Journal of Child and Family Studies (2020) 29:195–207
https://doi.org/10.1007/s10826-019-01545-y

ORIGINAL PAPER

Parental Psychological Control and Adolescent Problematic Outcomes: A Multidimensional Approach

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Published online: 11 September 2019

Abstract

Objectives Parental psychological control is an emotionally manipulative parenting behavior that involves the use of tactics such as love withdrawal, guilt induction, and conditional approval and has been found to be particularly problematic for adolescent development. However, research has not yet examined whether psychological control is also best measured as a multidimensional construct during adolescence or whether various dimensions of psychological control are differentially predictive of adolescents' problematic outcomes. Therefore, the current study examined the factor structure of a measure commonly used to assess psychological control, the Psychological Control Scale—Youth Self-Report. Additionally, the current study examined whether specific dimensions of psychological control are differentially associated with adolescents' problematic outcomes, including over- and under-eating behaviors, risky cyber behaviors, substance use, and depressive symptoms.

Methods Participants included 161 adolescents ($M_{age} = 14.42$, SD = 1.73; 80.7% Caucasian; 59.6% female) living in a University city in a Mid-Atlantic state. Participants completed survey questionnaires about parental psychological control, problematic eating behaviors, risky cyber behaviors, substance use, and depressive symptoms.

Results Results indicated that psychological control is comprised of three distinct factors, including personal attack, invalidating feelings, and love withdrawal, which were uniquely associated with adolescents' problematic outcomes.

Conclusions The findings provide insights into more precise ways to examine the association between psychological control and problematic outcomes and highlight which aspects of psychological control are important for specific problematic outcomes among adolescents.

Keywords Parental psychological control · Factor analysis · Adolescence · Problem behaviors

Research has consistently suggested that a blend of both parental support and parental control is ideal for positive developmental outcomes during adolescence (Barber and Xia 2013; Baumrind 1971; Steinberg 1990). However, certain types of parental control, such as parental psychological control are harmful to adolescents, as they interfere with the development of autonomy and self-direction (Steinberg 1990). Parental psychological control refers to emotionally manipulative parenting tactics such as love withdrawal, guilt induction, and conditional approval (Barber 1996; Barber et al. 2012; Steinberg 1990). Psychological control is thought to be especially harmful during adolescence, as it undermines the key developmental task of adolescent autonomy development by keeping the adolescent emotionally dependent on the parent (Barber 1996; Steinberg 1990). Although parental psychological control is often described as consisting of different types of controlling behaviors, the majority of the extant research has examined psychological control as a unidimensional construct (Barber 1996; Galambos et al. 2003; Li et al. 2013; Snoek et al. 2007). However, previous research examining the predictive utility of this construct during early childhood suggests that psychological control may consist of distinct components that are differentially predictive of problematic outcomes (Nelson et al. 2013).

Parental psychological control has typically been conceptualized and assessed as a unidimensional construct in early work by Schaefer (1965) and Barber (1996). Schaefer's (1965) original measure of psychological control consisted of

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ten items from the Children's Report of Parental Behavior Inventory (CRPBI). This measure assessed Psychological Autonomy versus Psychological Control and contained items capturing love withdrawal, guilt induction, and excessive pressure for change. Building upon this work, Barber (1996) developed a 16-item scale (PCS-YSR) assessing children's and adolescents' perceived parental psychological control. Although Barber conducted a factor analysis on the PCS-YSR with the goal of defining a single-dimensional scale of psychological control, he viewed psychological control as entailing an array of different behaviors, such as constraining verbal expressions, invalidating feelings, erratic emotional behavior, personal attack, love withdrawal, and guilt induction. Constraining verbal expressions entails the parent speaking for the child, whereas invalidating feelings involves the parent telling the child how to feel or think. Erratic emotional behavior was operationalized as parents switching rapidly between displays of caring behavior and attacking expressions (e.g., interfering with the child's talking, asking leading questions, attacking the child's worth, bringing up past mistakes) to gain compliance with parental demands. Love withdrawal refers to the parent threatening to withdraw their love or attention towards the child if he or she does not meet their expectations. Parents who engage in personal attack target the worth of the child by questioning the child's loyalty to the family. Finally, guilt induction refers to the parent pointing out that the child's behavior had a negative emotional impact on a family member. Despite the fact that theoretical definitions of psychological control include such a wide assortment of parental behaviors, there has been a lack of research examining the factor structure of the construct during adolescence following Barber's original research on the PCS-YSR (Barber 1996).

In addition, few subsequent studies have attempted to understand the factor structure of the PCS-YSR using a sample consisting of a broader age range of adolescents and thus, it remains unclear whether psychological control is best assessed as a unidimensional construct among samples including late adolescents. The original factor analysis of the PCS-YSR yielded eight items that formed a single, unidimensional factor including items from the invalidating feelings, constraining verbal expressions, personal attack, and love withdrawal subscales (Barber 1996). However, Barber's (1996) original work included a sample of early adolescents from fifth grade to eighth grade. The few studies that have examined the effects of separate dimensions of psychological control have utilized younger samples (i.e., ages 3–6; Cheah, et al. 2015; Nelson et al. 2013). For instance, Cheah et al. (2015) examined the factor structure of an 18-item psychological control measure and found evidence for three components, including personal attack, love withdrawal, and guilt induction. Similarly, Nelson et al. (2013) examined the factor structure of the 37-item Parental Psychological Control measure created by Hart and Robinson (1995), and found evidence for six distinct components, including personal attack, invalidating feelings, love withdrawal, guilt induction, constraining verbal expressions, and erratic emotional behavior.

