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The Application of Transformational Leadership Theory to Parenting: Questionnaire Development and Implications for Adolescent Self-Regulatory Efficacy and Life Satisfaction

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We draw upon transformational leadership theory to develop an instrument to measure *transformational parenting* for use with adolescents. First, potential items were generated that were developmentally appropriate and evidence for content validity was provided through the use of focus groups with parents and adolescents. We subsequently provide evidence for several aspects of construct validity of measures derived from the Transformational Parenting Questionnaire (TPQ). Data were collected from 857 adolescents (M_{age} = 14.70 years), who rated the behaviors of their mothers and fathers. The results provided support for a second-order measurement model of transformational parenting. In addition, positive relationships between mothers' and fathers' transformational parenting behaviors, adolescents' self-regulatory efficacy for physical activity and healthy eating, and life satisfaction were found. The results of this research support the application of transformational leadership theory to parenting behaviors, as well as the construct validity of measures derived from the TPQ.

Keywords: transformational leadership, parenting, adolescence, self-regulatory efficacy, life satisfaction, measurement, confirmatory factor analysis

Transformational leadership is a form of leadership that elevates the beliefs and motives of others, and supports them in achieving higher levels of functioning (Avolio, 1999). Ever since Burns (1978) introduced the concept of a "trans-

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formational leader" in his early political writings, research on transformational leadership has grown to become the most extensively studied model of leadership (Barling, Christie, & Hoption, 2010). Transformational leadership comprises four dimensions, namely, *idealized influence, inspirational motivation, individualized consideration,* and *intellectual stimulation* (Bass & Riggio, 2006). When leaders display idealized influence, they behave as role models and engender the trust and respect of followers. Leaders who engage in inspirational motivation communicate high expectations, are optimistic with regards to what followers can achieve, and energize others to go beyond minimally accepted standards. When leaders engage in intellectual stimulation, they encourage followers to think independently and contribute their own thoughts and ideas. Finally, leaders who demonstrate individualized consideration recognize and adapt to others' individual needs and abilities.

The Application of Transformational Leadership to Parenting

Although the vast majority of transformational leadership research has taken place within workplace contexts (e.g., Barling et al., 2010), sports (e.g., Tucker, Turner, Barling, & McEvoy, 2010), and the military (e.g., Hardy et al., 2010), recent research has also emphasized the importance of transformational leadership within families, and, in particular, in relation to parenting (Galbraith & Schvaneveldt, 2005). Both leadership and parenting practices are concerned with the processes through which people (irrespective of whether they are leaders or parents) elevate others to achieve important outcomes (Morton et al., 2010). Interestingly, Popper and Mayseless (2003) described transformational leadership as being analogous to effective parent–child dynamics in many respects. Indeed, in terms of supporting employee and child growth and development, both parents (within families) and leaders (within organizational settings) have the capacity to empower and help others to become autonomous in their actions. Parenthetically, contemporary theories of child development emphasize the importance of developing high-quality relationships between parents and their children, especially during adolescence (Bornstein, 2002). This directly aligns with research in the workplace, whereby transformational leaders gain influence through maximizing the quality of their relationships with others (Wang, Law, Hackett, Wang, & Chen, 2005). It is the focus on developmental processes that discriminates transformational leadership from other types of leadership (Burns, 1978), and makes transformational leadership theory especially relevant to understanding parenting behaviors.

An important rationale for the extension of transformational leadership theory to the domain of parenting and adolescent development is that an extensive body of research demonstrates support for the positive influence of transformational leadership in relation to a variety of adaptive psychosocial outcomes among followers. For example, transformational leadership is associated with enhanced self-efficacy (Kark, Shamir, & Chen, 2003), greater proactive behaviors (Strauss, Griffin, & Rafferty, 2009), and increased well-being (Arnold, Turner, Barling, Kelloway, & McKee, 2007) among those being led. In addition, a growing number of studies have demonstrated that transformational leadership behaviors can be developed through intervention, and that followers' attitudes and behaviors can be positively influenced as a result of their leaders' newly acquired transformational skills (Avolio, Reichard, Hannah, Walumbwa, & Chan, 2009). Thus, extending transformational

leadership theory to the parenting domain not only represents an opportunity to further examine the external validity of the transformational leadership construct (cf. Bass, 1997), but also represents a conceptually sound framework in which to develop interventions designed to target transformational leadership in parents (hereafter referred to as *transformational parenting*; cf. Morton et al., 2010) and their influence on positive adolescent development and well-being.

