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Adolescent Social Withdrawal, Parental Psychological Control, and Parental Knowledge Across Seven Years: A Developmental Cascade Model

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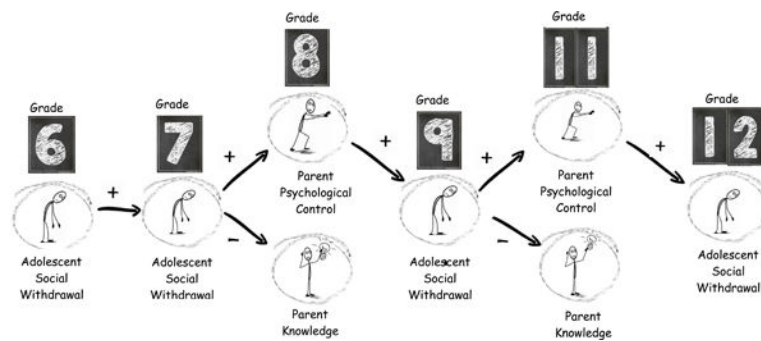
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Graphical abstract



Social withdrawal refers to a pattern of solitude or avoidance of situations where interaction is normative (Rubin & Coplan, 2004). While solitude can, at times, be healthy, most psychologists consider belongingness and affiliation to be basic human needs, and there is much empirical evidence to suggest high levels of social withdrawal are risky to emotional and even physical health (see review by Coplan & Bowker, 2014a). Children who are socially withdrawn may suffer from loneliness, peer rejection, and friendlessness, and are at risk for concurrent and subsequent social-emotional adjustment problems and academic difficulties (Rubin et al., 2006). Adolescents who are socially withdrawn are more likely

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than peers to have lower academic achievement, poorer self-efficacy and self-esteem, and higher levels of depression, social anxiety, and suicidal ideation (Kerr & Stattin, 2000; Plunkett et al., 2007; Prior et al., 2000; Rubin et al., 1995). Socially withdrawn youth also are at higher risk for adjustment problems as adults (e.g., Kim et al., 2008). Because of these risks, it is important to understand what exacerbates or attenuates the developmental course of social withdrawal as children move toward adulthood (Barzeva et al., 2019).

In the current study, we examine how two types of parenting that are salient to adolescent development may interact transactionally with social withdrawal across the adolescent period. One way our study adds to the parenting-of-adolescents literature is that we focus on how parenting relates to social withdrawal rather than to the broader construct of internalizing, which is more often a research focus in adolescence. Social withdrawal, per se, has been studied more often in childhood than in adolescence (Coplan & Bowker, 2014b), yet during adolescence, the importance of social relationships for psychological adjustment increases (Rubin et al., 2006) and the peer culture comes into prominence (Brown & Larson, 2009). Because social withdrawal interferes directly with the adolescent's ability to engage in social relationships and peer group interaction, it is arguably a significant target of study in adolescence.

Social withdrawal is a somewhat stable behavioral pattern across childhood and adolescence (e.g., Rubin et al., 1995; Schneider et al., 1998). It presents in many forms and subtypes (e.g., inhibition, fearful shyness, self-conscious shyness, anxious-solitude, reticence, social disinterest), some that are more biologically-based than others (Asendorpf, 1993; Rubin et al., 2009). However, research has identified family characteristics that contribute to the continuity or discontinuity of social withdrawal or related internalizing issues (e.g., social anxiety) over time (Booth-LaForce et al., 2012; also review by Ballash et al., 2006). The current study examines two components of parenting that may serve that function: Psychological control and parental knowledge.

Parenting and Adolescent Social Withdrawal

In families of adolescents, parenting changes as parents face the challenge of allowing their children to become more autonomous while confronting the reality of increasing risks associated with the adolescent period (see review by Soenens et al., 2019). Two things that likely change are parental control (attempts to get the child/adolescent to conform to parents' own or perceived social norms) and parental knowledge (awareness of the child/adolescent's activities). Control and knowledge can, in theory, be positive socialization tools (Bean et al., 2006; Kurdek & Fine, 1994). For example, parents can use them to teach children and adolescents about appropriate behavior, facilitate their development of self-control, or protect them from harm. However, these positive socialization goals are not always achieved; the type of and level of control and knowledge used by parents matters.

Psychological Control.

Psychological control refers to intrusive parental attempts to influence a child's thoughts and emotions. Psychologically controlling parents use strategies such as love withdrawal, shaming, devaluing, and guilt-induction to try to manipulate their children or adolescents

(Pettit et al., 2001; see also review by Barber, 1996). Levels of parents' psychological control are typically linearly related to adolescent adjustment, with higher psychological control being associated with worse adjustment (e.g., Bullock et al., 2018; Symeou & Georgiou, 2017; Soenens & Vansteenkiste, 2010). Even moderate levels of psychological control have been shown to predict child and adolescent problems (Kins et al., 2012), particularly internalizing problems such as anxiety or depression (see review by Rubin & Coplan, 2004). However, to our knowledge, social withdrawal, per se, has not been studied as an outcome or correlate of psychological control among adolescent samples.

Parental Knowledge.