Empirical investigations into the predictive utility of these specific sub-dimensions has been limited. The small amount of research examining associations between specific dimensions of psychological control and youth outcomes has focused on a small range of problematic outcomes, such as physical and relational aggression during early childhood (Nelson et al. 2013). Thus, it is unclear whether distinct components of psychological control are uniquely predictive of a wider range of problematic outcomes during adolescence. Psychological control is thought to be especially problematic for adolescents, as they strive for greater levels of autonomy and independence from their parents (Steinberg 1990). It is possible that there may be greater heterogeneity in adolescents' report of psychological control among a sample consisting of both early and late adolescents, which may be more sensitive to capturing distinctions in psychological control.

One advantage of examining the factor structure of psychological control is that it may clear up the inconsistent patterns of findings linking psychological control to various problematic outcomes. Although psychological control has been found to be predictive of depressive symptoms (Barber, 1996), substance use (Galambos et al. 2003; Soenens et al. 2006), over-eating behaviors (Snoek, et al. 2007), under-eating behaviors (Bruch 1985; Minucin et al. 1978), and risky cyber behaviors (Li et al. 2013), these associations have been inconsistent across studies (e.g., Giles and Price 2008; Soenens et al. 2008). Potentially, the unidimensional measure of psychological control may mask differential associations between distinct components of psychological control and adolescents' engagement in specific health-risk behaviors. For instance, adolescents have been theorized to experience depressive symptoms and engage in under-eating behaviors as a result of experiencing autonomy-inhibiting parenting, which is consistent with psychologically controlling behaviors that involve the parent speaking for the adolescent or controlling the adolescent's thoughts and feelings (e.g., invalidating feelings, constraining verbal expressions; Barber and Xia 2013; Rorty et al. 2000; Soenens et al. 2010; Strong and Huon 1998). Furthermore, specific aspects of psychological control that include the parent inducing guilt or shaming the adolescent (e.g., personal attack, guilt induction) may be especially problematic for adolescents' over-eating behaviors, as researchers have suggested that adolescents engage in over-eating behaviors to cope with feelings of shame and guilt that result from psychological control (Snoek et al. 2007). Finally, psychological control behaviors that involve parents

manipulating feelings of acceptance (e.g., erratic emotional behavior, love withdrawal) are thought to have important implications for adolescents' susceptibility to deviant peer affiliations and peer pressure. Although peers may influence a variety of problem behaviors, the influence of peers and peer pressure has been found to be especially strong for behaviors such as illicit substance use and risky cyber behaviors (Bahr et al. 2005; Reiner et al. 2017). Additionally, adolescents often seek out social acceptance from peers in order to experience the acceptance they do not receive from psychologically controlling parents (Soenens et al. 2007), and such a shift may increase adolescent susceptibility to problematic peer behaviors. Thus, it is likely that psychologically controlling behaviors, such as erratic emotional behavior or love withdrawal may be associated with adolescents' substance use and risky cyber behaviors.

The current study explored the factor structure of parental psychological control, as well as the differential role of potential factors of psychological control on adolescents' problematic outcomes. The first aim of the current study was to examine the factor structure of the full 16-item PCS-YSR among an adolescent sample with a wide age range (12–18). The second aim of the current study was to examine whether distinct components of parental psychological control are differentially predictive of adolescent problematic outcomes, including substance use, risky cyber behaviors, over-eating behaviors, under-eating behaviors, and depressive symptoms. Because there has been little work exploring the factor structure of the PCS-YSR, specific hypotheses regarding the subconstructs of parental psychological control, as well as the unique associations among these potential sub constructs and adolescent outcomes were not made. However, it was generally expected that factors consisting of items assessing parents' attempts to control adolescents' thoughts and feelings (e.g., invalidating feelings, constraining verbal expressions) would be associated with depressive symptoms and under-eating behaviors, as adolescents have been found to experience such internalizing problems when parents interfere with their ability and desire to function autonomously (Rorty et al. 2000; Soenens et al. 2010). Factors that include items relating to parents withdrawing love or making their acceptance contingent on adolescents' behaviors (e.g., love withdrawal, erratic emotional behavior) were generally expected to be associated with problematic behaviors that involve peer pressure and negative peer influence, including substance use and risky cyber behaviors. Finally, factors consisting of items capturing parental criticism and shaming (e.g., personal attack, guilt induction) were generally expected to be associated with behaviors, such as over-eating, as youth have been found to engage in over-eating behaviors to cope with feelings of shame and criticism received from parents (Snoek et al. 2007). Additionally, the influence of psychological control on problematic outcomes among youth has been found to vary by adolescent gender. However, these findings are often inconsistent, as some findings suggest that psychological control is more problematic among girls (Mandara and Pikes, 2008; Nelson and Crick 2002), whereas other findings suggest that it is more problematic for adolescent boys (Harper 2010; Soenens et al. 2008). Additionally, some past studies have pointed to gender differences in adolescents' problematic outcomes, with boys reporting greater engagement in problem behaviors (i.e., substance use; Kouros et al. 2017) and girls reporting greater internalizing problems (i.e., depression, problematic eating behaviors; Galambos et al. 2004). Therefore, the current study examined whether the factor structure of the PCS-YSR, as well as the associations among potential factors of psychological control and adolescents' problem behaviors varied as a function of gender.

