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Shyness, Preference for Solitude, and Adolescent Internalizing: The Roles of Maternal, Paternal, and Best-Friend Support

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The researchers examined differential outcomes related to two distinct motivations for withdrawal (preference for solitude and shyness) as well as the possibility that support from important others (mothers, fathers, and best friends) attenuate any such links. Adolescents (159 males, 171 females) reported on their motivations to withdraw, internalizing symptoms, and relationship quality in eighth grade, as well as their anxiety and depression in ninth grade. Using structural equation modeling, the authors found that maternal support weakened the association between shyness and internalizing problems; friend support weakened the association between preference for solitude and depression; and friend support strengthened the association between shyness and depression. Results suggest that shy adolescents may not derive the same benefits from supportive friendships as their typical peers.

Researchers have consistently found that childhood social withdrawal (i.e., withdrawal in the presence of peers) is a behavioral marker that is both concurrently and predictively related to maladaptive social and psychological outcomes (see Rubin, Coplan, & Bowker, 2009 for a review). Social withdrawal has been linked to numerous difficulties with peers including rejection, exclusion, and victimization as well as lower friendship quality and smaller social networks (e.g., Pedersen, Vitaro, Barker, & Borge, 2007; Rubin, Wojslawowicz, Rose-Krasnor, Booth-LaForce, & Burgess, 2006). Additionally, withdrawn children tend to have more overprotective, more intrusive, and less supportive parents than their nonwithdrawn age-mates (Coplan, Findlay, & Nelson, 2004; Rubin, Burgess, & Hastings, 2002). These negative experiences with important others are thought to partially explain the positive association between social withdrawal and various internalizing problems such as social anxiety, depression, and feelings of loneliness (e.g., Gazelle & Rubin, 2010).

Despite the relatively consistent finding that social withdrawal is related to a host of undesirable outcomes, both theoretical (Asendorpf, 1993) and empirical work (e.g., Coplan, Prakash, O'Neil, & Armer, 2004) suggest that socially withdrawn children do not comprise a homogenous group. Recently, researchers have begun to deconstruct the underlying motivations for what manifests behaviorally as social withdrawal, focusing on two in particular: shyness and preference for solitude or unsociability (see Coplan & Weeks, 2010a for a review). An emerging narrative from this growing literature is that social withdrawal motivated by shyness and social wariness carries greater costs and is more strongly related to maladaptive outcomes than is withdrawal motivated by a preference for solitude. One cornerstone of this narrative is that preference for solitude is not as consistently related to internalizing problems as is shyness (Bowker & Raja, 2011; Coplan & Armer, 2007; Coplan, Prakash, et al., 2004). However, it is important to consider that much of this work has been conducted with children enrolled in preschool through elementary school (e.g., Coplan & Weeks, 2010b; Li et al., 2016; Spangler & Gazelle, 2009). As such, the relations between shyness, preference for solitude, and internalizing problems remain poorly understood in early adolescence, when clinical

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levels of anxiety and depression begin to emerge (Graber, 2004) and when the relative importance of certain relationships may be in flux (Furman & Rose, 2015).

Internalizing Problems and Social Withdrawal

Depression and anxiety represent two of the most costly mental health problems in the world. While the global prevalence rates of depression and anxiety disorders may seem relatively low at 4.4% and 3.6%, respectively, depression accounts for a larger percentage of global health burden than any other neuropsychiatric disease, and anxiety disorders rank sixth in overall health burden (World Health Organization, 2017). In terms of the etiology of depression and anxiety, both elevated internalizing symptoms and increases in internalizing problems over the course of early adolescence predict depression and anxiety diagnoses in late adolescence and early adulthood (e.g., Rueter, Scaramella, Wallace, & Conger, 1999). It is also noteworthy that a high rate of comorbidity exists between depressive and anxious symptoms (Garber & Weersing, 2010; Seligman & Ollendick, 1998). Some have argued that this comorbidity may in fact be driven by a more stable trait such as an internalizing personality dimension (Clark & Watson, 1991) or dispositional negative affect (Shackman et al., 2016), which would be expected to predict concurrent and future internalizing symptoms. Thus, elevated levels of depression, anxiety, and dispositional negativity in early adolescence could each confer risk for the development of future costly mental health problems.

Social withdrawal in childhood and adolescence is well established as a predictor of internalizing problems across development (Rubin, Bowker, & Kennedy, 2009; Rubin, Coplan, et al., 2009). However, as noted above, several investigators have described socially withdrawn children as a heterogenous group in their underlying reasons for withdrawing (Coplan, Findlay, et al., 2004; Coplan, Prakash, et al., 2004). Moreover, many of these same investigators have reported differential associations between separate motivations for withdrawal and internalizing problems (e.g., Coplan & Weeks, 2010b; Özdemir, Cheah, & Coplan, 2015). Thus, it may very well be the case, as some have argued (e.g., Coplan & Weeks, 2010a), that distinguishable, underlying motivations for withdrawal can lead to the same observable phenomenon (i.e., self-isolation in the presence of peers), and yet they may also predict different outcomes. Relatedly, different external factors may moderate the associations between separate motivations for withdrawal and subsequent internalizing problems. The present study offers an initial examination of these claims during a particularly relevant period for the development of elevated anxiety and depression.

Distinguishing Underlying Motivations for Withdrawal

From a conceptual standpoint, shyness and preference for solitude can be distinguished along two motivational dimensions: *approach* and *avoidance* (Asendorpf, 1993). According to this conceptualization, shy children are conflicted in that they are simultaneously motivated to approach and avoid peers. While interacting with peers is appealing to shy children, their concern regarding negative social evaluation leads to feelings of distress and ultimately a desire to withdraw from the peer group (Cheek & Buss, 1991; Crozier, 1995). In contrast, children who prefer solitude are thought to have low approach motivations, but not necessarily high avoidance motivations (Asendorpf, 1993). That is, they are not particularly interested in interacting with peers but would do so given the right situation without experiencing feelings of anxiety or distress (Rubin & Asendorpf, 1993). Behaviorally, children who prefer solitude have been described as unsociable or socially disinterested, reflecting the presumption that low approach motivations underpin their withdrawal (e.g., Coplan & Armer, 2007). Given that the former group of children desires to spend time with peers but is too anxious to approach and interact with them, it seems plausible that they would be more inclined to be internally distressed than their counterparts who prefer not to interact with others.