The second parenting characteristic we examine that becomes particularly salient during adolescence is parental knowledge: parent's awareness of the adolescent's whereabouts, activities, and friends (Crouter, & Head, 2002; see Racz & McMahon, 2011, for a review). Parental knowledge is, in part, a result of parents' attention and active use of monitoring strategies. In studies of adolescents, parental monitoring (and knowledge, although it was not always labelled as such) has primarily been examined in relation to the adolescents' externalizing rather than internalizing problems (see review by Dishion & McMahon, 1998). When monitoring and knowledge have been assessed separately, parental knowledge has been found to mediate the positive association between active monitoring and adolescent externalizing problems (e.g., Fletcher et al., 2004). In the smaller set of studies examining internalizing, higher levels of parental knowledge have been found to be related to lower levels of internalizing symptoms (e.g., Fröjd et al., 2007; Garthe et al., 2015; Hamza & Willoughby 2011; Sagrestano et al., 2003).

More recently, it has become clear that, while some parental knowledge is a result of parents' active monitoring, solicitation, and control attempts, much, if not most, of parental knowledge is a result of adolescent disclosure; in other words, parents know what they know because their children allow them to know (e.g., Keijsers & Laird, 2010; Kerr et al., 2010). Thus, a transactional approach should be taken to examine associations between adolescent behavior and parental knowledge across time. This might be particularly important in the case of adolescent social withdrawal: If social withdrawal includes withdrawal from parents, then disclosure—and therefore parental knowledge—would likely decrease. Give that research among emerging adults engaging in the separation-individuation process has shown that “dysfunctional independence” negatively predicts disclosure to parents (Jiang et al., 2017), it may be that among adolescents with socially withdrawn tendencies, the beginning of this separation process increases their anxiety and withdrawal from parents. Whether increases in social withdrawal then predict changes in parenting is an empirical question guiding the current project.

A Developmental Cascade Model of Social Withdrawal and Parenting

Transactional Effects.

There is mounting evidence for transactional or bidirectional effects between parenting variables and adolescent behavioral variables, including the two examined in the current study. A meta-analysis of over 1000 studies (Pinquart, 2017) found bidirectional

associations between psychological control and internalizing symptoms, and parental knowledge has been found to be bidirectionally related to adolescent depression (Hamza & Willoughby, 2010) and antisocial behavior (e.g., Abar et al., 2014; Wertz et al., 2016). Our plan of analysis follows a methodological approach recommended for studying transactional processes (see Pettit & Arsiwalla, 2008) by using a cascade model to examine how levels of social withdrawal and parenting impact each other across the adolescent era.

Cascade Model.

A developmental cascade model represents the way two or more parts of a developmental system interact cumulatively across multiple time points (see Burt et al., 2008; Lansford et al., 2008; Masten & Cicchetti, 2010). In developmental cascade models of adolescent psychopathology, early childhood risk factors are seen as increasing exposure to risk processes across childhood, ultimately resulting in adolescent problems (Otten et al., 2019). Conceptually, a developmental cascade model using the variables of interest in our study would examine whether early adolescent social withdrawal evokes psychological control from parents and changes their level of knowledge, which, in turn, could trigger a change in the adolescent's social withdrawal, and so on. Alternatively, the cascade might begin with parental psychological control and monitoring-related knowledge in adolescence, which could trigger changes in social withdrawal and then, later, changes in parenting. The current study examines whether or not this kind of transactional developmental cascade exists from early to late adolescence in a large, non-clinical sample.

Hypothesized Mechanisms in the Unfolding of a Withdrawal-Parenting Cascade.

From a behavior genetics perspective (see, e.g., Kendler & Eaves, 1986), the association between social withdrawal and parental psychological control and knowledge could be an evocative (or reactive) genotype–environment correlation (Plomin et al., 1977): In one scenario, a child born with a sense of fearfulness might arouse a high level of parental protection and control, for example, if the parent is concerned about the child's feeling of fearfulness during social activities. In another scenario, a child who is temperamentally inhibited may evoke what Bell and Chapman (1986) call “lower limit controls,” high levels of parental control to encourage or force the child to become more socially engaged. A pattern of withdrawal → control → more withdrawal → more control could continue through adolescence, if the parent continues to react to the adolescent's withdrawal and the adolescent responds with continued or increased withdrawal. This parental control would likely be in the form of psychological control by the time the child reaches adolescence. Recent longitudinal neuro-imaging research (Clarkson et al., 2019) shows that among children with social reticence in early childhood, approximately 50% become hypersensitive to emotional experiences over time (reflected in insula activation in pre-adolescence) and develop social anxiety in late adolescence, with neural “scars” in the insula seeming to impact social behavior. In our model, parental psychological control towards children already predisposed to social withdrawal could prompt this damaging pattern of hypersensitivity.