In spite of the potential for applying transformational leadership theory to parenting, to date only a few empirical investigations have applied this conceptual framework to understanding the influence of parents. In the context of sport, Zacharatos, Barling, and Kelloway (2000) reported on the extent to which transformational behaviors exhibited by parents might translate into adolescents' transformational behaviors within their peer interactions. This study revealed that ratings of adolescents' transformational leadership behaviors were predicted by parents' displays of transformational behaviors. In another study, again in the context of youth sport, there was a negative relationship between parents' transformational behaviors and teenagers' propensity to aggress in ice hockey (Tucker et al., 2010). Finally, Galbraith and Schvaneveldt (2005) demonstrated that parents' transformational leadership behaviors predicted indices of family well-being, such as family concordance and improved marital strength.

One factor restricting the development and application of transformational leadership theory to parenting is the lack of an instrument to measure transformational parenting. Indeed, the few studies that have looked at transformational leadership behaviors in parents (e.g., Galbraith & Schvaneveldt, 2005; Zacharatos et al., 2000) were based on instruments developed for use within work-place contexts with adults (e.g., the Multifactor Leadership Questionnaire; Bass & Avolio, 1995). Such instruments contain terminology and language that is not well suited to the family environment or for use with adolescents (e.g., "The person I am rating suggests new ways of looking at how to complete assignments"). Thus, the first objective of this study was to develop an instrument to measure transformational parenting for use with adolescents in the context of the family, and provide evidence of *construct* validity (cf. Messick, 1995).

A Unified View of Validity

Traditionally, validity was viewed as a three-part concept that comprised content, construct, and criterion-related validity (e.g., Angoff, 1988). More recently, validity has been reconceptualized as being a unified concept now known as *construct validity* (Messick, 1989; 1995). Specifically, construct validity "comprises the evidence and rationales supporting the trustworthiness of score interpretation in terms of explanatory concepts that account for both test performance and score relationships with other variables'' (Messick 1995, p. 743). In the present study, we provide evidence for several aspects of construct validity: the *content* aspect of construct validity (evidence of content relevance and representativeness), the *substantive* aspect (how and why do respondents arrive at their answers, and how this may be affected by aspects of the questionnaire), the *structural* aspect (the internal structure of the assessment, i.e., factorial validity), and finally the *external* aspect of construct validity (evidence of criterion relevance and applied utility).

Transformational Parenting and Adolescent Self-Regulatory Efficacy and Life Satisfaction

As mentioned above, an important aspect of construct validity is to provide evidence of the potential applied utility of the construct of interest by highlighting external relationships between the focal construct (transformational parenting) and theoretically related variables. In the current study, we examine the relationship between transformational parenting and three important health-related cognitions, namely, self-regulatory efficacy for physical activity and healthy eating, and life satisfaction. As previously noted, transformational leadership has consistently been found to predict elevated levels of follower self-efficacy (Kark et al., 2003) and psychological well-being (Arnold et al., 2007). Transformational leaders increase followers' self-efficacy beliefs by communicating higher performance expectations, displaying optimism for others' abilities to meet such expectations, and by empowering rather than controlling (Shamir, House, & Arthur, 1993). In addition, transformational leaders create conditions whereby followers are inspired to learn, are encouraged to think for themselves, demonstrate greater self-awareness, and demonstrate enhanced self-regulation (Avolio, 2003). High-quality leadership also has the potential to positively influence others' subjective well-being (Arnold et al., 2007; van Dierendonck, Haynes, Borrill, & Stride, 2004). Within the health psychology literature, parents fulfill a vital role in fostering adolescent health-enhancing cognitions (Shields et al., 2008) and well-being (Aquilino & Supple, 2001). One potential influence that parents have on their children is the promotion of healthy lifestyles, such as the development of healthy eating practices (Harrington, Franklin, Davies, Shewchuk, & Binns, 2005) and physical activity behaviors (Gustafson & Rhodes, 2006). From an adolescent health perspective, self-efficacy, or the belief that one has the ability to engage in a specific behavior, is central to the regulation of that behavior (Bandura, 1997). In addition, Bandura emphasized that for successful behavior change, self-regulatory efficacy (individuals' judgments about their abilities to effectively self-regulate) is more important than performance self-efficacy. For example, the issue is not whether one can do the activities occasionally, but whether people believe that they can overcome potential barriers for regular performance of the activity. Self-regulatory efficacy is positively associated with a number of health-enhancing behaviors, such as healthy eating (Anderson, Winett, & Wojcik, 2007) and physical activity (Ryan & Dzewaltowski, 2002), thus giving it a central role in adolescent development. In addition, a growing body of research has emphasized the importance of parents as critical agents in supporting the subjective well-being of adolescents, specifically, in relation to adolescent life satisfaction (Antaramian, Huebner, & Valois, 2008). Life satisfaction is an important component of psychological health and well-being and has been defined as a subjective appraisal of the quality of one's life overall (Diener, Suh, Lucas, & Smith., 1999). For example, positive reports of parent–adolescent relationships (Ben-Zur, 2003) and high levels of parental support (Suldo & Huebner, 2004) are positively related to indices of adolescent life satisfaction.