Beyond these theoretical distinctions, it is important to note that individuals can and do distinguish between shyness and preference for solitude. By the time children reach preschool age, mothers are able to discriminate between shyness and preference for solitude when reporting on their children's motivations for social withdrawal (Coplan, Findlay, et al., 2004; Coplan, Prakash, et al., 2004). Dutch kindergarten teachers were also capable of identifying separate dimensions of withdrawn behavior that map onto shyness and preference for solitude (Thijs, Koomen, de Jong, van der Leij, & van Leeuwen, 2004). Importantly, children can make a conceptual distinction between these two motivations as early as kindergarten (Coplan, Girardi, Findlay, & Frohlick, 2007). By adolescence this capacity extends to the use of

self-reports; Bowker and Raja (2011) found that Indian adolescents made the distinction between shyness and preference for solitude when reporting on their own motivations for withdrawal. Canadian children in Grades 4–6 (ages 9–12; Coplan et al., 2013) as well as 8th graders (M_{age} = 13.43) and 12th graders (M_{age} = 17.25; Wang, Rubin, Laursen, Booth-LaForce, & Rose-Krasnor, 2013) in the United States demonstrated similar abilities in distinguishing between shyness and preference for solitude as motivations. Taken together, these results suggest that parents, teachers, and youth ranging in age from kindergarten to high school are readily capable of differentiating between solitude motivated by shyness and solitude motivated by preference.

The ability to distinguish between these motivations has allowed researchers to test the differential associations between each motivation and internalizing problems, which represent both a cause and consequence of social withdrawal (Rubin, Bowker, & Kennedy, 2009; Rubin, Coplan, & Bowker, 2009). Overall, the results from this work suggest that shyness, but not preference for solitude, is associated consistently with internalizing problems in early and middle childhood (Coplan & Weeks, 2010a). The age of the participants in many of these studies may factor into the null findings regarding preference for solitude. As children move into adolescence, all motivations for social withdrawal may lead to increasingly maladaptive outcomes as withdrawal is increasingly viewed negatively by peers with age (Coplan et al., 2013; Younger & Piccinin, 1989). At least one recent study supports this argument. Controlling for shyness, Wang et al. (2013) demonstrated that preference for solitude was related concurrently to higher levels of anxiety/depression and lower levels of self-esteem in the eighth grade. In the present study, we expected that both shyness and preference for solitude in eighth grade would be related to internalizing problems 1 year later, after controlling for concurrent internalizing problems. In examining these relations from eighth grade to ninth grade, we have selected a time point in adolescence often associated with increased stress due to the transition from middle (or junior high) school to high school (Roeser & Eccles, 2014). New settings, new social groups, and new social hierarchies characterize this transition and are likely to be distressing for all adolescents, and perhaps even more so for those who are motivated to withdraw from their peers.

Friendship Quality and Adolescent Social Withdrawal

Adolescence is a developmental period during which the relation between friend support and emotional adjustment tends to increase relative to perceived support in the context of other relationships (Furman & Buhrmester, 1992; Helsen, Vollebergh, & Meeus, 2000). In general, adolescents with high-quality close friendships characterized by intimacy, companionship, and trust experience lower levels of internalizing problems such as depression and anxiety (Demir & Urberg, 2004; Waldrip, Malcolm, & Jensen-Campbell, 2008), and high-quality best friendships have been associated with decreases in internalizing problems over time (Gaertner, Fite, & Colder, 2010).

For withdrawn children, who struggle to develop and maintain high-quality friendships (Rubin et al., 2006), a highly supportive best friend may carry outsized benefit. Along these lines, shy children who report a high-quality relationship with their best friend experience less anxiety and more positive self-esteem than those who lack a high-quality best friendship (Fordham & Stevenson-Hinde, 1999). Friendship quality has also been associated with trajectories of social withdrawal and emotional difficulties over time (Bukowski, Laursen, & Hoza, 2010; Oh et al., 2008). Shy, withdrawn adolescents without a best friend or with an unstable best friendship increase in their socially withdrawn behavior (Oh et al., 2008). Similarly, socially withdrawn children with a mutual friendship report decreasing depressive symptoms over several years, whereas withdrawn children without a mutual friend experience sharp increases in depression (Bukowski et al., 2010). In summary, shy and withdrawn adolescents seem to benefit particularly from stable, high-quality close friendships. However, it is important to note that much of the research detailing the importance of friendship for withdrawn children has focused on shy, anxiously withdrawn children. To our knowledge, researchers have yet to simultaneously investigate the buffering effects of friendship quality for shy versus preferred solitary and unsociable young adolescents.

Parent–Adolescent Relationship Quality and Social Withdrawal

Adolescence has frequently been described as a period during which children move away from the family and begin to develop increasingly intimate and supportive relationships with their peers

(Furman & Rose, 2015). Though occasionally portrayed as taking on a diminished role during adolescence (Collins & Laursen, 2004), parent–adolescent relationships high in support and positivity during this transition may be especially protective for withdrawn children, who are likely to struggle in peer contexts. Indeed, research on the etiology of internalizing problems such as anxiety and depression has demonstrated that parenting practices and parent–child relationships play an important buffering role, particularly for adolescents who are shy or anxiously withdrawn (Gaertner et al., 2010; Van der Voort et al., 2014). Experiencing maladaptive parenting may be particularly problematic for withdrawn adolescents. For instance, maternal intrusiveness in middle childhood is associated with increased risk of social anxiety during adolescence for children high in behavioral inhibition (Lewis-Morrarty et al., 2012).

Positive parenting practices are certainly important too. High maternal sensitivity in infancy and middle childhood predicts less withdrawn behavior as well as lower levels of maternally reported anxiety and depression among highly inhibited adolescents (Van der Voort et al., 2014). High-quality relationships with parents have also been shown to predict lower levels of adolescent internalizing problems, in general. For example, adolescents who reported higher quality relationships with their parents, characterized by mutual respect, support, and positivity, also reported lower levels of anxiety and depression several years later (Hair, Moore, Garrett, Ling, & Cleveland, 2008). More specific to shyness and anxious withdrawal, high-quality relationships with parents that involve warmth and social support predict lower levels of anxiety and depression among adolescents who are highly sensitive to social rejection (McDonald, Bowker, Rubin, Laursen, & Duchene, 2010). Based on this body of work, we expected that perceived parental support from mothers and fathers would attenuate the associations between motivations for withdrawal and internalizing problems during the transition into high school.

Present Study

As noted above, there is limited research in early adolescence that has focused on whether preference for solitude and shyness are, in fact, differentially related to maladaptive outcomes such as internalizing problems. Thus, the first aim of the present study was to simultaneously examine the concurrent and prospective relations between these two motivations for withdrawal and internalizing problems during a significant life transition in early adolescence. Building from this initial aim, it is also important to consider that even if these two motivations for withdrawal are similarly related in direction and strength to internalizing problems across the transition to high school, such relations may be driven by distinct processes and/or be influenced by different external factors. In the present study, we chose to examine perceived support from mothers, fathers, and self-identified best friends as moderators of the associations between motivations for withdrawal and internalizing problems. Combined, these two aims allowed us to address whether, and in what ways, preference for solitude and shyness are differentially related to internalizing problems in early adolescence.