Mechanisms by which parental knowledge and social withdrawal impact each other are more difficult to speculate about because studies linking parental knowledge and adolescent problems have focused so much on externalizing. What the externalizing research suggests is that the negative cross-time correlation between parental knowledge and adolescent externalizing problems is driven by the adolescent's behavior, not the parent's level of knowledge. Instead of high parental knowledge protecting adolescents from engaging in negative behavior, it appears more likely that adolescents with few behavior problems either have less need to hide their activities from parents, or have a parent-child relationship with good communication, both which lead to more accurate parental knowledge. Conversely, adolescents with more externalizing problems are less likely to disclose to their parents, resulting in less—or less-accurate—parental knowledge (Garthe et al., 2015; Kerr & Stattin, 2000). Regardless, all three of these potential causal paths are from adolescent to parent. But socially withdrawn adolescents are not (primarily) engaging in delinquent or illegal behavior. How, then, would their behavior problems manifest in terms of disclosure to their parents across adolescence, and would they be reactive to parents' changing levels of knowledge? These questions can be addressed empirically in our developmental cascade design.

Finally, it is important to acknowledge the developmental finding that most parents decrease monitoring behavior during their adolescents' high school years (Freeman & Newland, 2002). If parents "back off" as part of autonomy-granting (with less monitoring and subsequently less knowledge), a child who was withdrawn pre-adolescence might become less withdrawn, given less pressure and more freedom ($<$ monitoring \rightarrow $<$ withdrawal). Parents who increase monitoring, however, might cause their children to withdraw from them ($>$ monitoring \rightarrow $>$ withdrawal). In both cases, withdrawal and monitoring-related knowledge would be *positively* correlated across time. But if parental knowledge is driven by adolescent disclosure, as it is with externalizers, the adolescents who become less withdrawn across adolescence likely increase their disclosure (as they grow more connected and open), resulting in an increase in parental knowledge ($<$ withdrawal \rightarrow $>$ knowledge); thus, withdrawal and knowledge would be *negatively* correlated across time. These possible pathways are considered exploratory in the current study's analysis.

Gender and Withdrawal-Control Transactions.

In Western cultures, social withdrawal tends to be less acceptable for boys than girls (see review by Rubin et al., 2009). This may lead to different responses from parents of withdrawn boys versus withdrawn girls. Stevenson-Hinde (1989) found this to be true among a toddler sample, where parents displayed sensitivity and warmth toward shy daughters but displayed assertiveness and low responsiveness toward shy sons. Little is known about whether gender differences exist regarding parental psychological control and monitoring or monitoring-knowledge of socially withdrawn older children or adolescents, however. In the current study, we are interested not only in whether there is a cascade pattern in how social withdrawal and parental behaviors are related, but also whether the pattern differs for adolescent girls and boys.

In the current study, parental variables are measured via adolescent perceptions of their parents' behavior. This is potentially important, given that the adolescent's experience of parental control is an important part of the impact of that control (Soenens et al., 2006). We also assess both mothers' and fathers' parenting. Because maternal and paternal behaviors contribute to a system-level family climate (e.g., Cowan et al., 1996) and because studies suggest that parenting behaviors such as control can validly be aggregated (e.g., Kuppens et al., 2009; Schwarz et al., 1985), we include measures of both parents in the same analytic model.

The Current Study

To summarize, there is a lack of empirical studies that focus on adolescent social withdrawal (as opposed to internalizing symptoms assessed as a whole), particularly studies that examine multiple types of autonomy-relevant parental variables when studying adolescent social withdrawal. The current study investigates a developmental cascade model of social withdrawal, parental psychological control, and parental knowledge using a community sample of adolescents assessed six times (Grades 6–9, 11, and 12). Unlike some traditional cascade models, however, measures of parenting and social withdrawal are taken at different time points to address the sequence of the potential transactional effect. Based on our conceptual rationale, social withdrawal was designed to be the stimulus for the cascade. We offer the following hypotheses and research questions:

- H₁)** Based on evidence of relative stability in parenting across adolescence: Grade 8 parental psychological control and knowledge will positively predict Grade 11 parental psychological control and knowledge, respectively. However, the effect size is predicted to be small to moderate, given that some parents will change their behavior in response to their perception of adolescents' emergent developmental need for autonomy.
- H₂)** Based on evidence linking parental control and childhood withdrawal, evidence linking psychological control and internalizing in adolescence, and the notion of evocative interaction effects, it is expected that adolescent social withdrawal in Grade 6, Grade 7, and Grade 9, and parental psychological control in Grade 8 and Grade 11, will show a negative cascade effect on Grade 12 social withdrawal. In other words, we hypothesize that a negative cascade effect will follow the course from early social withdrawal (Grades 6 and 7) → more psychological control (Grade 8) → more social withdrawal (Grade 9) → more psychological control (Grade 11) → more social withdrawal (Grade 12).
- RQ₁)** Our first exploratory question is: Does parental knowledge show a cascade effect from earlier social withdrawal to Grade 12 social withdrawal?
- RQ₂)** Our second exploratory question is: If cascade models are supported, will there be an adolescent gender difference?

