys or girls, could live anywhere, and did not have to be of the same age. In addition, the youths reported on each friend's school and relationship (friend, sibling, or romantic partner). Although siblings and romantic partners could be nominated, in these analyses we included only friends. Thus, the friendship networks consisted of up to 3 nominations of friends each participant considered important to him or her. Assessment of four friends was tested at the first wave of the data collection, but as only 15.5% of the participants named a fourth friend, the number was limited to three from Wave 2 on.

Shyness. Shyness was measured with 8 questions about fears in different situations (Gren-Landell et al., 2009). The items involve situations or actions analogous to those that reliably discriminate shy individuals from non-shy individuals (Cheek, Melchior, & Carpentieri, 1986). The situations were speaking in front of the class, putting a hand up during class, making a phone call to someone one does not know, being with classmates during breaks, going to a party, initiating a conversation with someone one does not know very well, eating with others during lunch, and looking into someone's eyes while speaking. The youths rated themselves on a three-point scale, ranging from having *No fear* (1) to *A lot of fear* (3) of these situations. The Cronbach's alphas were .75 for Time 1, .73 for Time 2, and .75 for Time 3. The cross-year correlations ranged from .36 to .52.

Depression. Depression was measured using the Child Depression Scale from the Center for Epidemiological Studies (Radloff, 1977). The scale consists of 20 items, rated on four-point scales from *Not at all* (1) to *Often* (4). The scale assesses depressive symptoms such as worry, sadness, hopelessness, lethargy, and poor appetite. The youths were instructed to think about the past week. Examples of items are: I have "Worried about things I don't usually worry about," "Felt scared," "Felt down and unhappy," "Not slept as well as usual," and "Felt lonely and without friends." The Cronbach's alphas were .91 for Time 1, .92 for Time 2, and .91 for Time 3. The cross-year correlations ranged from .51 to .60. Correlations between depression and shyness ranged from .24 to .28 ($ps < .001$) at the three time points.

Analyses

Analyses were conducted using actor-oriented models of network evolution (Snijders, 2001). We used the software program SIENA (Simulation Investigation for Empirical Network Analyses; Snijders, Steglich, Schweinberger, & Huisman, 2007). Other studies have shown SIENA to be successful in analyzing selection effects (Burk, Steglich, & Snijders, 2007; Huisman & Snijders, 2003), as well as influence processes (Burk et al., 2007) in friendship networks. SIENA uses a continuous time-modeling approach, which estimates both selection and influence processes in a social network more accurately than, for example, a dyadic approach (Huisman & Snijders, 2003; Snijders, 2001). This approach reduces the variation in changes in friendship ties and changes in the dependent measures. We will only discuss the parameters of the SIENA program that were used in this study, but more information on the program and other estimation parameters can be found elsewhere (Snijders et al., 2007).

Strategy for analyses

We used SIENA to follow changes in the friendship networks in a social network of youths. In SIENA terms, this means changes in friendship ties from being absent to being present, and vice versa. A network is defined by selecting a starting sample and then adding all youths named as friends with the criteria that they have two consecutive waves of data. After that, the dataset is reordered in terms of absent versus present ties at each wave, which allows SIENA to estimate whether these ties are determined by various selection and influence processes. In this way, we are able to examine the development of the friendship networks over time.

Descriptives

SIENA provides a number of descriptives for every generated network. The *average degree* refers to the average number of ties per wave. Or put differently, it shows how connected the youths are on average in the network. The *reciprocity index* portrays the proportion of reciprocated or mutual ties in relation to the total number of ties. This descriptive shows the tendency for youths to reciprocate friendships within the network. Finally, the *transitivity index* depicts the proportion of the observed transitive triplets (“the friend of my friend is my friend”) compared to the total number of possible transitive triplets. This index shows the propensity of youths to form triadic relationships in the network. These descriptives provide general information about the development of the social network.

Changes in the network

Besides the descriptives of the social network development, SIENA also provides information about the types of changes in the network. In other words, changes over time in friendship ties can be predicted by variables such as shyness, while controlling for previous changes in the network. In this study, we included two types of effects: *endogenous network effects* and *individual covariate effects*.

The endogenous network effects included in this study are *outdegree*, *reciprocity*, and *transitive triplets*. Although termed the same as the aforementioned descriptives, these effects are dissimilar to the descriptives in that they are now used as predictors of network change. The *outdegree* shows the tendency for individuals to nominate others in the network over time. *Reciprocity* depicts the propensity for youths to reciprocate, or share, friendship nominations. This means that it shows the tendency of directed ties shared by two partners in a dyad. Directed ties indicate the one person choosing another person as a friend (as opposed to non-directed ties, which might be, for example, colleagues at a workplace who did not necessarily choose to be connected). Finally, the *transitive triplets* effect depicts the proportion of transitive triplets compared to the total number of possible triadic configurations, showing the tendency for youths to form triadic relationships in the network.