Using structural equation models, we tested the following hypotheses: (1) Shyness in eighth grade would be positively related to internalizing problems in ninth grade; (2) Preference for solitude in eighth grade would be positively related to internalizing problems in ninth grade; (3) Perceived supportive relationships in eighth grade (with fathers, mothers, and best friends) would be negatively related to internalizing problems in ninth grade; and (4) Perceived supportive relationships in eighth grade (with fathers, mothers, and best friends) would weaken the association between eighth grade motivations for withdrawal and internalizing problems in ninth grade.

METHOD

Procedures

Participants were initially recruited from eight public elementary schools in the greater Washington, DC area as part of a larger longitudinal study investigating child and adolescent social development. Data collection began in fifth grade, and a subsample of these students was followed through the transition from middle school to high school. All students at the initial time point were targeted for inclusion in the study. Parental consent was required for participation (consent rate = 84%) and child assent was obtained at each data collection time point. All participants were first contacted by telephone, and if both parents and adolescents expressed interest, parental consent and adolescent assent forms were mailed to the home with pre-addressed, stamped return envelopes. Adolescents were given the option of completing questionnaires on paper or online. Depending on participant

preference, packets of questionnaires were mailed home (approximately 87% of the sample) or a link to a secure website was sent via email (13% of the sample). All procedures were approved by the university's institutional review board.

Participants

A total of 330 participants (159 boys, 171 girls) provided necessary data for inclusion in the final year of middle school, eighth grade (i.e., self-reports of social withdrawal motivations, perceived parental support, and perceived best friend support). However, there was attrition during the transition to ninth grade and a total of 211 adolescents of the original 330 provided necessary data in ninth grade regarding the outcome variables (anxiety and depression). Participants with complete data did not differ from those without complete data in terms of eighth grade reports of shyness, $t(262.29) = 0.74$, $p = .45$, preference for solitude, $t(328) = 0.51$, $p = .61$, perceived maternal support, $t(328) = 1.20$, $p = .231$, perceived paternal support, $t(328) = 1.07$, $p = .288$, or perceived best friend support, $t(328) = 0.40$, $p = .687$. The group with complete data was also similar to the group without complete data in terms of gender composition, $\chi^2(1) = 0.09$, $p = .759$. Additionally, Little's MCAR test revealed no support for the hypothesis that data were not missing completely at random, $\chi^2(167) = 152.23$, $p = .787$. In sum, missing data in the present sample can be considered to be missing at random, supporting the use of full information maximum likelihood estimation.

In terms of family structure, biological mothers ($M_{age} = 45.09$, $SD = 4.48$) were married to the adolescents' biological fathers ($M_{age} = 47.63$, $SD = 5.56$) in 79.5% of the families. Regarding socioeconomic status, parents did not report on household income. They did, however, provide data regarding their highest level of education. Mothers tended to be well educated in this sample, with 9.7% completing high school or elementary school, 24.6% finishing some college or completing a vocational program, 28.2% holding a 4-year degree, 8.7% completing some graduate coursework, and 28.7% holding a graduate degree. The distribution of educational attainment was somewhat similar for fathers, with 17.2% completing high school or elementary school, 17.8% finishing some college or completing a vocational program, 27.2% holding a 4-year degree, 8.9% completing some graduate coursework, and 29.0% holding a graduate degree. The sample was diverse, with participants self-identifying as European American (56.3%), Asian American (18.9%), Latino/Hispanic (9.8%), African American (8%), or bi-/multiracial (6.9%).

Measures

Eighth grade motivations for withdrawal. We measured shyness and preference for solitude using a 6-item scale in eighth grade that was designed to tap motivations for withdrawn behaviors (adapted from Wang et al., 2013). Response options on each item ranged from 1 (*not at all true*) to 5 (*always true*). The shyness subscale included three items (e.g., "I spend time alone because I want to play with other kids but I don't because I am too shy or afraid"). The preference for solitude subscale also included three items (e.g., "I like spending time alone more than being with other kids"). A confirmatory factor analysis suggested that a two-factor model, in which the factors were allowed to covary, fit the obtained data well, $\chi^2(7) = 10.45$, $p = .165$, comparative fit index (CFI) = .99, root mean square error of approximation (RMSEA) = .04.[1] Loadings on the latent variable representing shyness ranged from .71 to .80 and loadings on the latent variable representing preference for solitude ranged from .57 to .89. Both the shyness and preference for solitude subscales also demonstrated adequate internal consistency (see Table 1). The three items for each subscale were averaged to create summary scores in which higher scores on each composite indicated higher levels of each internal motivation for withdrawal. In this sample, shyness and preference for solitude scores were both positively and significantly related to concurrent peer-perceived social withdrawal as measured using the Extended Class Play (see Rubin et al., 2006), rs = .39 and .29, respectively, ps < .001. Furthermore, both measures were significantly related to parent-reported, rs = .28 and .22, as well as self-reported, rs = .53 and .37, withdrawal as measured by the Child Behavior Checklist and Youth Self Report (Achenbach & Rescorla, 2001), all ps < .001.

Eighth grade relationship quality. We measured perceived relational support using the

[1]This same factor structure was replicated in Grade 5 and Grade 6 in separate samples. In Grade 5 the model fit the data well, $\chi^2(7) = 11.47$, $p = .120$, CFI = .98, RMSEA = .04, with loadings ranging from .41 to .86. Similar results were obtained in Grade 6, $\chi^2(7) = 8.73$, $p = .272$, CFI = 1.00, RMSEA = .03, with loadings ranging from .49 to .83.

TABLE 1
Correlations and Descriptive Statistics for Eighth Grade Predictor Variables

	YSR-Anx/Dep	*PFS*	*Shyness*	*Paternal Support*	*Maternal Support*	*Friend Support*
YSR-anx/dep	0.80					
PFS	0.23**	0.73				
Shyness	0.38***	0.35***	0.70			
Paternal support	−0.13	−0.14	−0.01	0.91		
Maternal support	−0.11	−0.13	−0.09	0.55***	0.87	
Friend support	−0.17*	−0.32***	−0.25***	0.27***	0.39***	0.87
M	4.02	2.01	1.72	3.77	4.02	4.02
SD	3.61	0.79	0.65	0.69	0.56	0.57

Note. Cronbach's alpha for each measure is presented on the diagonal. YSR = Youth Self-Report, PFS = preference for solitude.
*$p < .05$; **$p < .01$; ***$p < .001$.