METHOD

Participants

Two cohorts of U.S. kindergarten children ($N = 585$) in Bloomington, IN, and Knoxville and Nashville, TN, were recruited in the spring or summer before their kindergarten year to participate in the *Child Development Project (CDP; Dodge et al., 1990)*, a study of the development of conduct problems. Data were collected annually from two cohorts and variously included reports from the participating children, their parents, their teachers, their peers, outside observers, and school records. The present study used data collected in six waves across seven years beginning when CDP adolescents were in Grade 6 and included reports by mothers, teachers, and the adolescents themselves. Attrition, which is less than 10%, was due largely to families moving out of the area or opting to drop out owing to lack of interest. The baseline (Grade 6) sample consisted of 51.32% boys, 82.08% European-Americans, 16.42% African-Americans, and 1.51% adolescents from other ethnic groups. Forty-eight percent of the sample fell in the lower two of the five socioeconomic status groups assessed using the Hollingshead Four-Factor Index of Social Status (Hollingshead, 1975). At baseline, the average completed level of education for parents was “some college.” Mean parent age at baseline was 31.29 years for mothers and 33.77 years for fathers.

Because of missing data, sample size for each respective wave of data collection was $n = 477, 480, 451, 420, 416,$ and 438 . Maximum Likelihood estimation was used to handle missing data and the full sample ($n = 534$) was included in analyses.

Procedure and Measures

The study was approved each year by the Internal Review Boards at the Principal Investigator’s home university. Parent, teacher, and adolescent written consent were obtained each year of data collection. During the summers before Grades 9 and 12, the adolescents and their mothers were interviewed separately in the home by trained graduate students and asked to complete questionnaires following the interview. (Mothers were interviewed and surveyed because approximately a third of the sample consisted of mother-headed, single-parent families.) Demographic information was obtained from the mother’s questionnaire. During the summer before Grades 10 and 11, the adolescents and their mothers were mailed questionnaires. They were instructed to complete the questionnaires separately and return them in separate envelopes. Teacher questionnaire packets were delivered to teachers at the adolescents’ schools.

Social Withdrawal.—Adolescents’ social withdrawal was measured using the social withdrawal subscale from teacher reports on the Teacher Report Form, mother reports on the Child Behavior Checklist (CBCL), and adolescent reports on the Youth Self Report (Achenbach, 1991a; Achenbach, 1991b; and Achenbach, 1991c, respectively). Because most adolescents had multiple teachers, the principal of each school was asked to name the teacher most familiar with the student, usually a homeroom teacher, and that teacher completed the questionnaire. Responses were reported on a 3-point Likert-type scale (0 = not true, 1 = somewhat/sometimes true, 2 = very true/often true). The social withdrawal variables were assessed by at least two informants in four waves: Grade 6 (teacher and

mother reports), Grade 7 (teacher, mother, and adolescent reports), Grade 9 (mother and adolescent reports), and Grade 12 (mother and adolescent reports). The social withdrawal scale includes items about being a loner, refusing to talk, staring blankly, sulking, and being secretive, shy, underactive, sad, and withdrawn. The means of these nine items (eight for the adolescent report, where the “sulking” item was excluded) were computed to form a social withdrawal composite score for each reporter (mother, teacher, and adolescent). These three means were then used to yield latent variables representing social withdrawal at each wave. Most measures showed good reliability (α s from .69 to .89) except for the adolescent report at Grade 7, which had lower reliability ($\alpha = .60$).

Parenting.—During home visits in Grade 8 and Grade 11, adolescents participated in an interview that included questions about their perceptions of mothers’ and fathers’ psychological control and parental knowledge. Table 1 lists composite score means and standard deviations.

Psychological control was assessed using an adaptation of Barber’s (1996) scale and included 10 items reported on a 3-point scale (1 = not like him/her, 2 = somewhat like him/her, and 3 = a lot like him/her). Adolescents reported on the extent to which their mother and father, respectively, engaged in psychologically controlling behaviors such as blaming, shaming about loyalty to the family, being unpredictable in expression of warmth and criticism, being critical about past behaviors, and being disrespectful and intrusive regarding the adolescent’s thoughts and feelings. The means of the 10 items were computed to yield separate composite scores for mother’s and father’s psychological control.

Parental knowledge was assessed using an adaptation of scales from Brown et al. (1993) and Dishion et al. (1991), and included 5 items reported on 3-point scales (1 = don’t know, 2 = know a little, and 3 = know a lot). Items ask about parents’ knowledge of where the adolescent goes at night; where the adolescent spends most afternoons after school; how the adolescent spends money; what the adolescent does during free time; and who the adolescent’s friends “really are.” The means of the five items were calculated to yield composite scores for mother’s and father’s knowledge.

The reliability of all parenting measures was adequate in Grade 8 (α s from .65 to .76) and stronger in Grade 11 (α s from .89 to .99).

RESULTS

Plan of Analysis and Descriptive Statistics

Mplus (n.d.) version 7.2 was used to run a Structural Equation Model (SEM) to test for potential cascade effects among parental psychological control, parental knowledge, and adolescent social withdrawal. The correlation matrix is reported in Table 1. Psychological control and knowledge were negatively correlated with each other within Grade 8 and within Grade 11. Correlations were significant (all $ps < .05$) within parents (mothers’ psychological control and knowledge, $r_s = -.29, -.33$; fathers’ psychological control and knowledge, $r_s = -.29, -.27$) and across parents (mothers’ psychological control and fathers’ knowledge, $r_s = -.24, -.18$; fathers’ psychological control and mothers’ knowledge, $r_s = -.26, -.14$). Tests

for gender differences were conducted for all eight social withdrawal assessments. These *t*-test results showed gender differences for two measures: Girls' self-reports of social withdrawal were significantly higher than boys' reports at Grade 9 ($t = 3.15, p < .002$) and Grade 12 ($t = 2.97, p < .005$).