Taken together, and consistent with the research in both the transformational leadership and parenting domains, we hypothesized that adolescents' perceptions of their parents' transformational leadership behaviors will be positively associated

with enhanced self-regulatory efficacy related to two key health-enhancing behaviors, namely, physical activity and healthy eating, as well as improved life satisfaction.

Hypothesis 1: Adolescents' perceptions of their mothers' and fathers' transformational leadership behaviors will be positively associated with their own enhanced self-regulatory efficacy for physical activity and healthy eating.

Hypothesis 2: Adolescents' perceptions of their mothers' and fathers' transformational leadership behaviors will be positively associated with their own life satisfaction.

Method

Participants

Adolescents ($N = 857$) from Grades 9 and 10 participated in this study ($M_{age} = 14.70$ years; 426 males, 426 females, with 5 who did not specify their gender). Students were drawn from 35 classes, from four schools in the lower mainland of British Columbia (Canada), and represented a diverse range of ethnic and socioeconomic backgrounds.

Procedures

Before conducting the study, ethical approval was obtained from the lead author's institutional review board, as well as the corresponding school board. Once schools had elected to participate, a description of the study was provided to potential participants through an announcement in students' classes. Students were also given a letter informing them (a) of the purpose of the study, (b) that their participation was voluntary, (c) that any information they provide would remain confidential, and (d) that they could withdraw from the study at any time without having to give any reason. At the same time, parents were sent a letter informing them of the purpose of the study. After obtaining both parental and adolescent consent over the next 2 weeks, adolescents were invited to complete a questionnaire package during a prearranged class.

Measures

Transformational Parenting. To facilitate the development of an instrument to assess transformational parenting, we used a three-step process. In the first step, we conducted an extensive literature review of both the parenting and transformational leadership literatures. As Clark and Watson (1995, p. 310) assert, a "critical first step is to develop a precise and detailed conception of the target construct." For a full review of the transformational leadership and parenting literatures, as well as a detailed conception of the transformational parenting construct, see Morton et al., (2010). In sum, transformational parenting was conceptualized as involving four dimensions (Bass & Riggio, 2006): idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Using this conceptual framework (Bass & Riggio, 2006; Morton et al., 2010), a comprehensive list of items was generated. Existing transformational leadership scales (e.g., Bass &

Avolio, 1995; Beauchamp et al., 2010; Carless, Wearing, & Mann, 2000) were also reviewed, and, as a result of this item-generation process, a preliminary measure comprising 23 items was developed.

In the second step, focus groups with parents and adolescents were conducted to further refine and pretest the initial measure. Consultation with members of the target population represents an important step in providing evidence of the *content* aspect of construct validity (Vogt, King, & King, 2004), and can also establish the *substantive* aspect of construct validity by examining how respondents interpret and make sense of items (e.g., what does a score on a self-report measure actually mean to the participant?). In total, seven focus groups were conducted, three groups with parents of adolescents ($N = 13$; $M_{age} = 47.1$ years; 4 males, 9 females), and four groups with adolescents ($N = 17$; $M_{age} = 14.5$ years; 10 males, 7 females). To facilitate the process, a modified "retrospective think-aloud" protocol was used, which combined focus groups with a retrospective think-aloud protocol (Oremus, Cosby, & Wolfson, 2005; Willis, 2005), to better understand how members of the target population interpret and respond to items. Specifically, all participants in the focus groups were instructed to complete a copy of the initial measure (parent or adolescent version) independently. Following this, a series of probes were used to get participants to discuss all elements of the preliminary measure (i.e., instructions, response format, and each item) in turn. Probes included (a) what in your own words does the question mean to you?, (b) did the answer choices include your answer?, (c) did you understand how to answer the questions?, and (d) did the questionnaire leave anything out you felt was important? (Oremus et al., 2005; Willis, 2005). All focus groups were transcribed verbatim by the first author and a content analysis was conducted. A constant comparison approach was used (Strauss & Corbin, 1998), whereby sentences and phrases that carried meaning were identified and coded. This process was repeated following successive focus groups, and revisions were made to the questionnaire until no new suggestions emerged. As a result of this item-trimming and instrument-refinement process, nine of the original items were retained, seven items were reworked, and seven items were eliminated, resulting in a final list of 16 items across the four dimensions of transformational parenting (four items per dimension).[1]