Network of Relationships Inventory in eighth grade (NRI; Furman & Buhrmester, 1985). Participants completed the entire 33-item scale in which they rated statements about their relationships with their fathers, mothers, and best friends on a 5-point scale ranging from 1 (*none/not at all*) to 5 (*very much/almost always*). The NRI consists of 11 conceptually distinct subscales that load onto three factors (Burk & Laursen, 2005): (1) social support (affection, admiration, companionship, instrumental help, intimacy, nurturance, and reliable alliance); (2) negativity (antagonism and conflict); and (3) relative power. We focused on the social support factor from the NRI (original $\alpha = .94$) to assess positive relationship qualities. Scores were averaged across the social support subscales to create a summary score for perceived support in which higher scores corresponded to adolescents' higher perceptions of relationship support. Participants overwhelmingly reported on perceived social support from their biological mother (98.7%) and biological father (89.7%).

Eighth grade internalizing problems. Participants completed the Youth Self-Report in eighth grade (YSR; Achenbach & Rescorla, 2001). The YSR is a self-report measure adapted from the Child Behavior Checklist (CBCL), a commonly used and well validated parent-report that assesses child behavioral problems, and consists of 112 items. As part of a series of questionnaires administered in the middle of eighth grade, participants rated the degree to which YSR statements applied to them over the previous 6 months using a 3-point scale ranging from 0 (*not true*) to 2 (*very true or often true*). Though several subscale scores can be computed from the YSR, only the anxious/depressed subscale (original $\alpha = .84$) of the YSR was of interest in the present study, as a measure of internalizing problems. The subscale includes 13 items (e.g., "I feel worthless or inferior", "I am nervous or tense"). Item 91 ("I think about killing myself") was not provided to participants as the research team was not staffed to safely manage adolescents who endorsed an item tapping suicidality. Therefore, the anxious/depressed scores from the YSR used in the present analyses represented the sum of 12 items. In the present sample, the anxious/depressed subscale was significantly and positively related to both ninth grade anxiety, $r(209) = .55$, $p < .001$, and depression, $r(206) = .32$, $p < .001$.

Ninth grade anxiety. In the ninth grade, we measured anxiety using the Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, Stallings, & Conners, 1997). The MASC is a 39-item, 4-point self-report scale, in which responses range from 0 (*never true*) to 3 (*often true*). Six subscales of the MASC assess three sets of anxiety symptoms: (1) physical symptoms (tense/restless and somatic/autonomic), (2) social anxiety (humiliation/rejection and public performance fears), and (3) harm avoidance (perfectionism and anxious coping). Previous work has shown that total anxiety scores (original $\alpha = .90$) calculated from the MASC are strongly correlated with other measures of anxiety in adolescents (aged 12–18) such as the trait version of the State-Trait Anxiety Inventory for Children, Fear Survey Schedule for Children—Revised, Revised Children's Manifest Anxiety Scale, Screen for Child Anxiety Related Emotional Disorders, and Spence Children's Anxiety Scale (Muris, Merckelback, Ollendick, King, & Bogie, 2002). Subscale scores were created by summing the items that comprised each set of anxiety symptoms. These scores were then utilized to create a latent variable

representing ninth grade anxiety. The mean total anxiety score, a combination of all six subscales, was 28.58 (SD = 12.88, α = .81).

Ninth grade depression. In the ninth grade, we measured depression using the Children's Depression Inventory (CDI; Kovacs, 1992). The CDI is a commonly used and well validated self-report questionnaire that assesses the cognitive, behavioral, and affective symptoms of depression experienced by children and adolescents (original α = .82). Each of the 27 items is presented as a group of statements involving depression symptomology, with each statement reflecting a different level of symptom severity 0 (*symptom not present*) to 2 (*high level of symptom*). Participants choose the sentence from a group of symptom statements that best described them during the past 2 weeks. Items assess five categories of depressive symptoms: (1) negative affect, (2) interpersonal problems, (3) ineffectiveness, (4) anhedonia, and (5) negative self-esteem. Subscale sores were created by summing the items that comprised each dimension of depression symptoms. These scores were then utilized to create a latent variable representing ninth grade depression. The mean total depression score, a combination of all five subscales, was 6.92 (SD = 6.90, α = .85).

Data Analysis

All analyses were conducted using the *lavaan* package (Rosseel, 2012) in the freely available statistical computing software R (R Core Team, 2014). The *lavaan* package allows researchers to develop and test a wide range of structural equation models including, but not limited to, confirmatory factor analyses, latent variable path analyses, and latent growth models.

Full information maximum likelihood estimation was used to address missing data on the ninth grade depression and anxiety subscales. After the development of an adequate measurement model to represent Grade 9 depression, anxiety, and dispositional negativity (see Figure S1 in the online Supporting Information), we tested all of our study hypotheses in a single path model (see Figure 1). Observed scores for Grade 8 shyness, preference for solitude, mother–child relationship quality, father–child relationship quality, friendship quality, and all two-way interactions between each motivation for withdrawal and each relationship quality measure entered the final structural model simultaneously as predictors of latent variables representing ninth grade internalizing problems. Gender and eighth grade internalizing problems entered the model as covariates. For the final model, we trimmed nonsignificant interaction terms in order to reduce collinearity among the predictors and to provide a more straightforward test of any significant main effects.

Influential cases were identified using a jackknife procedure in which we calculated change scores in the model chi-square statistic associated with each individual case's deletion. The

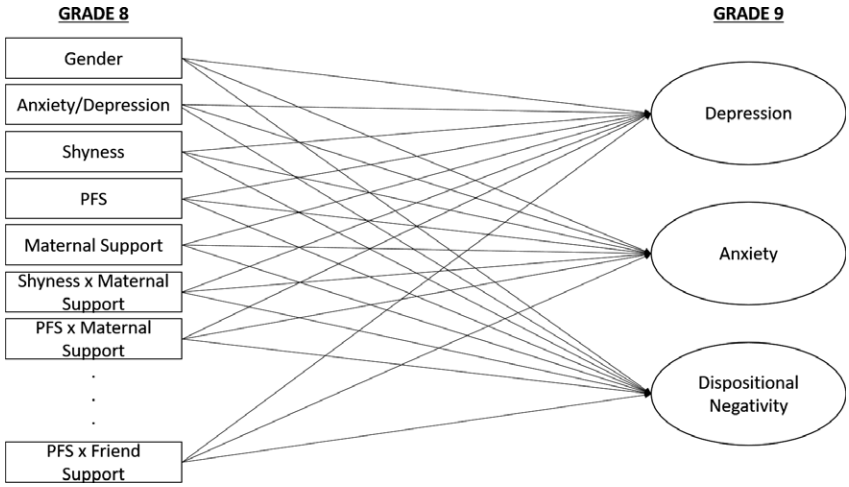

FIGURE 1 Graphic depiction of the structural equation model testing the interaction between support variables and motivations for withdrawal in Grade 8 predicting internalizing problems in Grade 9. PFS = preference for solitude. Note that though not depicted, observed variables in Grade 8 were free to covary in the model. Additionally, several of the main effects (paternal and friend support) and interaction terms are visually omitted above but were included in the initial structural model.