Method

Participants

Participants were drawn from a study of adolescents living in a University city in a Mid-Atlantic state. Participants were 161 adolescents ($M_{age} = 14.42$, $SD = 1.73$, $range =$ 12–18; 60% female) recruited from various youth organizations, including Boy's and Girl's club, church youth groups, and youth sport organizations, as well as from classrooms and school and community related events. In addition, a local medical clinic and three local high-schools were involved with participant recruitment. The medical clinic mailed parent information letters and recruitment flyers to the parents of adolescents. Each participating adolescent was required to recruit at least one adult primary caregiver, including any biological parent, stepparent, legal guardian, aunt, uncle, or grandparent. Adult caregivers were not included in the current analyses as participants. The sample was 81% Caucasian/White, 7.5% African-American/Black, 2.5% Asian American or Pacific Islander, 2.5% Hispanic/Latinx, and 5% identified as another race-ethnicity. Youth report of caregiver education indicated that 67% of mothers and 52% of fathers completed college or higher while 19% of mothers and 24% of fathers completed high school or less. Some participants reported they "Don't Know" their caregiver's education level (mothers: 14%, fathers: 23%).

Procedure

The data for the current study were obtained from a larger study on family processes and adolescents' developmental outcomes. The majority of the family visits took place in

participants' homes. However, some additional family visits took place at the research lab and in community-group locations (e.g., public library, church). Before participating in the study, caregivers provided informed consent for their adolescent and adolescents provided informed assent. After providing informed consent and assent, all adolescents received $50 payment for participating. Participants completed questionnaires assessing parental psychological control, substance use, risky cyber behaviors, eating behaviors, and depressive symptoms.

Measures

Psychological Control Scale—Youth Self-Report

Parental psychological control was assessed using the 16-item Psychological Control Scale-Youth Self-Report (Barber 1996). Using a 5-point Likert-type scale from 1 (*Never*) to 5 (*Always*), participants were asked to rate the extent to which items described their parents. Sample items included "*My parents will avoid looking at me when I have disappointed them*" and "*My parents finish my sentences whenever I talk*" ($\alpha = 0.89$).

Center for Epidemiological Studies—Depression (CES-D)

To assess depressive symptoms, participants completed the 20-item Center for Epidemiological Studies Depression inventory (CES-D; Radloff 1977). Participants were instructed to rate the frequency of depressive symptoms experienced within the past week. Responses were measured on a 3-point Likert type scale from 0 (*rarely or none of the time*) to 3 (*most or all of the time)*. Sample items included "*During the past week, I felt depressed*" and "*During the past week, I felt that everything I did was an effort*." Mean scores were calculated for each adolescent ($\alpha = 0.90$).

Problematic eating behaviors

The Dutch Eating Behavior Scale, which includes three subscales (restrained, external, and emotional eating behaviors), was used to measure adolescent problematic eating behaviors (van Strien et al. 1986). Participant responses were measured on a 5-point Likert-type scale (1 = *Never*) to (5 = *Very Often*). Participants' scores on the external and emotional eating subscales were combined to create an *over-eating behavior* scale. Sample items included "*Do you have the desire to eat when you are irritated?*" and "*If food tastes good to you, do you eat more than usual?*" Adolescent *under-eating behavior* was measured using the restrained eating subscale. Sample items included "*When you have put on weight, do you eat less than you usually do?"* and "*Do you try to eat less at mealtimes than you would like to eat?"* Mean scores were calculated for the *over-eating behavior* scale ($\alpha = 0.93$) and the *under-eating behavior* scale ($\alpha = 0.90$), with higher scores indicating higher levels of problematic eating behaviors.

Risky cyber behaviors

Participants completed a 6-item self-report measure that assessed risky Internet and cell-phone behaviors. Participants were instructed to rate how often they engaged in risky Internet and cell-phone behaviors in the last 30 days (1 = *0 days*, 2 = *1day*, 3 = *2–3 days*, 4 = *4–6 days*, 5 = *7–10 days*, 6 = *11 + days*). Sample items included "*How often in the last 30 days have you posted photos on Facebook involving alcohol and drug use?"* and "*How often in the last 30 days have you posted sexually suggestive photos of yourself or your friends on Facebook?"* Mean scores were calculated for each adolescent with higher scores indicating greater engagement in risky cyber behaviors ($\alpha = 0.75$).

Illicit substance use

An 8-item self-report scale was used to measure adolescent substance use, which asked participants to rate how often in the last three months they have engaged in alcohol behaviors. Responses were measured on a Likert-type scale from 1 (*Never*) to 4 (*Often*). Sample items included "*In the last 3 months, how often have you drank alcohol?*" and "*In the last 3 months, how often have you attended a party where alcohol was served?*" Three items from a larger Adolescent Delinquency scale were also included to assess participants' past substance use. On a Likert-type scale from 1 (*Never*) to 4 (*Often*), participants rated how often in the past 30 days they engaged in substance use behaviors. Sample items included "*In the past 30 days, how often have you smoked marijuana?*" and "*In the past 30 days, how often have you used prescription medications not meant for you?*" Mean scores across the 11 items were calculated with higher scores indicating higher levels of substance use ($\alpha = 0.87$).

Data Analyses

Because parental psychological control has been examined primarily as a unidimensional construct as assessed by the PCS-YSR, exploratory factor analyses (EFAs) were first conducted using M*plus* version 8.1 to examine the factor structure of the full 16-item PCS-YSR. An oblique rotational method was used to account for correlations among obtained factors. A factor solution was obtained by considering Kaiser's criterion (retaining factors with eigenvalues greater than one), the interpretability of obtained factor

solutions, the internal consistency of obtained factors, and model fit indices. Standard model fit criteria were used, including chi-square tests, Root Mean Square Error of Approximation (RMSEA), and Root Mean Square Residual (RMR). Factor solutions were determined upon achieving adequate model fit, with values lower than 3.00 for χ^2/df, 0.10 or lower for RMSEA, and 0.08 or lower for RMR (Kline 2005). The EFA was also used to inform the retention and removal of PCS-YSR items. First, an EFA was run on the full 16-item measure. Items that showed a significant cross-loading (i.e., an item that loads at 0.32 or higher on two or more factors; Costello and Osborne (2005)) or that did not have any significant loading in the EFA were discarded from further analyses. Subsequently, additional EFAs were examined after removing cross-loaded items.