Social withdrawal was measured by a latent variable based on two or three informants (teachers, mothers, and/or adolescents) at each grade. Adolescents' separate reports about mothers and fathers were used as two indicators to create latent variables for each parenting variable, psychological control and knowledge. The model included eight latent variables: psychological control and knowledge for Grades 8 and 11, and social withdrawal for Grades 6, 7, 9, and 12. All factor loadings for mother's and father's parenting variables were above 0.50. Loadings for social withdrawal were 0.44 or higher except for a loading of .38 on the adolescent report at Grade 7, the only grade with all three informant reports available.

In the latent path model, the residuals of the repeated measures across different time points (i.e., the same informant's reports across grades for social withdrawal and for parenting variables) were allowed to be correlated (see Marsh & Hocevar, 1985). Each pair of path coefficients between the same two variables at different grades was constrained to be equal to each other (e.g., both path coefficients from psychological control to subsequent social withdrawal). This yielded four pairs of coefficients constrained to be equal. Chi-square difference test results between the unconstrained model ($\chi^2 = 123.14, df = 88$) and the constrained model ($\chi^2 = 121.35, df = 84$) indicated no significant difference, which suggested that the constrained model was more parsimonious than the unconstrained model and the effect size for the relations between parenting variables and social withdrawal is similar. The resulting model (Figure 1) yielded a χ^2 of 123.14 with 88 degrees of freedom ($p = .01$). The fit indices suggested a good model fit with the data ($CFI = .98, TLI = .97, RMSEA = .03, SRMR = .04$).

Maximum Likelihood (ML) estimation was used in Mplus to handle missing data, which assumes missingness as random (MAR) after controlling for variables in the model. To make the MAR assumption more credible (see Arbuckle, 1996; Little, 1995), the following demographic variables that correlated with missingness were added to the model as auxiliary variables: mother education, father education, child gender, child ethnicity, family socioeconomic status, and parents' marriage status. The results did not change when these six auxiliary variables were added, further supporting the MAR assumption.

Model Results

Cross-Time Stability: Tests of H_1 .—Figure 1 shows that the effect size for cross-time correlations in parenting variables was large: .52 for Grade 8 psychological control predicting Grade 11 psychological control and .40 for Grade 8 knowledge predicting Grade 11 knowledge. The previous wave scores explained 16%–27% of the variance in the later wave scores for each of the parenting paths. Social withdrawal was also found to be highly stable across time, with standardized effect sizes between adjacent-wave social withdrawal scores ranging from .78–.88. The previous wave's social withdrawal scores explained 60%–80% of the variance in the later wave score for each path.

Cascade Models—The cascade models examine whether social withdrawal can be predicted after accounting for the large effect of the stability in social withdrawal, as well as accounting for the effects of earlier levels of the parenting variables on later levels of the parenting variables.¹

Cascade Model of Adolescent Social Withdrawal and Parental Psychological Control: Test of H_2 .

An escalating cascade effect of early social withdrawal and psychological control on later social withdrawal and psychological control was detected (see Figure 1). Early social withdrawal predicted more subsequent psychological control by parents, which in turn predicted more social withdrawal at the next time point, and so on, in a negative cascade pattern. Stable patterns were found from Grade 6 social withdrawal to Grade 12 social withdrawal, from Grade 8 psychological control to Grade 12 social withdrawal, and from Grade 11 psychological control to Grade 12 knowledge. An unexpected finding was that psychological control at Grade 8 predicted knowledge at Grade 11 through social withdrawal at Grade 9 ($\beta = -.03, p = .01$).

Cascade Model of Adolescent Social Withdrawal and Parental Knowledge: Test of RQ_1 .

Parental knowledge did not predict later social withdrawal, but earlier social withdrawal did predict significantly less parental knowledge at the next time point.

Gender Effects in Cascades: Test of RQ_2 .

A multi-group SEM was used to compare boys and girls with respect to links between their social withdrawal and their perceptions of parent psychological control and knowledge. In the first model, all the comparable paths in the boys' group versus the girls' group were allowed to be different (e.g., the path from Grade 6 social withdrawal to Grade 7 social withdrawal for the boys' and girls' groups was allowed to be different), which assumes potentially different patterns of effects for boys versus girls. In the second model, all the comparable paths in the boys' group and the girls' group were constrained to be equal, which assumes boys and girls show the same patterns of effect. A Satorra-Bentler Scaled Chi-Square difference test (Bryant & Satorra, 2012; Satorra & Bentler, 2010) was computed to compare the two models. The results were non-significant ($T_d = 12.05, df = 13, p = .52$), suggesting that, according to our data, the developmental relations between social withdrawal and parenting did not differ for boys and girls across adolescence.