influence.SEM R package provides an easy and straightforward means of implementing this procedure (Pastore & Altoe, 2015). We identified a total of 0 cases in the measurement model and 13 cases in the structural model which, when deleted, led to a change in the model chi-square statistic of 3.84 or greater. Analyses for the structural model were performed with and without these potential influential cases, resulting in minimal changes to parameter estimates and no changes to the pattern of significant findings. Thus, the final models reported herein are based on all cases available in the data set. Data–model fit was assessed using model χ^2 statistics, comparative fit indices (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). Acceptable data–model fit is indicated by CFI values >.95, RMSEA values <.05, and SRMR values <.08 (Kline, 2011; Mueller & Hancock, 2010).

RESULTS

Correlations and descriptive statistics for the predictor variables are presented in Table 1. Shyness and preference for solitude were moderately correlated, which was consistent with the oblique confirmatory factor analysis described above. Both motivations for withdrawal were significantly related to concurrent internalizing problems; the magnitude of each association did not differ significantly, $z = 1.69$, $p = .091$ (two-tailed). The three relationship support variables were all significantly and positively related to one another. The association between paternal and maternal support was significantly stronger than the association between paternal support and friend support, $z = 3.48$, $p < .001$, as well as the association between maternal support and friend support, $z = 2.11$, $p = .017$. Only perceived best friend support was negatively related to concurrent self-reports of internalizing problems, preference for solitude and shyness.

Measurement Model

We started by fitting a measurement model for our primary outcomes of interest: ninth grade internalizing problems. In order to create latent variables that separately represented anxiety, depression, and dispositional negativity, we based our model on the following assumptions: (1) anxiety subscale scores are driven by a latent variable representing anxiety, (2) depression subscale scores are driven by a latent variable representing depression, and (3) both anxiety and depression subscale scores are driven by an individuals' dispositional negativity (see Figure S1 in the online Supporting Information). Using modification indices as a guide, we freed error covariances between indicator variables of these latent constructs one at a time. Freeing covariances across depression and anxiety subscales is appropriate because depressive and anxious symptoms are often comorbid in children and adolescents (e.g., Seligman & Ollendick, 1998). Additional information about measurement model development and the final measurement model can be found in Tables S1 and S2, respectively, in the online Supporting Information.[2]

Structural Model

Once the final measurement model was defined, we included the measures of eighth grade motivations for withdrawal, eighth grade relationship quality scores, and their two-way interaction terms as predictors of anxiety, depression, and dispositional negativity in the ninth grade. Prior to inclusion in the model, all continuous predictors were mean-centered. Both eighth grade anxiety/depression and gender were included as covariates in the model. Nonsignificant interaction terms were dropped from the final model. A complete set of parameter estimates is displayed in Table 2. The model showed mixed evidence of good data–model fit, $\chi^2(114) = 208.90$, $p < .001$, RMSEA = .05, CFI = .93, SRMR = .05.

Anxiety. Overall, the predictors combined to explain 32.5% of the variability in ninth grade anxiety. Higher levels of eighth grade internalizing problems were related to higher levels of ninth grade anxiety, and boys and girls did not significantly differ in their levels of ninth grade anxiety ($p = .074$). Both motivations for withdrawal were also related to ninth grade anxiety. Higher levels of self-reported shyness and higher levels of self-reported preference for solitude in eighth grade were both related to higher levels of anxiety 1 year later. Standardized regression weights suggested that shyness was more strongly related to anxiety than preference for solitude, but the difference in

[2]Several of the indicator variables used to construct the latent factors in the measurement model were not normally distributed. Therefore, at the end of our model building, we performed the same set of analyses, starting with the initial measurement model up to the final structural model, using multiple imputation with Satorra-Bentler corrected fit statistics and standard errors. The pattern of significant results remains unchanged in the final model using this more robust approach to violations of multivariate normality.

TABLE 2
Motivations for Withdrawal, Relationship Quality, and Motivations × Relationship Quality Interactions Predicting Internalizing Problems During the Transition to High School

	G9 Anxiety			*G9 Depression*			*G9 Dispositional Negativity*		
G8 Predictors	*b*	*SE*	*β*	*b*	*SE*	*β*	*b*	*SE*	*β*
Main effects									
Gender	0.33	0.19	0.14	0.11	0.20	0.05	0.11	0.19	0.05
YRS anx/dep	0.11**	0.03	0.31	0.04	0.19	0.13	0.12***	0.03	0.34
PFS	0.30*	0.12	0.19	−0.04	0.12	−0.03	−0.03	0.12	−0.02
Shyness	0.44**	0.16	0.23	−0.19	0.16	−0.11	0.50**	0.16	0.26
Maternal support	0.13	0.21	0.06	−0.23	0.19	−0.13	−0.41*	0.19	−0.19
Paternal support	0.26	0.16	0.14	−0.23	0.15	−0.16	−0.01	0.15	−0.01
Friend support	0.12	0.19	0.06	0.07	0.18	0.04	−0.17	0.17	−0.08
PFS ×									
Maternal support	–	–	–	–	–	–	–	–	–
Paternal support	–	–	–	–	–	–	–	–	–
Friend support	–	–	–	−0.31*	0.14	−0.17	–	–	–
Shyness ×									
Maternal support	–	–	–	–	–	–	−0.68**	0.23	−0.20
Paternal support	–	–	–	–	–	–	–	–	–
Friend support	–	–	–	0.53*	0.23	0.18	–	–	–

Note. Nonsignificant interaction paths were trimmed from final model. Gender (males = 0, females = 1). PFS = preference for solitude. YSR = youth self-report.
*$p < .05$; **$p < .01$; ***$p < .001$.

the magnitude of the coefficients was not statistically significant, $z = 0.69$, $p = .493$. None of the relationship quality measures were related to ninth grade anxiety, and none of the relationship quality variables moderated the association between either motivation for withdrawal and anxiety.