The factor solution indicated by the EFA was then cross-validated with a confirmatory factor analysis (CFA). The CFA establishes a measurement model for the PCS-YSR and is a more rigorous test of underlying factor structure, as the items are restricted to load on to only one factor (Muthén and Muthén 2010). Because an oblique rotation was used in the EFA, correlations between all factors were estimated in the CFA. Next, measurement invariance by adolescent gender was tested using multiple group analysis. Specifically, an unconstrained multi-group model was fit across groups (i.e., boys, girls) to serve as a comparison against a more restrictive model. To test for metric invariance, the factor loadings were constrained to be equal across groups. If constraining the factor loadings to be equal across groups did not lead to a significantly worse model fit, the factor loadings were considered invariant across groups. Additionally, the intercepts of the observed variables were constrained to be equal across groups in order to test for scalar (intercept) invariance. Scalar invariance was achieved if these additional constraints did not yield a significantly worse model fit. Consistent with current recommendations, a change in CFI less than 0.01 was used as the criterion for establishing measurement invariance (Little 2013).

After examining the factor structure of the PCS-YSR, a series of structural equation models were performed using M*plus* version 8.1. Standard model fit criteria were used, including chi-square tests, RMSEA, the Comparative Fit Index (CFI), and the Tucker-Lewis Index (TLI). Parameters were interpreted upon achieving adequate model fit as described above. Values of 0.90 or higher for CFI and TLI were considered adequate (Kline 2005). Variables with significant bivariate correlations were allowed to covary. A structural equation model was estimated in which parental psychological control was treated as a unidimensional construct predicting adolescents' substance use, risky cyber behaviors, over-eating behaviors, under-eating behaviors, and depressive symptoms, while controlling for adolescent age and gender. Follow-up multi-group analyses were performed to test whether the structural paths varied by adolescent gender. Next, a structural equation model was estimated in which the resulting factors from the EFA predicted adolescent problematic outcomes, while controlling for adolescent age and gender. Finally, follow-up multi-group analyses were conducted to test whether the structural paths varied by adolescent gender. For multi-group analyses, the fit of an unconstrained model that freely estimated structural paths between groups was compared to the fit of a model that constrained the paths to be equal. Structural models were statistically compared based on chi-square difference tests.

Results

Preliminary Analyses

Analyses were performed to assess missing data, outliers, and the distribution of all continuous variables. There was one missing data point for the substance use scale and one missing data point for the CES-D inventory. M*plus* version 8.1 was used to compute full-information maximum likelihood estimates in the presence of missing data (Arbuckle 1996). Means and standard deviations for key study variables are included in Table 1.

Dimensional Structure of Parental Psychological Control

Following the first EFA, which examined the factor structure of all 16 items, five cross-loaded items were removed. See Table 2 for a description of these analyses, including the standardized factor loadings. Model fit indices suggested that the three-factor solution provided the best fit to the data (χ^2/df = 1.39, RMSEA = 0.05, [0.001, 0.085], RMR = 0.03) and a better model fit compared to both the one-factor solution ($\Delta\chi^2 = 86.43$, df = 19, $p < 0.001$) and two-factor solution ($\Delta\chi^2 = 46.39$, df = 10, $p < 0.001$). Items 1 ("change the subject, whenever I have something to say"), 3 ("often interrupt me"), 12 ("are less friendly with me, if I do not see things their way"), 15 ("often change their moods when with me"), and 16 ("goes back and forth between being warm and critical toward me") loaded onto two factors and were dropped from the subsequent EFA. The second EFA examined the factor structure of the remaining eleven items. Model fit indices, again, suggested that the three-factor solution provided the best fit to the data (χ^2/df = 1.64, RMSEA = 0.06, [0.042, 0.083], RMR = 0.04) and a better model fit compared to both the one-factor solution ($\Delta\chi^2 = 110.86$, df = 29, $p < 0.001$) and two-factor solution ($\Delta\chi^2 = 42.27$, df = 14, $p < 0.001$). Models estimating more than three factors did not converge. This solution was

Table 1 Descriptive statistics for key study variables

	M(SD)	PC	PC 10	PA	IF	LW	SU	Cyber	Over	Under	Depression
PC	2.24 (0.74)	–									
PC 11	2.28 (0.72)	0.96***	–								
PA	2.19 (0.90)	0.85***	0.84***	–							
IF	2.60 (0.87)	0.73***	0.81***	0.45***	–						
LW	1.85 (0.99)	0.66***	0.66***	0.44***	0.34***	–					
SU	1.32 (0.52)	0.22**	0.24***	0.16*	0.19*	0.25*	–				
Cyber	1.31 (0.58)	0.23**	0.21**	0.13	0.20*	0.17*	0.52***	–			
Over	2.47 (0.70)	0.26**	0.24**	0.19*	0.19*	0.19*	0.19*	0.12	–		
Under	2.26 (0.85)	0.28***	0.27***	0.22**	0.24**	0.17*	0.18*	0.16*	0.20*	–	
Depression	0.73 (0.54)	0.41***	0.39**	0.27**	0.36***	0.30***	0.26**	0.31***	0.23**	0.37***	–

P Control Psychological Control; *P Control 11* 11 Psychological Control Items Retained in EFA; *PA* Personal Attack; *IF* Invalidating Feelings; *LW* Love Withdrawal; *SU* Substance Use; *Cyber* Risky Cyber Behaviors; *Over* Over-Eating Behaviors; *Under* Under-Eating Behaviors; *Depression* Depressive Symptoms

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 2 Parental psychological control items and exploratory factor analysis