To ensure that the items were representative of the four a priori transformational parenting dimensions, the trimmed item pool was subsequently reviewed in the third step for item representativeness by five individuals with expertise in transformational leadership. This process resulted in no further changes to the items. These 16 items, hereafter referred to as the *Transformational Parenting Questionnaire* (TPQ), demonstrate a Flesch (1948) readability score of 60.1, which corresponds to a reading level suitable for children in Grades 6–8 (D'Alessandro, Kingsley, & Johnson-West, 2001). Items on the TPQ were anchored on a 6-point Likert-type rating scale anchored by 0 (*strongly disagree*), 1 (*disagree*), 2 (*slightly disagree*), 3 (*slightly agree*), 4 (*agree*), and 5 (*strongly agree*). All items (see Appendix) were prefixed by "My parent/guardian. . . ." Adolescents were invited to complete separate TPQs for each parent/guardian (a maximum of two).

Self-Regulatory Efficacy for Physical Activity. Adolescents' beliefs in their abilities to manage various self-regulatory aspects of their physical activity participation over the upcoming 3 weeks (e.g., scheduling physical activity sessions and monitoring progress) were assessed using a 10-item instrument originally

developed by Shields and Brawley (2006, 2007). Responses to items are anchored on a 0% (*not at all confident*) to 100% (*completely confident*) scale. An example item is, "How confident are you that you can motivate yourself to get at least 30 minutes of activity a day, 3 times per week over the *next 3 weeks*?" The self-regulatory efficacy for physical activity measure demonstrated satisfactory reliability in the current study (composite reliability in present study = .94).

Self-Regulatory Efficacy for Healthy Eating. Adolescents' beliefs in their abilities to eat healthily were measured using a modified version of the instrument developed by Strachan and Brawley (2008). Participants were asked to rate their confidence that they could engage in five self-regulatory behaviors related to maintaining a healthy diet during the next 3 weeks. Item responses were again anchored on a 0% (*not at all confident*) to 100% (*completely confident*) scale. An example item is, "How confident are you that if you are going to eat out, you will choose healthy meals over the *next 3 weeks*?" The self-regulatory efficacy for healthy eating measure demonstrated satisfactory reliability in the current study (composite reliability in present study = .91).

Life Satisfaction. This construct was measured using the satisfaction with life scale adapted for children (SWLS-C; Gadermann, Schonert-Reichl, & Zumbo, 2010). The SWLS-C was adapted for younger populations by Gadermann et al. (2010) based on the original satisfaction with life scale developed by Diener, Emmons, Larsen, and Griffin (1985). The SWLS-C consists of five items, in which participants are asked to respond using a 5-point Likert scale, anchored by 1 (*disagree a lot*) and 5 (*agree a lot*). An example item is, "In most ways my life is close to the way I would want it to be." This measure demonstrated acceptable reliability in the current study (ordinal composite reliability in present study = .90).

Results

Confirmatory Factor Analysis

Research in the parenting domain has suggested that mothers' and fathers' parenting behaviors should be analyzed separately, because (a) the behaviors of one parent may differ significantly from the other parent (Simons & Conger, 2007) and (b) there may be differences in the strength of a mother's versus father's influence over a child (Milevsky, Schlechter, Netter, & Keehn, 2007). With this in mind, separate models representing mothers' (n = 829) and fathers' (n = 709) transformational parenting behaviors were specified. Thirty-seven adolescents completed the TPQ with reference to a guardian other than a parent (i.e., aunt, uncle, grandmother, grandfather). These cases were excluded from the analyses.