Depression. Overall, the predictors combined to explain 15.3% of the variability in ninth grade depression. The model revealed only two significant predictors of depression, both interaction effects involving self-reported friendship quality and each motivation for withdrawal in eighth grade. Interestingly, the moderation effects appeared to be in opposing directions; friendship quality attenuated the association between preference for solitude and depression whereas it strengthened the association between shyness and depression. These significant two-way interactions are depicted separately in Figures 2 and 3. Figure 2 depicts the moderating effect of friendship support on the association between preference for solitude and depression. As self-reported friendship support increased, the association between preference for solitude and depression was increasingly negative. However, regardless of the degree of positive friendship quality reported, the association between preference for solitude and depression never differed significantly from zero.

Figure 3 displays the two-way interaction between shyness and friendship quality in predicting depression. According to Figure 3, greater

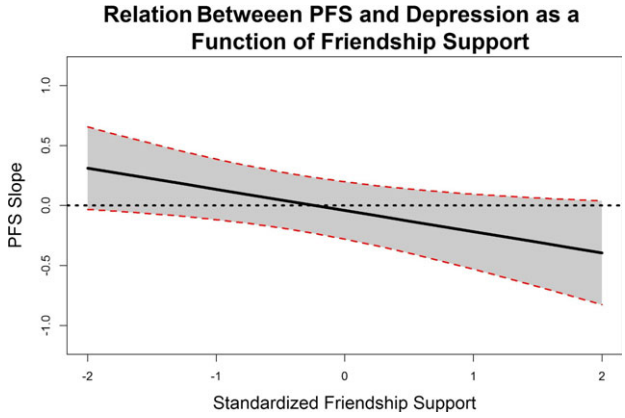

FIGURE 2 Depicts the two-way interaction between PFS (preference for solitude) and friendship support predicting depression. Simple slopes for the relation between PFS and depression are plotted on the *y*-axis, higher values represent a stronger and more positive relation between PFS and depression. Friendship support is plotted on the *x*-axis. The solid line represents model-estimated simple slopes as a function of friendship support. The shaded region marks the upper and lower boundaries of a 95% confidence interval for model-estimated simple slopes, and the horizontal dotted line indicates a simple slope of zero, providing a visual marker for determining whether an estimated slope at a given value of friendship support is significantly different from 0 ($\alpha = .05$).

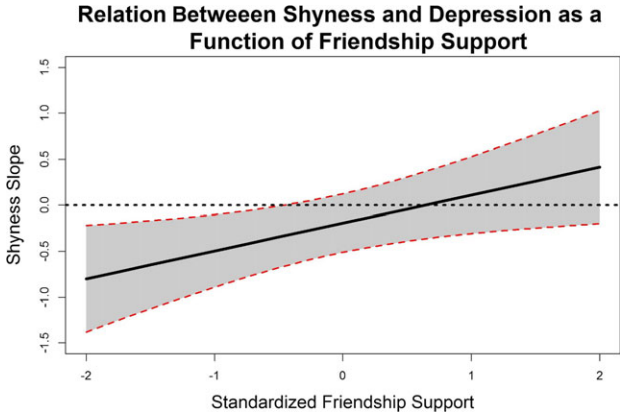

FIGURE 3 Depicts the two-way interaction between shyness and friendship support predicting depression. Simple slopes for the relation between shyness and depression are plotted on the *y*-axis, higher values represent a stronger and more positive relation between shyness and depression. Friendship support is plotted on the *x*-axis. The solid line represents model-estimated simple slopes as a function of friendship support. The shaded region marks the upper and lower boundaries of a 95% confidence interval for model-estimated simple slopes, and the horizontal dotted line indicates a simple slope of zero, providing a visual marker for determining whether an estimated slope at a given value of friendship support is significantly different from 0 ($\alpha = .05$).

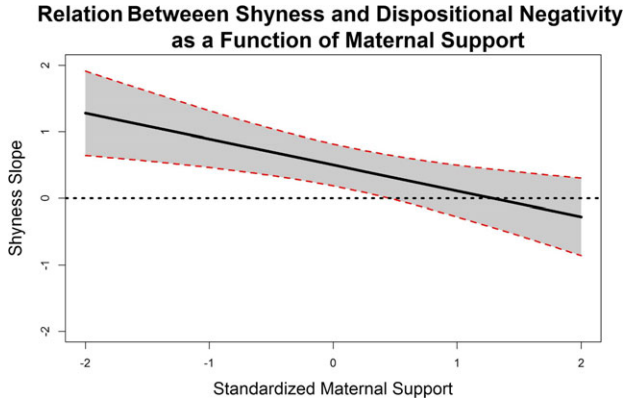

FIGURE 4 Depicts the two-way interaction between shyness and maternal support predicting depression. Simple slopes for the relation between shyness and depression are plotted on the *y*-axis, higher values represent a stronger and more positive relation between shyness and depression. Maternal support is plotted on the *x*-axis. The solid line represents model-estimated simple slopes as a function of maternal support. The shaded region marks the upper and lower boundaries of a 95% confidence interval for model-estimated simple slopes, and the horizontal dotted line indicates a simple slope of zero, providing a visual marker for determining whether an estimated slope at a given value of maternal support is significantly different from 0 ($\alpha = .05$).

friendship support was associated with an increasingly positive association between shyness and depression. Shyness only significantly predicted depression at low levels of friendship quality (i.e., less than −0.50 *SD*), and, contrary to expectations, the association was negative. This result suggests that, at low levels of friendship support, higher levels of shyness were related to lower levels of depression. Because this result was contrary to expectations, we further probed the significant interaction between shyness and friendship quality by positioning shyness as a moderator of the relation between friendship quality and depression (see Figure S2 in the online Supporting Information). As shyness increased, the association between friendship quality and depression was increasingly positive. Specifically, at high levels of shyness (i.e., greater than +1.5 *SD*), friendship quality was significantly and positively related to depression.

Dispositional negativity. Overall, the predictors combined to explain 33.8% of the variability in dispositional negativity. Self-reported eighth grade anxiety/depression was positively related to dispositional negativity as was eighth grade shyness. Among the relationship quality variables, only maternal support was significantly and negatively related to dispositional negativity. These main effects for shyness and maternal relationship quality were, however, qualified by a two-way interaction such that higher reported maternal relationship quality attenuated the association between shyness and dispositional negativity. Figure 4 depicts the association between shyness and dispositional negativity as a function of maternal relationship quality. As maternal relationship quality increased, the association between shyness and dispositional negativity became increasingly negative. Specifically, there was a significant positive association between shyness and dispositional negativity for individuals who reported below-average levels of maternal support (i.e., less than +0.25 *SD*).