Psychological Control Items	Factor Loadings		
My parents…	Personal Attack	Invalidating Feelings	Love Withdrawal
Change the subject, whenever I have something to say.[a]	0.524	0.524	0.378
Finish my sentences whenever I talk.	0.094	**0.430**	0.162
Often interrupt me.[a]	0.552	0.666	0.372
Act like they know what I'm thinking or feeling.	0.244	0.**620**	0.219
Would like to be able to tell me how to feel or think about things all the time.	0.378	**0.645**	0.232
Are always trying to change how I feel or think about things.	0.332	**0.585**	0.376
Blame me for other family members' problems.	**0.678**	0.232	0.383
Bring up my past mistakes when they criticize me.	**0.707**	0.334	0.239
Tell me that I am not a loyal or good member of the family.	**0.674**	0.271	0.296
Tell me all of the things they have done for me.	**0.502**	0.266	0.377
Say, if I really cared about them, I would not do things that cause them to worry.	**0.558**	0.199	0.367
Are less friendly with me, if I do not see things their way.[a]	0.767	0.448	0.597
Will avoid looking at me when I have disappointed them.	0.333	0.355	**0.778**
If I have hurt their feelings, stop talking to me until I please them again.	0.302	0.240	**0.709**
Often change their moods when with me.[a]	0.600	0.284	0.558
Goes back and forth between being warm and critical toward me.[a]	0.737	0.459	0.485

[a]Items that cross loaded and were dropped from the second EFA

composed of three conceptually meaningful factors reflective of the underlying psychological control construct and each of the eleven items loaded onto one single factor. In Table 2, extracts of promax-rotated factor loadings are listed. The first factor represents personal attack and included the following items: Statements concerning parents blaming the adolescent for other family members' problems, bringing up the adolescent's past mistakes, telling the adolescent they are not a loyal member of the family, telling the adolescent all they have done for them, and telling the adolescent that they would not do things that cause them to worry if they really cared about them ($\alpha = 0.77$). The second factor reflects invalidating feelings and included the following items: parent finishing the adolescent's sentences, acting like they know what the adolescent is thinking or feeling, telling the adolescent how to feel or think about things, and trying to change how the adolescent thinks or feels about things ($\alpha = 0.73$). The third factor represents love withdrawal and included two items: avoiding looking at the adolescent when they have disappointed them, and not talking to the adolescent until the adolescent pleases them ($\alpha = 0.71$). Means, standard deviations, and bivariate

Table 3 Parental psychological control items and confirmatory factor analysis

Psychological Control Items	Factor Loadings		
My parents…	Standardized estimate	*SE*	R^2
Invalidating Feelings			
Finish my sentences whenever I talk.	0.77**	0.09	0.25
Act like they know what I'm thinking or feeling.	0.55***	0.08	0.19
Would like to be able to tell me how to feel or think about things all the time.	0.81***	0.07	0.35
Are always trying to change how I feel or think about things.	0.98***	0.06	0.66
Personal Attack			
Blame me for other family members' problems.	0.80***	0.05	0.54
Bring up my past mistakes when they criticize me.	0.98***	0.05	0.50
Tell me that I am not a loyal or good member of the family.	0.63***	0.06	0.40
Tell me all of the things they have done for me.	0.68***	0.07	0.28
Say, if I really cared about them, I would not do things that cause them to worry.	0.81***	0.06	0.32
Love Withdrawal			
Will avoid looking at me when I have disappointed them.	0.85***	0.07	0.54
If I have hurt their feelings, stop talking to me until I please them again.	0.80***	0.07	0.58

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

correlations among each of the psychological control components are included in Table 1.

The three-factor model identified through the EFA was cross-validated by the use of a CFA. Correlations between all factors were estimated in the CFA. The CFA provided a good fit to the data (χ^2/df = 2.56, RMSEA = 0.06 [0.028, 0.086], RMR = 0.05, CFI = 0.95, TLI = 0.93). Table 3 provides standardized factor loadings, standard errors, and R^2 for the final CFA model. All standardized factor loadings were statistically significant ($p < 0.05$). All variables significantly loaded onto the same factor in the CFA as they had in the EFA, providing additional support for the conceptualization of the PCS-YSR as a multidimensional construct. The factor structure of psychological control was tested for equivalence across gender. Multi-group analyses tested for metric and scalar invariance across groups. The factor loadings and intercepts for psychological control were invariant by gender (male vs female). Therefore, full measurement invariance was achieved. Results from measurement invariance tests are described in Table 4.

Table 4 Measurement invariance tests for parental psychological control across gender

	Critical reflection			
	χ^2	df	CFI	ΔCFI
By gender (male vs. female)				
Configural	312.838	122	0.948	
Factorial invariance	328.563	131	0.940	0.008
Intercept invariance	343.532	150	0.939	0.001

Associations between Psychological Control Factors and Problematic Outcomes

To test associations between psychological control and adolescents' problematic outcomes, three separate structural equation models were performed. Five problematic outcomes (i.e., substance use, risky cyber behavior, over-eating behaviors, under-eating behaviors, depressive symptoms) were included as endogenous outcomes in each model and were allowed to covary. The first model treated psychological control as a unidimensional construct using the full 16-item PCS-YSR ($\alpha = 0.89$) assessed as an observed variable. The second model treated psychological control as a unidimensional construct using the eleven items retained in the EFA in the current study ($\alpha = 0.81$) assessed as an observed variable. Finally, the third model treated psychological control as a multidimensional construct with the three factors as separate and correlated first-order latent variables. Adolescent age and gender were entered as covariates in all models.