To examine the effects of the individual covariates when predicting

changes in the network friendship ties, we included three parameters testing for two variables – shyness and gender. These parameters are called the *ego*, *alter*, and *similarity* effects. The *ego* effect is the effect on selection of the characteristics of the youth who nominates. The *alter* effect is the effect on selection of the characteristics of the youth who is being nominated. Finally, the *similarity* effect shows the tendency for youths to nominate friends who are similar to them in certain characteristics. With shyness, a negative shyness ego effect would show that the more shy youths are, the fewer friends they nominate. A negative shyness alter effect would show that the more shy youths are, the less they are being nominated by others. Finally, a positive shyness similarity effect would mean that youths are inclined to nominate friends who are similar to themselves on levels of shyness. In our study, besides testing for these effects on shyness, we test for the same effects of gender.

Finally, we also examined influence effects in the network. In the behavioral part of the model where influence effects are tested, one examines to what extent variables predict changes in behaviors. In this study, we used shyness as the behavior of choice. We used several effects to test for the influence of shyness on friendship formation. The *effect from gender* in this part of the analyses examines differences between boys and girls in changes in shyness over time. It answers the question whether the way shyness changes for individuals in the network differs between genders. The *effect from age* shows the same thing – differences between youths with different ages and changes in shyness over time. *Shyness tendency* refers to the tendency for the individuals in the network to be shy. *Shyness similarity* is an effect that shows to which extent friends influence each other's shyness. At last, the *interaction between shyness similarity and gender* shows whether boys' shyness is influenced by their friends' shyness more than girls' shyness is influenced by their friends' shyness, or vice versa.

Justifying the use of a social network approach

Modeling the social network effects permits testing a dyadic independence model to check whether the use of social network analyses is motivated. If it is, then the parameter estimating the *transitive triplets* (i.e., the tendency of individuals to become friends with friends' friends) significantly increases the model fit. The score test statistics can be understood as estimated chi-square values, which means that if the fit value greater than 1.96 ($p < .05$) improves, the model fit improves significantly (Huisman & Snijders, 2003). This comparison of models tests whether dyads are the best unit of analyses, or whether it is better to add the complex network structuring. When these network effects are controlled, one is able to evaluate whether adding individual covariates in the network, in this case shyness, explains changes in the network above and beyond network effects. Thus, by taking into account the characteristics of the network itself, one is able to view unique individual covariate effects on friendship selection.

Results

Descriptive Analyses of the Network Structure

By viewing the descriptives of the social network, we are able to portray how the network develops over the three time points used in this study. Descriptive statistics are shown in Table 1. As is illustrated in the table, the average degree shows the average number of ties between individuals in the network, which also tends to change across time but in no extreme way. Youths tend to have around 5 friends at Time 1, a number which fluctuates slightly over time. Further, the reciprocity index shows the proportion of reciprocated ties in the network, which in our case is around 60% of youths at each of the three time points. Finally, the transitivity index shows the proportion of transitive ties, or triadic relationships in the network. In this case, almost 40% of the youths have such relationships at Times 1 and 2, whereas this decreases slightly at Time 3. The fact that almost 40% of the youths share triadic relationships also shows the importance of including triads in the analyses of social networks.

Is a Network Model Significantly Better than a Dyadic Model?

In order to see whether social network analyses are a feasible way to conduct our analyses, we tested a dyadic independence model. By so doing, we examined whether the parameter estimating transitive triplets significantly increased the fit of our model. In this study, the approximate chi-square value improved by 77.67 ($p < .0001$) across the network. Thus, adding triadic effects in the model significantly improves its fit. Consequently, the use of the social network analyses rather than a dyadic model is justified for this network of adolescents.

Endogenous Network Effects

There are many kinds of selection effects involved in friendships. In this study, gender and depressive symptoms are explicit selection effects. Being a friend of a friend (i.e., associated in a triadic relationship, or forming a friendship with a friend of my friend), however, is also a selection criterion. SIENA analyses control for all these effects. Thus, the final selection effect of choice (e.g., shyness) is in fact a selection effect above and beyond all these other effects, which are controlled for by the program. The upper part of Table 2 shows aggregated estimates of the endogenous network effects, controlling for gender and depression. Endogenous network effects are represented by three parameters: outdegree, reciprocity, and transitive triplets. All of these were significant predictors of friendship ties in the network. The outdegree refers to the tendency for individuals to have outgoing ties. In our case, the value was negative, which indicates that individuals are selective in whom they choose as a friend, as would be expected. The reciprocity parameter shows the tendency for youths in the network to reciprocate the nominations they receive. In this case, youths tended to reciprocate their nominations in general. Finally, the transitive triplets effect is the tendency for individuals to form triadic relationships within the network. In our network, there is a tendency for youths to form triadic relationships. Thus, the participants in the social network are selective regarding their choices of

friends; they mostly reciprocate received nominations, and have a tendency to befriend their friends' friends.

As the middle part of Table 2 shows, all gender effects were significant. The gender ego effect shows that girls tended to nominate friends more than boys. In addition, the gender alter effect shows that girls have a lower tendency to be nominated as friends in the network. Girls tend to be more active in the network than boys, but tend not to be as popular as boys. These findings might sound counterintuitive at first; what this might mean, however, is that girls spread their nominations out more, but boys concentrate them to a few highly popular boys. Finally, the gender similarity effect shows that boys tend to nominate boys, and girls tend to nominate girls as friends.