DISCUSSION

Recently, researchers interested in children's and adolescents' tendencies to self-isolate in the presence of peers have begun to examine the notion that social withdrawal as a manifest behavior may arise as a function of different underlying motivations. Building from empirical work demonstrating that individuals can and do differentiate between separate motivations for withdrawal (e.g., Coplan, Girardi et al., 2007), investigations have shifted to understanding whether distinct motivations for withdrawal are differentially associated with

maladaptive outcomes (e.g., Wang et al., 2013). Our findings extend this emerging body of work in two important ways. First, we chose to examine concurrent and predictive associations between two separate motivations for withdrawal (i.e., preference for solitude and shyness) and internalizing problems during an important social transition in early adolescence. Second, we simultaneously tested whether positive parent–adolescent relationships and best friendships offered any protective effects in disrupting the association between motivations for withdrawal and subsequent internalizing problems. To our knowledge, ours is the first investigation that has simultaneously examined friendships and parent–adolescent relationships as moderators of the links between different motivations for withdrawal and the development of internalizing problems. The inclusion of the often overlooked paternal–adolescent relationship represents an additional strength along these lines.

In support of our first two hypotheses, our analyses revealed that both shyness and preference for solitude were positively, and similarly, related to concurrent levels of reported anxiety/depression in addition to both being prospectively linked to higher anxiety during the transition from middle school to high school. Furthermore, eighth grade shyness, but not preference for solitude, was positively and prospectively related to Grade 9 dispositional negativity. Regarding our hypotheses involving relational support variables, we found that reported friendship quality, but not maternal or paternal support, was negatively related to concurrent levels of anxiety and depression. It does bear noting, however, that the negative association between friendship quality and internalizing problems in eighth grade was relatively small. Prospectively, we found that maternal support was negatively related to dispositional negativity, and we found no support for the direct effects of friend support or paternal support in predicting anxiety, depression, or dispositional negativity during the transition to high school.

In addition to these main effects, we detected three significant interaction effects. First, friendship quality moderated the association between preference for solitude and depression such that higher levels of friendship quality were related to increasingly negative associations between preference for solitude and depression. Second, and opposite to our expectations, friendship quality moderated the association between shyness and depression such that higher levels of friendship quality were related to increasingly positive associations between shyness and depression. Third, maternal relationship quality moderated the association between shyness and dispositional negativity such that higher maternal relationship quality weakened the association between shyness and dispositional negativity.

Motivations for Withdrawal and Internalizing Problems

Some researchers have suggested that different motivations for withdrawal may confer varying levels of risk for the development of social and emotional difficulties (Coplan & Weeks, 2010a). Specifically, previous work across multiple developmental stages appears to suggest that preference for solitude and related constructs such as unsociability are less strongly predictive than shyness of maladaptive outcomes (Bowker & Raja, 2011; Coplan & Weeks, 2010b; Coplan et al., 2013; Harrist, Zaia, Bates, Dodge, & Pettit, 1997; Nelson, 2013). Our findings provide mixed evidence for this contention. On the one hand, shyness was positively related to both anxiety and dispositional negativity in our longitudinal model, whereas preference for solitude was only related to anxiety. On the other hand, these two motivations for withdrawal appear to have more commonality than divergence when it comes to associations with maladaptive outcomes in our data. Both motivations for withdrawal were related to concurrent internalizing problems as well as anxiety over the course of 1 year. Additionally, both motivations for withdrawal were negatively related to concurrent reports of friendship quality. And, with the exception of dispositional negativity in ninth grade, the coefficients linking each motivation to maladaptive outcomes did not significantly differ in magnitude.

Overall then, our data appear to suggest that shyness and preference for solitude carry similar social and emotional costs in adolescence. While there is some support for this conclusion (Bowker, Markovic, Cogswell, & Raja, 2012; Liu et al., 2014; Wang et al., 2013), the reality is that comparisons of the correlates and consequences of different motivations for adolescent social withdrawal are limited in the existing literature, especially in North American samples. Thus, it is difficult to determine why we failed to detect differences in the outcomes related to shyness and preference for solitude when others have. One possibility is methodological in nature, as researchers interested in the motivations that putatively underlie withdrawn behavior have employed a range of

measures and techniques (Coplan, Ooi, & Nocita, 2015). Variation in findings across studies could then be due to different approaches.

Alternatively, it is possible that adolescence represents a period of heightened vulnerability for the experience of social and emotional difficulties related to social withdrawal, regardless of the underlying motivation. For instance, healthy peer relationships, which withdrawn youth have difficulty developing and maintaining (Rubin, Bowker, & Kennedy, 2009), are important sources of self-worth and validation for young adolescents in particular (e.g., Furman & Buhrmester, 1992). Consistent with this line of reasoning, our analyses revealed that motivations for withdrawal as well as internalizing problems in eighth grade were negatively correlated with reported friendship quality, but not with parent–adolescent relationship support. Relatedly, previous work with slightly younger children (aged 9–12) than the present sample demonstrated that both shyness and unsociability were related to higher levels of withdrawn and solitary behavior, which in turn predicted peer rejection (Coplan et al., 2013). Combined with the added social stressors associated with moving from middle school to high school, it may be the case that early adolescence is a particularly challenging time for behaviorally withdrawn individuals, irrespective of the motivation driving withdrawal.

Relationships and Motivations for Withdrawal in Adolescence Predicting Internalizing Problems During the Transition to Ninth Grade

A primary aim of the present study was testing whether the quality of particular adolescent relationships might moderate the association between different motivations for withdrawal and increases in internalizing problems over time. Our models did not detect any significant main effects or interactions involving perceived paternal support, suggesting the possibility that father–adolescent relationship quality is not a particularly strong moderator of the links between motivations for withdrawal and internalizing problems in adolescence. Using other measures of observed or multi-informant-rated paternal relationship quality or paternal socialization behaviors (e.g., paternal monitoring of adolescent behavior) could very well result in a different pattern of findings and better elucidate the roles that fathers play, if any, in disrupting the association between motivations for withdrawal and internalizing difficulties. It could also be the case that father–child relationship quality plays less of a role in reducing internalizing problems and more of a role in hampering the development of externalizing behaviors (e.g., Booth-LaForce & Kerns, 2009; Booth-LaForce et al., 2006).

The finding that maternal support weakened the association between shyness and dispositional negativity was consistent with our a priori hypotheses. It is interesting, though, that the buffering effect related to maternal support was isolated to shyness. The reason may have to do with our modeling approach and the precise nature of the latent variable we identified as a dispositional negativity. A latent variable that drives scores on both depression and anxiety symptoms likely shares a large proportion of variance with personality dimensions related to negative affect more generally (Clark & Watson, 1991; Shackman et al., 2016). Along these lines, shyness has often been linked to early markers of personality such as negative emotional reactivity and behavioral inhibition in early childhood, which are also related to the development of internalizing problems in adolescence and adulthood (Fox, Henderson, Marshall, Nichols, & Ghera, 2005). Having a supportive mother may disrupt the processes through which temperamentally rooted shyness leads to the development of an internalizing-prone personality. Such an interpretation is consistent with a number of studies across development showing that positive parent–child relationships, decreased use of maladaptive parenting strategies, and increased adaptive parenting behaviors attenuate the association between child and adolescent shyness/withdrawal and subsequent socio-emotional problems (for a review see Hastings, Nuselovici, Rubin, & Cheah, 2010).