The model with the full 16-item PCS-YSR specified as an exogenous predictor of adolescents' problematic outcomes provided a good fit to the data (χ^2/df = 1.69, RMSEA = 0.07 [0.010, 0.124], CFI = 0.97, TLI = 0.91). Results suggested that parental psychological control was uniquely associated with greater under-eating behaviors, risky cyber behaviors, substance use, and depressive symptoms among adolescents. Next, a model with

Table 5 Unstandardized estimates and standard errors of structural model testing associations among psychological control and adolescents' problematic outcomes

	Substance Use		Cyber Beh.		Over-eating		Under-eating		Depression	
	B	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*
Covariates										
Gender	0.22**	0.14	0.04	0.15	0.42**	0.15	0.57***	0.14	0.31*	0.14
Age	0.25***	0.03	0.18***	0.04	0.07	0.04	0.05	0.04	0.04	0.04
Psychological Control	0.26**	0.09	0.28**	0.10	0.33**	0.10	0.35***	0.09	0.54***	0.09
Covariates										
Gender	0.10	0.07	0.01	0.07	0.20**	0.07	0.27***	0.07	0.14*	0.07
Age	0.43***	0.06	0.31***	07	0.12	0.07	0.09	0.07	0.06	0.07
PC11	0.19**	0.07	0.19*	0.07	0.22**	0.07	0.24**	0.07	0.37***	0.07
Covariates										
Gender	0.10	0.07	0.01	0.07	0.22**	0.07	0.23**	0.07	0.09	0.08
Age	0.44***	0.07	0.32***	0.07	0.13	0.07	0.06	0.08	0.03	0.08
Psychological Control										
Personal Attack	−0.05	0.14	−0.01	0.16	0.25**	0.12	0.07	0.16	−0.03	0.16
Invalidating Feelings	−0.02	0.14	0.20	0.15	0.30	0.16	0.29*	0.12	0.34*	0.16
Love Withdrawal	0.34**	0.12	0.22**	0.08	−0.07	0.13	0.03	0.13	0.19	0.13

PC11 11 Psychological Control Items Retained in EFA; *Cyber Beh.* Risky Cyber Behaviors; *Depression* Depressive Symptoms

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

psychological control assessed with the eleven items retained in the EFA was examined as a predictor of adolescents' problematic outcomes. This model provided a good fit to the data (χ^2/df = 1.90, RMSEA = 0.08 [0.010, 0.132], CFI = 0.96, TLI = 0.87). Results suggested that psychological control was associated positively with each of the five problematic outcomes. Taken together, psychological control assessed as a unidimensional construct was associated similarly with adolescents' problematic outcomes, with the exception of over-eating behaviors, when it was assessed using all 16 items, as well as only the 11 items retained in the EFA. Finally, the model with three latent variables representing personal attack, invalidating feelings, and love withdrawal specified as exogenous variables of adolescents' problematic outcomes provided a good fit to the data $\chi^2/df = 1.42$, RMSEA = 0.05 [0.030, 0.069], CFI = 0.93, TLI = 0.90. The results indicated that personal attack was uniquely associated with adolescents' over-eating behaviors. Additionally, invalidating feelings was uniquely associated with adolescents' under-eating behaviors and depressive symptoms, whereas love withdrawal was uniquely associated with adolescents' substance use and risky cyber behaviors.

In order to determine whether the associations among factors of psychological control and problematic outcomes varied by adolescent gender, a multi-group analysis was conducted. Findings indicated that constraining all structural paths to be equal across males and females did not yield a significantly worse model fit ($\Delta\chi^2$ (103) = 113.61), $p = 0.22$, suggesting that gender did not moderate these associations. Table 5 displays the unstandardized estimates and standard errors of the structural parameters for each of the three structural models.

Discussion

Since Barber (1996) first revisited the construct of parental psychological control, researchers have consistently examined the association between psychological control as assessed by the PCS-YSR and numerous problematic outcomes among adolescents, including substance use (Galambos et al. 2003), risky cyber behaviors (Li et al. 2013), over-eating behaviors (Snoek et al. 2007), under-eating behaviors (Soenens et al. 2008), and depressive symptoms (Hunter et al. 2015; Soenens et al. 2010). However, the multidimensional nature of psychological control has not been thoroughly examined within a sample of adolescents. Although researchers have found evidence for distinct components of psychological control using a sample of young children, the predictive utility of these separate components has not been examined (Cheah et al. 2015; Nelson et al. 2013). Previous researchers have primarily assessed psychological control as a unidimensional construct using the eight items retained in Barber's (1996) original measurement work on psychological control. The current findings indicated that psychological control is comprised of three distinct dimensions, including personal attack, invalidating feelings, and love withdrawal. Although psychological control was predictive of all problematic

outcomes when examined as a unidimensional construct, the current findings suggest that the three components of psychological control were differentially predictive of adolescents' problematic outcomes. Specifically, personal attack was uniquely associated with greater over-eating behaviors, invalidating feelings was uniquely associated with greater under-eating behaviors and depressive symptoms, and love withdrawal was uniquely associated with greater substance use and risky cyber behaviors. Enhanced understanding of the multidimensional nature of psychological control may provide future researchers with more precise ways to examine the association between psychological control and problematic outcomes, as a unidimensional measure may be masking these distinct associations. Additionally, it may provide important implications for practitioners to know which specific psychologically controlling behaviors to target during parenting intervention.