Do Adolescents Choose Friends Similar to Them in Shyness?

Is adolescent shyness a basis for friendship selection? As the remaining selection effects in Table 2 illustrate, all effects involving shyness were significant. The shyness ego and alter effects indicate that the more shy youths are, the fewer friends they nominate in the network and the less they tend to be nominated themselves. Thus, shyness is associated with having few friends and low popularity in the network. Finally, the shyness similarity effect indicates that youths tend to choose friends whose levels of shyness are similar to their own. This means that shyness is a clear selection criterion when shy youths choose others as friends.

Do Friends Influence Each Other's Shyness Over Time?

Can friends socialize one another into becoming more shy? We included several effects to examine this. As the lower part of Table 2 shows, besides influence effects from gender and age, we also added shyness tendency and similarity, and the interaction between gender and shyness. As previously, these effects were all controlled for effects of gender and depression. As the table shows, the effect of gender was not significant, which means that the way shyness is changing for the youths in the network does not differ between genders. The effect of age was not significant either, which shows that the way shyness is changing does not differ between age groups due to age variations in the target sample's friends. Hence, shyness tends to change in similar ways for boys and girls and for youths of different ages. The effect of shyness tendency was also not significant, as Table 2 shows. In other words, youths in the entire network do not tend to be shy, which would be assumed. Regarding shyness similarity, however, we found a significant effect. This shows that friends tend to influence each other's shyness over time. Hence, friends socialize each other into becoming more shy over time.

Is There a Difference Between Boys and Girls in Shyness Socialization?

As gender differences on shyness have been clearly established before (La Greca & Lopez, 1998), the question remains whether shyness socialization might work differently for girls and boys. As the lower part of Table 2 illustrates, the

interaction between gender and shyness was significant. This suggests that girls are influenced more than boys by their friends' shyness. In other words, girls influence each other's shyness in friendships more than boys do. In sum then, shyness can be a selection criterion for choosing friends. Nevertheless, shyness is also influenced by friends' shyness over time. In addition, girls are affected more by their friends' shyness than boys are. These effects are present over and above other selection and socialization effects, such as those referring to gender, depressive symptoms, and the tendency to form triadic relationships.

Discussion

Adolescents' social lives largely revolve around their peers, but adolescents who have high levels of shyness are less able than others to enjoy social relationships. In fact, adolescent shyness carries with it such unpleasant experiences as self-consciousness, (Bruch et al., 1986; Buss, 1980; Buss, 1986), and fear of negative evaluation and rejection (Asendorpf, 1987; Jackson, Towson, & Narduzzi, 1997; Jones, Briggs, & Smith, 1986; Leary & Kowalski, 1993; Miller, 1995; Pilkonis, 1977a; Watson & Friend, 1969). Despite the problems shyness poses for adolescents' social relationships and the importance of relationships with friends in adolescence, little is known about the role of friendships in the development or escalation of shyness during this developmental phase. In this study, we have shown that youths select friends who are similar to themselves on shyness, and friends' shyness influences youths' shyness over time. This is more pronounced for girls than boys, and it is independent of depression, which is linked to shyness and has been shown to be influenced by friends' depression (Rose, 2002). The findings support our general theoretical suggestions that youths and their close friends might, through their ordinary daily interactions, socialize each others' shyness.

Although we cannot know exactly how youths and their friends influenced each others' shyness, there are several viable possibilities. One is that friends reinforce each others' social fears by subtle indications of understanding or acceptance when a friend mentions feeling or acting awkward or fearful in a social situation. Such subtle, positive reinforcements have been identified in interactions between delinquent youths and their friends (Dishion, Spracklen, Andrews, & Patterson, 1996). The authors found that reinforcement of deviant talk, or comments about antisocial behaviors, was linked to subsequent increases in antisocial behavior. The process, termed *deviancy training*, might not be unique to deviant talk, but might have an analog in other types of behavior for which friends show each other acceptance. Thus, if a youth relates having experienced feelings of shyness in a situation and friends show understanding, the disclosure of social fears would be reinforced and might be repeated. Through this *shyness training* process, social fears might begin to loom larger than before in both youths' minds, and this could increase their shyness levels. Another influence process found to occur in early adolescents' friendships is co-rumination (Rose, 2002). Co-rumination refers to extensively discussing and focusing on problems in relationships with close friends, which results in overly focusing on negative emotions (Rose, 2002), and seems to influence depression and anxiety - both of which are highly correlated with shyness (Cox, MacPherson, & Enns, 2005; Elovainio et al., 2004). Co-rumination can strengthen the friendship bond

in dyads—as the friends self-disclose a lot—while it increases feelings of depression and anxiety via excessive dwelling on these feelings (Rose, 2002). In an analogous process, shy friends might spend too much time talking with each other about negative experiences related to their social fears, thus evoking more shy thoughts and behaviors. These are two possible mechanisms through which influence might take place. Further research is needed to examine the types of selection and influence processes in the friendships of shy youths. This study provides a basis; however, in showing that influence does take place. In that way, this study makes a unique contribution.