DISCUSSION

The purpose of this study was to examine social withdrawal among a non-clinical sample of children entering middle school, specifically whether later levels of social withdrawal are predicted by a developmental cascade involving earlier social withdrawal, parental

¹In addition to testing the hypothesized paths, we also tested two cross-time direct paths from one type of parental variable to the other type: the path from Grade 9 psychological control to Grade 12 knowledge and the path from Grade 9 knowledge Grade 12 psychological control. Both of the paths were non-significant and the model fit was similar to the fit of our hypothesized model. Therefore, for simplicity's sake, these paths were not included in the model shown in Figure 1.

psychological control, and parental knowledge. The results support our hypothesis for psychological control and offer new information about parental knowledge.

Adolescents' social withdrawal scores changed only a small amount between adjacent grades. This is consistent with previous studies that social withdrawal is relatively stable from preschool to adulthood (Degnan Henderson et al., 2008; Dennissen et al., 2008), and adds to the literature by using a multi-informant—therefore perhaps more ecologically valid—approach to assess social withdrawal across the adolescent era.

Additionally, according to our adolescent participants' perceptions, parental psychological control and knowledge were significantly correlated from Grade 8 to Grade 11 (β s = .40 and .52, respectively). This result supports our hypothesis that autonomy-related parenting is relatively stable, although we found it is not as stable as social withdrawal. Part of this relative stability may be that parenting have become habitual parts of the family dynamics by the time the child reaches adolescence (see review by Pettit & Arsiwalla, 2008). However, there was evidence in our cascade model that some parents modify their control and their levels of knowledge change in response to their adolescents' social withdrawal, and that levels of social withdrawal change as a function of psychological control, but not as a function of parental knowledge, beyond the stability of those constructs. The fact that these changes occurred across the adolescent period supports our conceptualization of adolescence as a time of family-level change, and also supports the notion that even behaviors with a strong biological basis can be tempered by parenting (see Bates et al., 2019).

We found that psychological control and knowledge were negatively related to each other within and across years: Parents who were high in the use of psychological control tended to be low in parental knowledge, and vice versa. We believe this is the first study to reveal a negative association between parents' psychological control and monitoring-related knowledge in a cascade model. Also, according to adolescents, one parent's psychological control was negatively related to the other parent's knowledge, both within and across years. This may be evidence of a family-system process where one parent reacts to the other parent's style in a compensatory fashion with the child (see Cook, 2002), or it could reflect that adolescents tend to be closer to one parent than the other. Because adolescents reported about their mothers' and fathers' control and knowledge, it may also be the case that they regard their mothers and fathers as a parenting unit, with perceptions of each influenced by perceptions of the other.

Despite some empirical overlap, however, our results showed differences in how the parenting variables were related to social withdrawal. Specifically, earlier social withdrawal positively predicted psychological control and negatively predicted parenting knowledge, but later social withdrawal was predicted only by psychological control. These findings suggest that social withdrawal and parental psychological control are influencing each other, similar to others' findings on the relation between psychological control and depression (e.g., Soenens et al., 2008) and internalizing (Pinquart, 2017). One possible explanatory mechanism for the dynamic we observed has to do with the child's motivational system. It may be that an "emotional type" of withdrawal involving the child's behavioral inhibition system (Carver & White, 1994) is occurring early on, in the context of a psychologically-

controlling home. This emotional withdrawal may become a mechanism for the child to avoid anxious experiences (see Wood et al., 2003), and if it becomes entrenched over time, may manifest as socially withdrawn behavior.

Our findings support those from two other studies where psychological control predicted adolescent internalizing problems, but monitoring-related behavior did not (viz., Barber et al., 1994, which assessed monitoring and autonomy granting, and Symeou & Georgiou, 2017, which assessed autonomy-granting only). However, among our sample, while adolescents' social withdrawal appears to result in low levels of parental knowledge, the opposite is not true: Earlier levels of knowledge do not impact later social withdrawal. This supports past findings about the role of adolescent disclosure in parental monitoring-knowledge: In our study, it seems likely that adolescents with high levels of social withdrawal gradually talked less to their parents, resulting in less parental knowledge. Alternatively, it may be that when early adolescents have high levels of social withdrawal, parents do not worry about them getting into trouble during peer interactions, and, perhaps as a way of allowing autonomy, talk to them less about their social activities, resulting in less knowledge. We suggest that more refined conceptualizations of parental monitoring and autonomy-granting, such as the model of vigilant care proposed by Omer et al. (2016), can be used to better understand monitoring's role in adolescent development.

Our results also suggest that psychological control and parental knowledge are not independently related to social withdrawal, as evidenced by the significant path from Grade 8 psychological control through Grade 9 social withdrawal to Grade 11 parental knowledge. This indicates that parents who do more psychological controlling of their withdrawn adolescents obtain less knowledge when the adolescents' withdrawal increases. Again, adolescent disclosure could account for these associations, if adolescents react to high psychological control by withholding information from their parents (while withdrawing more from peers). While this interpretation needs to be explored empirically in the future, it is suggestive of a complex longitudinal dynamic among the two types of parenting and adolescent behavior.

We found no differences in the cascades models as a function of adolescent gender, in contrast to findings about parents' differential reactions to withdrawn behavior in very young girls versus boys. In adolescence, parents' gender-differentiated behavior has been found to begin to focus on issues like physical appearance (Striegel-Moore & Kearney-Cooke, 1994), dating (Crouter et al., 1995), academic achievement, and antisocial behavior (DeBaryshe et al., 1993); it may be that, by adolescence, social withdrawal is less related to gender in the eyes of parent than are these other issues.