With respect to best friend support, our models revealed an intriguing divergence in the moderating role that perceived friendship quality played in altering the association between each motivation for withdrawal and depression. The association between preference for solitude and depression was increasingly negative at higher levels of reported friend support, whereas the association between shyness and depression was increasingly positive as friend support increased. It is interesting, in and of itself, that friendship quality did not similarly influence the links between these two motivations for withdrawal and depression. Despite our analyses appearing to show that preference for solitude and shyness were similarly related to the same maladaptive socio-emotional outcomes overall, the divergence in moderation effects related to friendship quality suggests that the factors involved in establishing the links

between each motivation for withdrawal and depression differ. Of particular interest, our model seems to suggest that higher friendship support may actually compound the problems of shy adolescents (see Figure S2 in the online Supporting Information).

While this finding may seem counterintuitive at first glance, there is existing evidence linking high-quality friendships to elevated internalizing problems (Dishion & Tipsord, 2011; Schwartz-Mette & Rose, 2012). Previous studies have demonstrated that consistently engaging in certain maladaptive behaviors within friendships may simultaneously strengthen perceived friendship quality while increasing depression and anxiety (Rose, 2002; Schwartz-Mette & Rose, 2012). For instance, co-rumination, the tendency to discuss problems and hassles in a nonsolution-oriented fashion within a dyad, is related to both higher reported friendship quality as well as higher depression scores (e.g., Rose, 2002). Over time, these associations can be reciprocal and self-propagating in nature, as co-rumination is both predictive of and predicted by internalizing problems (Rose, Carlson, & Waller, 2007). More directly related to shyness, a short-term longitudinal study found that co-rumination within a best friendship was indirectly predicted by social anxiety through elevated rumination in an adolescent sample (Jose, Wilkins, & Spendelow, 2012). Furthermore, anxiously withdrawn children tend to make friends with similarly anxious and withdrawn peers (e.g., Rubin et al., 2006), which could increase the potential for co-rumination emanating from both members of the dyad. This account, though speculative, is consistent with our finding that there is a positive association between friendship quality and depression for highly shy adolescents. Unfortunately, our data cannot directly speak to whether co-rumination or a similar process may be at work in the friendships of shy adolescents in our sample. Future studies should seek to replicate our novel finding regarding this effect, and in so doing attempt to identify dyadic processes that may be involved.

One potentially disheartening implication of our findings is that none of the social relationships examined appeared to protect preferred solitary or shy adolescents from elevated anxiety symptoms. Aside from the difficulties facing anxious individuals, elevated anxiety symptoms in children and adolescents are problematic as they may be a precursor to the development of depression (Cole, Peeke, Martin, Truglio, & Seroczynski, 1998; Cummings, Caporino, & Kendall, 2012; Pine, Cohen, Gurley, Brook, & Ma, 1998). Thus, it is possible that both motivations for withdrawal increase the risk of future depression later in adolescence and adulthood via elevated anxiety symptoms. Whether such a cascading pathway exists linking depression to both motivations for withdrawal via anxiety and whether relationship qualities differentially moderate links in that pathway remain targets of future research over longer periods.

Limitations

There are several limitations to consider when interpreting our results. The first is that all measures were based on adolescents' self-reports. As a result, our models only consider the focal members' perceptions in each dyad. Given that our study was the first to investigate the interaction between separate motivations for adolescent withdrawal and the quality of different relationships in predicting increases in internalizing problems, such an approach seems a defensible first step. Additionally, adolescents are likely the best informants available to provide information regarding their own internal motivations for withdrawal. Future studies, however, should attempt to gather information about relationship quality from both members of the dyad. Relatedly, qualities of relationships can change and subsequent investigations would benefit from repeatedly assessing relationship quality over time. A second limitation is that we did not examine whether any of the paths in our models varied as a function of gender. While we did control for gender in our models, research has consistently shown that, beginning in adolescence, girls experience higher levels of internalizing problems than boys (e.g., Hankin et al., 1998). Additionally, researchers have suggested that withdrawal may be more strongly related to negative socio-emotional outcomes for boys compared with girls (e.g., Doey, Coplan, & Kingsbury, 2014), though there is some debate (Gazelle, Peter, & Karkavandi, 2014; Rubin & Barstead, 2014). Larger samples that afford the opportunity to explore gender as a moderator of the associations tested in the present study would also represent a fruitful next step. Finally, while our sample was racially and ethnically diverse, the majority of adolescents lived in intact homes in which their biological parents tended to be well educated and married to one another. As a result, it is unclear how our findings might generalize to adolescents with different family structures and/or those who live in households of lower socioeconomic status.

CONCLUSION

Notwithstanding these limitations, the present study provides novel insights into the correlates and consequences of different motivations for withdrawal in adolescence. To start, both preference for solitude and shyness were similarly related to internalizing problems during the transition from middle to high school. If replicated in future studies, such a finding would imply that even children who are seemingly content with self-imposed isolation are not free from negative social (reduced friendship quality) or emotional consequences (elevated anxiety and depression). These adolescents may be particularly difficult for practitioners to identify as they may not exhibit the sort of outwardly anxious behaviors that are more characteristic of shy, withdrawn children. Additionally, mother–adolescent relationship quality remained relevant in our early adolescent sample, a period often associated with a pivot away from parental sources of support. Not only did maternal relationship quality predict lower dispositional negativity following the transition to high school, it also attenuated the relation between shyness and dispositional negativity. Thus, improving maternal–adolescent relations may be a useful target of interventions designed for shy and socially anxious adolescents. Turning to friendship, it was surprising that a high-quality friendship did not appear to confer the expected protective benefits on shy adolescents that it afforded their typical or even their preferred-solitary peers. Though we have offered a reasonable explanation for this pattern of results, the truth is that our account represents a thoughtful conjecture worthy of future investigation and no more. It is therefore prudent to withhold offering any specific advice or conclusions related to this effect, pending its replication and the identification of the potential dyadic, emotional, and/or cognitive mechanisms at play.

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Supporting Information

Additional Supporting Information may be found online in the supporting information tab for this article:

Figure S1. Graphic depiction of the initial measurement model.

Figure S2. Depicts the two-way interaction between shyness and friendship support predicting depression.

Table S1. Summary Data and Fit Statistics for Measurement Models

Table S2. Final Measurement Model