Shyness as a characteristic might, in itself, pose a barrier for everyday social interactions. Shy people are not usually thought of as having many friends or being popular. As children, shy individuals are less talkative, and have communication problems, which makes them less socially attractive to others (Evans, 1993). Over the course of adolescence and early adulthood, shy people might learn to avoid social interactions, as they might become insecure about their own behavior (Crozier, 1979; Pilkonis, 1977b). This, in turn, might lead to not acquiring appropriate social skills for successful interactions with new people. This is not to say that shy individuals are necessarily friendless. On the contrary, some research shows that younger and older shy children have as many reciprocated friends as their non-shy counterparts (Ladd & Burgess, 1999; Rubin et al., 2006). As we have shown in this study, it might not be the quantity of friends that is the most important. Who these friends are seems to be of larger significance.

Several previous studies on children and youths have found that children and adolescents with shy, withdrawn characteristics often have friends similar to them regarding these attributes. Until now, not much has been known about adolescents' socialization of one another's shyness. There might be several reasons for shy youths to choose shy friends. Shy youths might more easily reach out to others who are shy, as they would seem to be similar to the other person. According to the similarity-attraction hypothesis, similar people are attracted to one another (Byrne, 1971). Together, shy friends can avoid the need for social interaction. By hanging out with someone else who is also shy, youths can avoid fear of negative evaluation, one important component of shy behavior (Bruch, 1989). In this sense, shyness as a characteristic is a motivation for choosing friends, and can exert influence when engaging in friendships with others who are shy. This study is, to our knowledge, the first to show that shyness socialization is present in adolescent friendships over and above other processes, such as the effects of gender, depression, and triadic friendship formations.

An alternative explanation to why shy youths would seek out others who are shy, however, is that they might seek out similar friends not only because it would be easier for them to become friends, but perhaps also because they are the youths that are left out from the peer group. Thus, the rejected, unpopular youths might reach out to each other. Rejected youths have been shown to befriend each other, and to be similar in sociometric status (Hoff, DuPaul, & Handwerk, 2003), which speaks in favor of this hypothesis. What speaks against it, however, is the heterogeneity of rejected youths. In one longitudinal study, subtypes of rejected boys were examined (Cillessen, Van Ijzendoorn, Van Lieshout, & Hartup, 1992). Only 13% of the boys were found to be shy; the other 77% showed aggressive, but also non-deviant characteristics. Thus, there might be

more to friendship selection of shy youths than making a convenient choice and picking someone only because they too are outside the peer group.

There are many features of friendships that might play a role in how they affect youths. Friendships can be unilateral; that is, one person nominating someone else as a friend would not be considered as a friend by the nominee. Friendships can also be mutual, or reciprocal. If one person nominates another as a friend, the selected friend returns the nomination. Whether or not friendships are unilateral or reciprocal can play an important role. In this study, mutual friendships are not the focus. They are, however, controlled. By taking the social network approach, we take into account both reciprocated and non-reciprocated friendships. Stability is another feature of friendships that is important in its impact on youths' lives. Some friendships are short-lived, whereas others can last for years. The stability of friendships is a forerunner to influence processes, as socialization cannot happen without stability. There is a one-year interval between our measurement points, where changes in friendships might have occurred. Whether or not the participants in the social network had stable friendships or changed friends, however, is controlled by SIENA. In sum, after controlling for and taking into account basic friendship features, our results show selection and influence of shyness on friendships over and above mutuality and stability.

One unexpected finding in this study was the number of triadic relationships in the social network. As many as 40% of the youths were involved in triadic friendships, both concurrently and over time. In principle, this means that many youths select and influence each other because they are friends through a third party. The fact that triadic friendships exist in our social network, however, does not have to mean that transitivity affects friendship. One of the advantages of the SIENA program is that it is able to control for triadic effects. The effects of selection and influence on friendships shown in our results are present over and above the effects of selection and influence of triadic relationship formations on friendships. Exactly which processes are present in the selection and influence in triadic relationships, and how these processes function is an interesting issue for future research.

Another unexpected finding was that girls selected more friends than boys, and tended to select other girls, but the most popular youths in the network (i.e., most often selected) tended to be boys. This finding is puzzling at first blush. The explanation, however, is that boys tended to concentrate their nominations on certain individuals more than girls did. On average, boys received fewer nominations than girls, but a few boys received many more nominations than the rest, which placed them among the most popular youths in the network. This might also be explained by the peer group structure of early adolescence. Generally speaking, youths tend to form cliques, best defined as tight-knit groups of a smaller number of adolescents (Brown, 1989). Girls are more likely to partake in cliques, however (Urberg, Değirmencioglu, Tolson, & Halliday-Scher, 1995), and boys tend to have larger peer groups (Benenson, 1990). As SIENA controls for the tendency to form triadic groups, our results are valid over and above this tendency. Thus, after controlling for the tendency for girls to have smaller friendship groups, girls receive fewer nominations in the social network.