Limitations

Although this study has strengths, we should note its limitations. First, latent variables for social withdrawal include loadings as low as .38 (see Figure 1). It is possible that adolescents' socially withdrawn behaviors vary across situations or are not consistently evaluated by different informants. This is in line with what some researchers have found regarding disagreements among parents, teachers, and youth reports on the CBCL internalizing problem subscale (Stanger & Lewis, 1993; Youngstrom et al., 2000). And

adolescents certainly display different behaviors at school and at home; as with any personality construct conceptualized as cross-situational, social withdrawal is dependent on incentive conditions in different settings. The fact that the loading on adolescent reports of social withdrawal at Grade 7 (.38) is relatively low compared to Grades 9 (.50) and 12 (.62) suggests that as adolescents get older, either their social withdrawal becomes more consistent across situations or they are better able to report on their socially withdrawn behavior. It may also be that they become better informants about their parents' behavior: We found the reliability of adolescent reports of parenting improved from Grades 8 to Grade 11. This is consistent with psychometric research (e.g., Borgers et al., 2000) that finds the reliability of self-report increases with age from childhood through middle adolescence due, primarily, to cognitive development.

A methodological limitation of our study is that the predictions of scores made after controlling for previous wave's scores was possible only after Grade 8. Also, because not every concept was measured at each wave, we were not able to control for within-time correlations, which is what is usually done in cross-lagged path analyses.

A characteristic of our study that is not necessarily a limitation but that should be noted as our findings are generalized and/or compared to those of existing studies is that we assessed parental knowledge, not parental monitoring. Our data were gathered before Kerr and Stattin's (2000) reformulation of monitoring, with its focus on characteristics such as solicitation and disclosure of knowledge. As such, the results from our study does not tell the whole picture of the relation between parental monitoring and social withdrawal. Additionally, we only used a single source of information on parenting, the adolescent's perspective. While it can be argued (e.g., from a symbolic interaction perspective) that adolescents' "subjective" perceptions are the bases for their responses to situations, they may or may not correspond to more "objective" reality (Plunkett et al, 2007); in interpreting our findings, it should be remembered that measures of parental psychological control and knowledge are based solely on their adolescents' perceptions.

A final limitation is that different types of social withdrawal such as reticence versus unsociability were not distinguishable in our study. Previous studies have indicated that reticent and unsociable children display different developmental behavioral patterns (Rubin et al., 2010). It may be fruitful to investigate various types of social withdrawal separately in the future.

Conclusions

Social withdrawal can have a life-span effect on relationships, academic performance, social competence, and adult adjustment (Kerr & Stattin, 2000; Kim et. al., 2008; Prior et. al., 2000; Rubin et. al., 2006). However, research on cross-time patterns of social withdrawal and its relations with parenting during adolescence is limited. The current study examined the development of social withdrawal and the contribution of parenting from early adolescence to the brink of adulthood. We found that the pattern of parental psychological control, social withdrawal, their mutual effects, and their cascade effects are relatively stable and did not differ by adolescent gender. Although parental knowledge did not predict social withdrawal, we found parents with socially withdrawn adolescents are less likely to have

high levels of knowledge. Additionally, previous parental psychological control negatively predicted later knowledge through social withdrawal. Such findings may enrich an understanding of the mechanism of the development and maintenance of social withdrawal from a life-span perspective.