The results of the EFA indicated that the PCS-YSR consists of three distinct components (i.e., personal attack, invalidating feelings, and love withdrawal). These three distinct components are generally consistent with previous measurement work, as personal attack, invalidating feelings, and love withdrawal have consistently emerged in this research (Hart and Robinson 1995; Nelson et al. 2013). One potential explanation as to why guilt induction, constraining verbal expressions, and erratic emotional behavior did not emerge as distinct components of psychological control in the current study is that these specific factors may be especially present for parents of young children (Cheah et al. 2015; Nelson et al. 2013). In line with this idea, the components that were not retained in the current study consisted mostly of items describing parents manipulating their child's behavior, rather than the child's thoughts or feelings (e.g., my parents often interrupt me). During adolescence, psychologically controlling parents may engage in behaviors that involve controlling adolescents' thoughts and feelings, rather than their behaviors, as adolescents begin to spend greater time away from parents (Steinberg 1990). Additionally, adolescents typically strive for greater autonomy and independence from their parents than they did in childhood, as the parent-child relationship begins to become less hierarchical, with parents relinquishing control over some behaviors (Koepke and Denissen 2012; Steinberg 1990). Behavioral control (i.e., parental behaviors that attempt to control or manage children's behavior; Barber 1996) also becomes less effective during adolescence (Kerr and Stattin 2000).

Current findings provide a potential explanation for the inconsistencies that have emerged in previous research, which has examined the association between psychological control and adolescents' substance use, risky cyber behaviors, over-eating behaviors, and under-eating behaviors (Galambos et al. 2003; Giles and Price 2008; Silk et al. 2003; Soenens et al. 2006). Potentially, relying on a unidimensional measure of psychological control may have masked the differential associations between distinct components of psychological control and adolescents' problematic outcomes, leading to inconsistencies across studies. The current study hints at the possibility that specific components of psychological control are uniquely predictive of specific problem behaviors. Thus, the strength of the association between specific psychological control components may be weakened when studies utilize a measure of psychological control that aggregates across these sub-constructs.

The differential associations between components of psychological control and adolescents' problematic outcomes provide additional support for the specific dimensions of psychological control located in the current study. The personal attack, invalidating feelings, and love withdrawal sub-factors were differentially associated with adolescents' substance use, risky cyber behaviors, over-eating behaviors, under-eating behaviors, and depressive symptoms. Specifically, personal attack was uniquely associated with over-eating behaviors, invalidating feelings was uniquely associated with under-eating behaviors and depressive symptoms, and love withdrawal was uniquely associated with substance use and risky cyber behaviors. Personal attack involves the parent criticizing and attacking the worth of the child by questioning their loyalty to the family, leading to feelings of shame in the child. Feelings of shame and criticism are thought to promote over-eating behaviors among youth, as youth often engage in over-eating behaviors to cope with these negative feelings (Snoek et al. 2007). Invalidating feelings involves parental attempts at controlling adolescents' thoughts and feelings, and this component was uniquely predictive of both under-eating behaviors and depressive symptoms. Research has suggested that adolescents often engage in under-eating behaviors to regain the emotional control that is threatened when parents engage in psychologically controlling parenting (Rorty et al. 2000; Strong and Huon 1998). Additionally, parental attempts at controlling adolescents' thoughts and feelings have been found to be associated with inhibited peer relationships and greater parental dependence (Barber and Xia 2013; Soenens et al. 2010). Parents who attempt to control adolescents' thoughts and feelings are thought to communicate distrust in the adolescent's ability to function autonomously, leading to greater depressive symptoms (Soenens et al. 2010). Finally, love withdrawal was uniquely associated with adolescents' substance use and risky cyber behaviors. Love withdrawal involves parents withdrawing acceptance and making love contingent on adolescents' behaviors. This places the adolescent at greater risk for engaging in deviant peer affiliations and conforming to peer pressure in order to reduce the frustration of parental rejection and increase social acceptance (Soenens et al. 2007). Researchers have suggested that

anger and frustration are two prominent emotions that often result from this aspect of psychologically controlling parenting, as adolescents often interpret love withdrawal as a sign of parental rejection, which leads, by extension, to greater problem behaviors, such as substance use and risky cyber behaviors (Soenens et al. 2007). Specifically, different types of adolescent problem behaviors appear to have specific and unique antecedents.

Interestingly, the findings suggested that neither the factor structure nor the associations among distinct psychological control factors and problematic outcomes varied by adolescent gender. Although there is mixed evidence suggesting that psychological control is differentially associated with problematic outcomes for adolescent boys and girls (Harper 2010; Mandara and Pikes 2008; Nelson and Crick 2002; Soenens et al. 2008), the current findings are consistent with empirical findings and theory suggesting that psychological control interferes with the fundamental need for autonomy and independence similarly for adolescent males and females (Soenens and Vansteenkiste 2010). It has been suggested that a lack of support for gender differences in adolescents' response to psychological control may be a result of the use of broad measures of psychological control without considering the possibility that psychological control may be interpreted differently by boys and girls (Soenens and Vansteenkiste 2010). The current findings provide further support for this notion by suggesting that they also respond similarly to distinct components or factors of psychological control. However, the current study does not assess adolescents' beliefs about or interpretations of psychological control, so future work should explore whether adolescent boys and girls interpret psychological control differently.

The current findings provide important implications for future researchers who examine the influence of parental psychological control on adolescent outcomes. Specifically, the current findings urge future researchers to examine psychological control as a multidimensional construct as suggested by recent research on younger children (Cheah et al. 2015; Nelson et al. 2013). In addition, the current study highlights the importance of considering the multidimensional nature of youth health-risk behavior, as different types of adolescent problem behaviors appear to have specific and unique antecedents. Further replications of the current findings may provide important implications for practitioners working with adolescents engaging in problematic outcomes in response to psychologically controlling parenting. Understanding which aspects of psychological control are associated with different problematic outcomes may provide practitioners with greater insight into which specific parenting behaviors to target during intervention depending upon which type of problem behavior the adolescent is displaying. For instance, when working with parent-adolescent dyads in which the adolescent is engaging in problem behaviors associated with negative peer influence and peer pressure (i.e., substance use, risky cyber behaviors), it may be especially important for clinicians to target parents' withdrawing love or ignoring the adolescent. However, when working with adolescents experiencing problematic outcomes that are more internalizing in nature (i.e., under-eating behaviors, depressive symptoms), practitioners should focus on reducing parents' behaviors that involve speaking for the adolescent and telling the adolescent how to think or feel (i.e., invalidating feelings). Finally, for adolescents who are engaging in over-eating behaviors, it may be important for practitioners to focus on reducing parents' engagement in shaming behaviors and behaviors that involve attacking the worth of the adolescent. Thus, these findings may eventually aid in tailoring interventions to specific parenting practices, as particular aspects of psychological control appear to be operating differently.