There are some limitations that should be mentioned. We included individuals in our social network as long as they had two or more consecutive

waves of data with friendship nominations, because this is one of the basic criteria posed by the SIENA software. Thus, we did not include the very socially isolated youths, as those who nominated no friends or had friends only one year at a time were excluded from the analyses. We did find that these youths were not any different from the other youths on shyness and depression. Nonetheless, how such youths are affected by their peers' or potential friends' behavioral characteristics remains unanswered by this study. An additional limitation is that we do not know about the friendship stability of the youths in the sample. Research has shown, nonetheless, that the stability of friendships might not be the most potent factor in children's adjustment, but rather gaining another friend (Wojslawowicz Bowker, Rubin, Burgess, Booth-LaForce, & Rose-Krasnor, 2006). In addition, friendships at this point in life show high instability or fluidity across as short periods of time as three weeks (Cairns, Leung, Buchanan, & Cairns, 1995). Another possible limitation is that we did not include more than three friends. We assume that the three important friends that we included capture the kinds of close relationships in which youths' shyness might be influenced, but it is possible that less central friends might contribute to selection and influence effects, as well. In addition, our results say nothing of the quality of these friendships, which might be more or less constructive for youth development. Finally, we focused on one cohort and analyses covering ages 14 through 16. We do not know whether youths are more or less open to influence from their friends at these ages compared with other periods in development.

There are, however, several strengths of this study. First, SIENA is capable of controlling for various selection effects. Controlling for all the aforementioned network and covariate effects provides an insight into the impact of youths' shyness over and above other selection effects on friendships. Furthermore, our sample was an entire cohort of youths in a whole community, which were followed for three consecutive years, and were allowed to select friendships both in and out of classrooms. What is more, the reports of friends' characteristics were independent of the target youth. This design, with friends in and out of school and independent reports of behavior, is rare in research on shy youths' friendships. Despite its limitations, then, this study offers a new and unique way of looking at shy youths' friendships.

Even though some previous research has examined shy children's and adolescents' similarity with friends, the knowledge about shyness socialization in adolescence has been unclear. As the results of this study show, shyness might have consequences for acquiring and maintaining friendships, which in turn might influence shyness over time. What advice, then, could one give shy youths? Should parents worry if their shy adolescent befriends a similarly shy peer? And should they be more worried if the adolescent is a girl, rather than a boy? There are no simple answers to questions like these. Maybe having a friend instead of none at all would be preferable for shy youths, even if their shyness might be influenced for the worse over time. Being friendless might deprive children of a secure base, which in turn would deprive them of the comfort and readiness to explore new environments and new social relationships (Birch & Ladd, 1996). The shy friends might contribute to a positive friendship quality, particularly if they prompt one another to engage in fun activities and do things they might not do if they were isolated and friendless. In contrast, shy youths might fare even worse by befriending for example aggressive peers instead of similarly shy

counterparts. In such cases, these youths might partake in bully-victim dyads, or get easily influenced to engage in problem behaviors, as shy individuals are typically known to “*go along to get along*” (Cheek & Krasnoperova, 1999; Leary & Kowalski, 1995; Lewinsky, 1941). Perhaps parents and concerned adults should focus on encouraging the shy youths to concentrate on the quality of their friendships, regardless of the friends’ potential social fears.

References

- Asendorpf, J. (1989). Shyness as a final common pathway for two different kinds of inhibition. *Journal of Personality and Social Psychology*, 57, 481-492.
- Asendorpf, J. B. (1987). Videotape reconstruction of emotions and cognitions related to shyness. *Journal of Personality and Social Psychology*, 53, 542-549.
- Asendorpf, J. B. (1991). Development of inhibited children's coping with unfamiliarity. *Child Development*, 62, 1460-1474.
- Benenson, J. F. (1990). Gender differences in social networks. *The Journal of Early Adolescence*, 10, 472-495.
- Birch, S. H., & Ladd, G. W. (1996). Interpersonal relationships in the school environment and children's early school adjustment: The role of teachers and peers. In J. Juvonen & K. R. Wentzel (Eds.), *Social motivation: Understanding children's school adjustment. Cambridge studies in social and emotional development* (pp. 199-225). New York, NY: Cambridge University Press.
- Brown, B. B. (1989). The role of peer groups in adolescents' adjustment to secondary school. In T. J. Berndt & G. W. Ladd (Eds.), *Peer relationships in child development* (pp. 188-215). New York: John Wiley & Sons.
- Bruch, M. A. (1989). Familial and developmental antecedents of social phobia: Issues and findings. *Clinical Psychology Review. Special Issue: Social phobia*, 9, 37-47.
- Bruch, M. A., & Cheek, J. M. (1995). Developmental factors in childhood and adolescent shyness. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope & F. R. Schneier (Eds.), *Social Phobia: Diagnosis, Assessment, and Treatment* (pp. 163-182). NY: Guilford Press.
- Bruch, M. A., Giordano, S., & Pearl, L. (1986). Differences between fearful and self-conscious shy subtypes in background and current adjustment. *Journal of Research in Personality*, 20, 172-186.
- Bukowski, W. M., Gauze, C., Hoza, B., & Newcomb, A. F. (1991). Differences and consistency between same-sex and other-sex peer relationships during early adolescence. *Developmental Psychology*, 29, 255-263.
- Burk, W. J., Steglich, C. E. G., & Snijders, T. A. B. (2007). Beyond dyadic interdependence: Actor-oriented models for co-evolving social networks and individual behaviors. *International Journal of Behavioral Development*, 31, 397-404.
- Buss, A. H. (1980). *Self-consciousness and social anxiety*. San Francisco, California: Freeman.
- Buss, A. H. (1986). A theory of shyness. In S. R. Briggs, J. M. Cheek & H. J. Warren (Eds.), *Shyness: Perspectives on research and treatment* (pp. 39-46). New York: Plenum Press.
- Byrne, D. (1971). *The attraction paradigm*. New York: Academic.
- Cairns, R. B., Leung, M.-C., Buchanan, L., & Cairns, B. D. (1995). Friendships and social networks in childhood and adolescence: Fluidity, reliability, and interrelations. *Child Development*, 66, 1330-1345.
- Cheek, J. M., & Buss, A. H. (1981). Shyness and sociability. *Journal of Personality and Social Psychology*, 41, 330-339.