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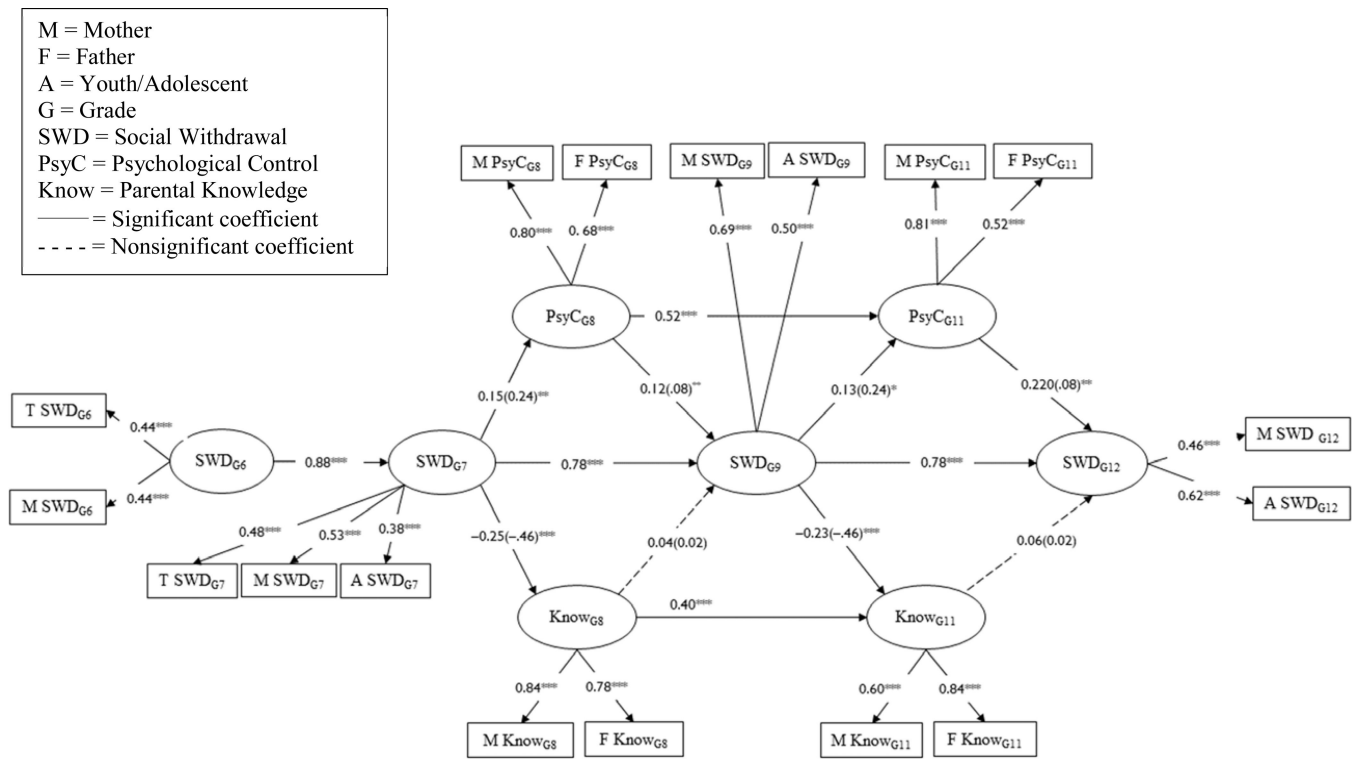


Figure 1. Standardized path coefficients for the structural equation model describing the cascading relations among social withdrawal, psychological control, and parental knowledge. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 1

Correlations Means, and Standard Deviations for Psychological Control, Knowledge, and Social Withdrawal

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. M PsyCG8																	
2. F PsyCG8	0.69***																
3. M KnowG8	-0.29***	-0.26***															
4. F KnowG8	-0.24***	-0.29***	0.63***														
5. M PsyCG11	0.37***	0.23***	-0.18***	-0.18***													
6. F PsyCG11	0.22***	0.36***	0.01	-0.16**	0.43***												
7. M KnowG11	-0.23***	-0.12*	0.34***	0.24***	-0.33***	-0.14*											
8. F KnowG11	-0.08	-0.08	0.19***	0.38***	-0.17***	-0.27***	0.51***										
9. M SWD _{G6}	0.06	0.08	-0.02	-0.05	0.03	0.02	-0.11*	-0.10									
10. T SWD _{G6}	0.04	0.01	-0.01	-0.05	0.01	0.07	-0.01	0.03	0.20***								
11. M SWD _{G7}	0.09	0.08	-0.07	-0.03	0.04	0.10	-0.14**	-0.05	0.63***	0.33***							
12. T SWD _{G7}	0.03	-0.02	-0.06	-0.08	-0.03	-0.03	-0.05	-0.03	0.19***	0.38***	0.25***						
13. A SWD _{G7}	0.18***	0.13*	-0.13*	-0.04	0.11*	-0.02	-0.15**	-0.07	0.14**	0.11*	0.19***	0.23***					
14. M SWD _{G9}	0.19***	0.18**	-0.07	-0.05	0.10	0.08	-0.22***	-0.09	0.57***	0.21***	0.61***	0.28***	0.17*				
15. A SWD _{G9}	0.16**	0.18**	-0.13*	-0.16*	0.14**	0.07	-0.19***	-0.10a	0.13*	0.13*	0.23***	0.21***	0.42***	0.31***			
16. M SWD _{G12}	0.06	0.17**	-0.05	-0.03	0.10*	0.10	-0.08	-0.09	0.42***	0.16**	0.47***	0.11*	0.13*	0.62***	0.24**		
17. A SWD _{G12}	0.10	0.11*	-0.08	-0.09	0.21***	0.18*	-0.18***	-0.12*	0.13**	0.16**	0.24***	0.18***	0.33***	0.27***	0.46***	0.28***	

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	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Missing (%)	18.73	33.15	18.73	33.15	13.67	30.34	13.48	29.77	14.98	16.85	14.04	20.04	22.22	22.84	23.22	18.91	18.91
<i>SD</i>	0.11	0.11	0.13	0.20	0.18	0.13	0.18	0.27	0.06	0.12	0.07	0.12	0.10	0.07	0.10	0.07	0.12
Mean	1.42	1.37	2.60	2.42	1.45	1.39	2.58	2.36	0.21	0.24	0.25	0.24	0.50	0.24	0.45	0.24	0.45

Note. n = 534. M = Mother, F = Father, T = Teacher, A = Adolescent, PsyC = Parental Psychological Control, Know = Parental Knowledge, SWD = Social Withdrawal. Subscripts indicate adolescent's grade.

* p < .05;

** p < .01;

*** p < .001.