Limitations and Future Directions

The results of the current study should be interpreted in light of several limitations. First, we cannot establish the direction of effects between parental psychological control and adolescents' problematic outcomes, as the current study utilized a cross-sectional, correlational design. Although the current study examined parental psychological control as a predictor of adolescent problem behavior, it is possible that adolescents' engagement in problem behaviors influences parents' use of psychological controlling parenting strategies. For instance, when exploring the early childhood antecedents of psychological control, researchers have found that although parental psychological control was associated with delinquency during adolescence, parents' behavior was also anteceded by children's earlier externalizing problems (Pettit et al. 2001). Similarly, longitudinal research suggests that adolescents' perceived psychological control is predicted by adolescents' aggression, such that greater aggression was associated with higher levels of later psychological control (Murray et al. 2013). Therefore, future research should examine the association between distinct components of psychological control and adolescents' problematic outcomes using a longitudinal design to better understand the predictive associations between various components of psychological control and adolescents' problematic outcomes over time. Although previous research has suggested that youth self-report of perceived parenting is more closely related to youth adjustment than is parents' self-report of parenting (Grecas and Schwalbe 1986), future studies would benefit from a multi-informant approach when assessing parenting behaviors in order to better understand whether components of psychological control are differentially associated with adolescents'

problematic outcomes for both adolescents' perceived psychological control and parents' report of psychological control. Similarly, research suggests that discrepancies between parent and adolescent report of certain parenting behaviors, such as parental monitoring, may predict problematic outcomes over and above the influence of parent or adolescent report of such parenting (Metzger et al. 2016). It remains important to also examine discrepancies in parent and adolescent report of psychological control, as these discrepancies may be important predictors of adolescents' problematic outcomes. Additionally, the current study was limited in terms of race/ethnicity, as well as academic success, as the majority of participants identified as White or Caucasian and reported receiving mostly As and Bs in school. Therefore, the current study should be replicated in more diverse samples with regards to race/ethnicity, as well as academic success, to increase the generalizability of the findings. The sample used for the current study was relatively small and less diverse in terms of race/ethnicity compared to previous research that has explored the factor structure of the measure (Barber 1996). Future researchers should examine the factor structure of the PCS-YSR, as well as the associations among psychological control factors and youth problematic outcomes using additional samples consisting of different samples of youth to ensure that findings generalize to other age, race, and SES groups.

Of the eleven items retained in the EFA, only six are consistent with the eight items that were retained in Barber's (1996) factor analysis of the 16-item PCS-YSR. Exploration of the factor structure of other measures of psychological control used with younger children consistently suggests that psychological control should be assessed as a multidimensional construct (Cheah et al. 2015; Nelson et al. 2013). However, the majority of the research examining the role of psychological control on youth outcomes has assessed psychological control using the eight items retained in Barber's (1996) study. Because the pattern of findings on the associations between psychological control and adolescents' problematic outcomes has been somewhat inconsistent with the unidimensional eight-item PCS-YSR, future researchers should consider examining the role of the separate factors of psychological control observed in the current study on youth outcomes. Although Barber examined the factor structure of the PCS-YSR with the goal of creating a unidimensional measure, he argued that psychologically controlling parenting consists of different types of behavior (Barber 1996). The current findings indicate that these different psychologically controlling behaviors operate separately and may be better assessed as a multidimensional construct. However, because the factor structure of the PCS-YSR has only been explored once by Barber (1996) in addition to the current study, more measurement work is necessary. An important future research question concerns the potential mechanisms responsible for the differential associations between specific components of psychological control and adolescents' problematic outcomes. For instance, it is possible that specific components of psychological control may be differentially associated with problematic outcomes through different mechanisms, such as autonomy (Rorty et al. 2000; Strong and Huon 1998), problematic peer associations (Soenens et al. 2007), and self-esteem (Snoek et al. 2007). It also remains important for future researchers to explore potential moderators of the association between psychological control components and problematic outcomes. For instance, various individual characteristics of the adolescent, including emotion-regulation strategies and personality characteristics have been found to moderate the association between psychological control measured as a unidimensional construct and problematic outcomes (Blossom, et al. 2016; Cui et al. 2014; Mabbe et al. 2016). However, researchers have not yet examined whether certain individual characteristics of the adolescent may matter more for certain components of psychological control.

Author Contributions KR: conceived of the study, conducted data analyses, and wrote the introduction, results, and discussion sections of the paper. AM: made substantial intellectual and conceptual contributions to the design of the project, collaborated with the writing of the paper, and edited the final manuscript. LA: aided KR with statistical analyses and wrote the methods section of the paper.

Funding This research was supported via internal funding through West Virginia University.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval The current study was approved by the Institutional Review Board for West Virginia University. In conducting this research, the accepted principles of ethical and professional conduct have been followed.

Informed Consent Informed consent was obtained from all individual participants included in the study. All participating youth gave informed consent prior to their participation. In addition, parental permission and consent was obtained from the parents of all youth under 18 years of age.

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