- Cheek, J. M., Carpentieri, A. M., Smith, T. G., Rierdan, J., & Koff, E. (1986). Adolescent shyness. In S. R. Briggs, J. M. Cheek & H. J. Warren (Eds.), *Shyness: Perspectives on research and treatment* (pp. 105-116). New York: Plenum Press.
- Cheek, J. M., & Krasnoperova, E. N. (1999). Varieties of shyness in adolescence and adulthood. In L. A. Schmidt & J. Schulkin (Eds.), *Extreme fear, shyness, and social phobia: Origins, biological mechanisms, and clinical outcomes* (pp. 224-250). New York: Oxford University Press, Inc.
- Cheek, J. M., & Melchior, L. A. (1990). Shyness, self-esteem, and self-consciousness. In H. Leitenberg (Ed.), *Handbook of social and evaluation anxiety* (pp. 47-82). New York: Plenum Press.
- Cheek, J. M., Melchior, L. A., & Carpentieri, A. M. (1986). Shyness and self-concept. In L. M. Hartman & K. R. Blankstein (Eds.), *Advances in the study of communication and affect* (pp. 113-131). New York: Plenum Press.
- Cheek, J. M., & Watson, A. K. (1989). The definition of shyness: Psychological imperialism or construct validity. *Journal of Social Behavior and Personality*, 4, 85-95.
- Chen, X., Chen, H., & Kaspar, V. (2001). Group social functioning and individual socioemotional and school adjustment in Chinese children. *Merrill-Palmer Quarterly*, 47, 264-299.
- Cillessen, A. H., Van Ijzendoorn, H. W., Van Lieshout, C. F., & Hartup, W. W. (1992). Heterogeneity among peer-rejected boys: Subtypes and stabilities. *Child Development*, 63, 893-905.
- Cox, B. J., MacPherson, P. S. R., & Enns, M. W. (2005). Psychiatric correlates of childhood shyness in a nationally representative sample. *Behaviour Research and Therapy*, 43, 1019-1027.
- Crozier, R. (1979). Shyness as anxious self-preoccupation. *Psychological Reports*, 44, 959-962.
- Crozier, W. R. (1981). Shyness and self-esteem. *British Journal of Social Psychology*, 20, 220-222.
- Crozier, W. R. (1995). Shyness and self-esteem in middle childhood. *British Journal of Educational Psychology*, 65, 85-95.
- Crozier, W. R. (2000). Shyness and social relationships: Continuity and change. In W. R. Crozier (Ed.), *Shyness: Development, Consolidation and Change* (pp. 1-21). London: Routledge.
- Dishion, T. J., Spracklen, K. M., Andrews, D. W., & Patterson, G. R. (1996). Deviancy training in male adolescents friendships. *Behavior Therapy*, 27, 373-390.
- Elovainio, M., Kivimäki, M., Puttonen, S., Heponiemi, T., Pulkki, L., & Keltikangas-Järvinen, L. (2004). Temperament and depressive symptoms: A population-based longitudinal study on Cloninger's psychobiological temperament model. *Journal of Affective Disorders*, 83, 227-232.
- Evans, M. A. (1993). Communicative competence as a dimension of shyness. In K. H. Rubin & J. B. Asendorpf (Eds.), *Social withdrawal, inhibition, and shyness in childhood* (pp. 189-212). Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc.

- Fuligni, A. J., Eccles, J. S., Barber, B. L., & Clements, P. (2001). Early adolescent peer orientation and adjustment during high school. *Developmental Psychology, 37*, 28-36.
- Furnham, A., & Henderson, M. (1983). The mote in thy brother's eye, and the beam in thine own: Predicting one's own and others' personality test scores. *British Journal of Psychology, 74*, 381-389.
- Gazelle, H., & Spangler, T. (2007). Early childhood anxious solitude and subsequent peer relationships: Maternal and cognitive moderators. *Journal of Applied Developmental Psychology, 28*, 515-535.
- George, T. P., & Hartmann, D. P. (1996). Friendship networks of unpopular, average, and popular children. *Child Development, 67*, 2301-2316.
- Gifford-Smith, M. E., & Brownell, C. A. (2003). Childhood peer relationships: Social acceptance, friendships, and peer networks. *Journal of School Psychology, 41*, 235-284.
- Gren-Landell, M., Tillfors, M., Furmark, T., Bohlin, G., Andersson, G., & Svedin, C. G. (2009). Social phobia in Swedish adolescents. *Social Psychiatry and Psychiatric Epidemiology, 44*, 1-7.
- Güroglu, B., Van Lieshout, C. F. M., Haselager, G. J. T., & Scholte, R. H. J. (2007). Similarity and complementarity of behavioral profiles of friendship types and types of friends: Friendships and psychosocial adjustment. *Journal of Research on Adolescence, 17*, 357-386.
- Haselager, G. J., Hartup, W. W., Van Lieshout, C. F. M., & Riksen-Walraven, J. M. A. (1998). Similarities between friends and nonfriends in middle childhood. *Child Development, 69*, 1198-1208.
- Hoff, K. E., DuPaul, G. J., & Handwerk, M. L. (2003). Rejected youth in residential treatment: Social affiliation and peer group configuration. *Journal of Emotional and Behavioral Disorders, 11*, 114-123.
- Huisman, M., & Snijders, T. A. B. (2003). Statistical analysis of longitudinal network data with changing composition. *Sociological Methods Research, 32*, 253-287.
- Jackson, T., Towson, S., & Narduzzi, K. (1997). Predictors of shyness: A test of variables associated with self-presentational models. *Social Behavior and Personality, 25*, 149-154.
- Jones, W. H., Briggs, S. R., & Smith, T. (1986). Shyness: Conceptualization and measurement. *Journal of Personality and Social Psychology, 51*, 629-639.
- Jones, W. H., & Russell, D. (1982). The Social Reticence Scale: An objective instrument to measure shyness. *Journal of Personality Assessment, 46*, 629-631.
- Kagan, J., & Reznick, J. S. (1986). Shyness and temperament. In S. R. Briggs, J. M. Cheek & H. J. Warren (Eds.), *Shyness: Perspectives on research and treatment* (pp. 81-90). New York: Plenum Press.
- Kandel, D. B. (1978). Homophily, selection, and socialization in adolescent friendships. *The American Journal of Sociology, 84*, 427-436.
- Kerr, M. (2000). Childhood and adolescent shyness in long-term perspective: Does it matter? In W. R. Crozier (Ed.), *Shyness: Development, Consolidation and Change* (pp. 64-87). London: Routledge.
- Kerr, M., Stattin, H., & Kiesner, J. (2007). Peers and problem behavior: Have we missed something? In R. C. M. E. Engels (Ed.), *Friends, lovers and groups:*

- Key relationships in adolescence. Hot topics in developmental research* (pp. 125-153). New York, NY: John Wiley & Sons Ltd.
- Kiesner, J., Cadinu, M., Poulin, F., & Bucci, M. (2002). Group identification in early adolescence: Its relation with peer adjustment and its moderator effect on peer influence. *Child Development, 73*, 196-208.
- Kiesner, J., Kerr, M., & Stattin, H. (2004). "Very Important Persons" in adolescence: Going beyond in-school, single friendships in the study of peer homophily. *Journal of Adolescence, 27*, 545-560.
- La Greca, A., & Lopez, N. (1998). Social anxiety among adolescents: Linkages with peer relations and friendships. *Journal of Abnormal Child Psychology, 26*, 83-94.
- Ladd, G. W., & Burgess, K. B. (1999). Charting the relationship trajectories of aggressive, withdrawn, and aggressive/withdrawn children during early grade school. *Child Development, 70*, 910-929.
- Lawrence, B., & Bennett, S. (1992). Shyness and education: The relationship between shyness, social class and personality variables in adolescents. *British Journal of Educational Psychology, 62*, 257-263.
- Leary, M. R., & Kowalski, R. M. (1993). The Interaction Anxiousness Scale: Construct and criterion-related validity. *Journal of Personality Assessment, 61*, 136-146.
- Leary, M. R., & Kowalski, R. M. (1995). *Social anxiety*. New York: The Guilford Press.
- Lewinsky, H. (1941). The nature of shyness. *British Journal of Psychology, 32*, 105-113.
- Miller, R. S. (1995). On the nature of embarrassability: Shyness, social evaluation, and social skill. *Journal of Personality, 63*, 315-337.
- Morry, M. M. (2005). Relationship satisfaction as a predictor of similarity ratings: A test of the attraction-similarity hypothesis. *Journal of Social and Personal Relationships, 22*, 561-584.
- Oh, W., Rubin, K. H., Bowker, J. C., Booth-LaForce, C., Rose-Krasnor, L., & Laursen, B. (2008). Trajectories of social withdrawal from middle childhood to early adolescence. *Journal of Abnormal Child Psychology, 36*, 553-566.
- Pilkonis, P. A. (1977a). Shyness, public and private, and its relationship to other measures of social behavior. *Journal of Personality, 45*, 585-595.
- Pilkonis, P. A. (1977b). The behavioral consequences of shyness. *Journal of Personality, 45*, 596-611.
- Prinstein, M. J. (2007). Moderators of peer contagion: A longitudinal examination of depression socialization between adolescents and their best friends. *Journal of Clinical Child and Adolescent Psychology, 36*, 159-170.
- Prinstein, M. J., Borelli, J. L., Cheah, C. S. L., Simon, V. A., & Aikins, J. W. (2005). Adolescent girls' interpersonal vulnerability to depressive symptoms: A longitudinal examination of reassurance-seeking and peer relationships. *Journal of Abnormal Psychology. Special Issue: Toward a Dimensionally Based Taxonomy of Psychopathology, 114*, 676-688.
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385-401.

- Romero, L. E., & Epkins, C. C. (2008). Girls' cognitions of hypothetical friends: Are they related to depression, loneliness, social anxiety and perceived similarity? *Journal of Social and Personal Relationships, 25*, 311-332.
- Rose, A. J. (2002). Co-rumination in the friendships of girls and boys. *Child Development, 73*, 1830-1843.
- Rubin, K. H., Wojslawowicz, J. C., Rose-Krasnor, L., Booth-LaForce, C., & Burgess, K. B. (2006). The best friendships of shy/withdrawn children: Prevalence, stability, and relationship quality. *Journal of Abnormal Child Psychology, 34*, 143-157.
- Schmidt, L. A., & Robinson, T. N. (1992). Low self-esteem in differentiating fearful and self-conscious forms of shyness. *Psychological Reports, 70*, 255-257.
- Schneider, B. H. (1999). A multimethod exploration of the friendships of children considered socially withdrawn by their school peers *Journal of Abnormal Child Psychology, 27*, 115-123.
- Smith, H. M., & Betz, N. E. (2002). An examination of efficacy and esteem pathways to depression in young adulthood. *Journal of Counseling Psychology, 49*, 438-448.
- Snijders, T. A. B. (2001). The statistical evaluation of social network dynamics. *Sociological Methodology, 31*, 361-395.
- Snijders, T. A. B., Steglich, C. E. G., Schweinberger, M., & Huisman, M. (2007). *Manual for SIENA version 3*. Groningen: University of Groningen.
- Stednitz, J. N., & Epkins, C. C. (2006). Girls' and mothers' social anxiety, social skills, and loneliness: Associations after accounting for depressive symptoms. *Journal of Clinical Child and Adolescent Psychology, 35*, 148-154.
- Urberg, K. A., Değirmencioğlu, S. M., Tolson, J. M., & Halliday-Scher, K. (1995). The structure of adolescent peer networks. *Developmental Psychology, 31*, 540-547.
- Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting and Clinical Psychology, 33*, 448-457.
- Wojslawowicz Bowker, J. C., Rubin, K. H., Burgess, K. B., Booth-LaForce, C., & Rose-Krasnor, L. (2006). Behavioral characteristics associated with stable and fluid best friendship patterns in middle childhood. *Merrill-Palmer Quarterly, 52*, 671-693.

Table 1.
Descriptive Statistics of the Network Structure

	Time 1	Time 2	Time 3
<u>Network Structure</u>			
Average degree ^a	4.65	4.97	4.36
Reciprocity index ^b	0.57	0.58	0.59
Transitivity index ^c	0.37	0.37	0.31

^aShows the average number of outgoing network ties between the individuals in the network; ^bShows the proportion of reciprocated ties in the network; ^cShows the proportion of transitive ties, or triadic relationships, in the network.

Table 2.

Individual Characteristics: Selection and Socialization Processes of Shyness and Gender on Friendships as Shown by SIENA Estimates

Effect	Effect size [†]
<u>Selection Effects</u>	
Outdegree ^a	-3.46***
Reciprocity ^b	2.49***
Transitive Triplets ^c	0.23***
Ego Gender ^d	0.25***
Alter Gender ^e	-0.20***
Gender Similarity ^f	0.72***
Ego Shyness ^d	-0.12***
Alter Shyness ^e	-0.12***
Shyness Similarity ^f	1.28***
<u>Influence Effects</u>	
Effect from Gender ^g	0.09
Effect from Age ^h	-0.02
Shyness Tendency ⁱ	-0.04
Shyness Similarity ^j	1.27***
Gender X Shyness Similarity ^k	1.07**

^aThe tendency for individuals to have outgoing ties; ^bThe tendency for the individuals to reciprocate the nominations they receive; ^cThe tendency for the individuals to form triadic relationships; ^dThe tendency to nominate more according to the characteristic; ^eThe tendency to be nominated more due to the characteristic; ^fSimilarity due to the characteristic; ^gDifferences in gender regarding changes in shyness over time; ^hDifferences in age regarding changes in shyness over time; ⁱThe tendency for the individuals in the network to be shy; ^jThe tendency for friends to influence each other's shyness; ^kThe interaction between gender and similarity in shyness between friends.

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

[†]Shows the relative size of prediction; the size of the estimate values are thus comparable to one another.