Based on prior measurement development research within the transformational leadership literature (Avolio, Bass, & Jung, 1999; Bass & Avolio, 1994; Beauchamp et al., 2010), models representing different factor structures were compared to determine the best fit for measures derived from the TPQ. Although the four dimensions of transformational leadership (idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation) are theorized to be conceptually distinct components (Bass, 1997), several studies have found these dimensions to be highly correlated (e.g., Beauchamp et al., 2010; Bycio, Hackett,

& Allen, 1995). Indeed, many researchers have combined the four factors to represent an omnibus indicator of transformational leadership (Judge & Bono, 2000).

Confirmatory factor analyses were performed on data derived from the TPQ using M*plus* Version 5.21 software (Muthén & Muthén, 2006); we used weighted least squares mean and variance-adjusted (WLSMV) estimation,[2] treating the Likert item responses as ordinal—with a polychoric correlation matrix. The WLSMV estimator is considered the best option for CFA modeling with ordered categorical data (Beauducel & Herzberg, 2006; Muthén, 1993). For missing data, M*plus* does not impute values for those that are missing. It uses all data that are available to estimate the model using, in our case, the WLSMV algorithm. Each parameter is estimated directly without first filling in missing data values for each individual. To determine which model of transformational parenting provides the best overall fit for the data, a variety of fit indices were examined for each of the hypothesized models. The χ^2 test was considered for each model. However, a nonsignificant χ^2 statistic may be unrealistic (Barrett, 2007) and oversensitive to large sample sizes (Hair, Black, Babin, & Anderson, 2009); therefore, supplemental fit indexes were also considered. As the models we compared were non-nested (therefore we could not perform χ^2 difference tests), we examined the comparative fit index (CFI), Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). Acceptable model–data fit was designated as CFI and TLI values of >.90 (Bentler, 1992) and RMSEA values of <.08 (Hu & Bentler, 1999), whereas excellent fit was designated as TLI and CFI values close to or greater than .95 and RMSEA values close to .06 (Hu & Bentler, 1999). The process of psychometric evaluation also involves an examination of the reliability of the measurement and the quality of the individual items. Specifically, these were evaluated using component fit results from the CFA (e.g., factor loadings, composite reliability, and average variance extracted). The factor loadings indicate how much of the variance in an item is explained by the latent factor. Composite reliability (CR) is an index of measurement reliability formalized within a structural equation modeling framework and is similar to a Cronbach α, except that it does not assume that each item is equally weighted in the composite load determination (see Bollen, 1989). For scales using Likert item response formats (e.g., the TPQ and the SWLS-C), the CR is computed based on the polychoric correlation matrix, and hence the resulting coefficient is an indicator of ordinal composite reliability (Zumbo, Gadermann, & Zeisser, 2007). Finally, the average variance extracted (AVE) is a summary measure of convergence among the items. According to Hair et al. (2009), the factor loadings should be $\geq .50$, the CR values should be 0.70 or greater, and the recommended value for average variance extracted should exceed the variance due to measurement error (i.e., AVE should exceed 0.50). Finally, as a more stringent test of discriminant validity, it is recommended that the AVE for each construct should exceed the squared correlation between that and any other construct (Farrell, 2010; Fornell & Larcker, 1981).

Initially, a four factor measurement model (Model a) was tested with the four transformational parenting dimensions specified as correlated first-order latent factors (See Table 1). For mothers, this measurement model provided evidence of good model fit: χ^2 (66) = 409.3, $p < .001$, CFI = .922, TLI = .992, RMSEA = .079. In addition, the conditions for convergent validity were met (i.e., all factor loadings were significant and ranged from .66 to .86; CR values ranged from .84 to .89; AVE values ranged from .57 to .67). Similarly, for fathers this measurement model

provided evidence of acceptable model fit: χ^2 (57) = 339.9, $p < .001$, CFI = .946, TLI = .994, RMSEA = .084. In this model, the conditions for convergent validity were also met (i.e., all factor loadings were significant and ranged from .73 to .89; CR values ranged from 88 to .91; AVE values ranged from .66 to .73). However, for both the mother and father models, the more stringent test of discriminant validity was not supported, as the squared factor correlations exceeded the AVE values for each dimension (i.e., the dimensions for transformational parenting were highly correlated, $.89 < r < .98$). These findings are consistent with a growing body of measurement research on transformational leadership in both organizational (Bycio et al., 1995) and educational (e.g., Beauchamp et al., 2010) settings that have reported high interfactor correlations among these four dimensions. As an explanation for this phenomenon, it has been suggested that the dimensions comprising transformational leadership are expected to be mutually reinforcing, as they are grouped under the same class of leadership behavior (Bass, 1985).

In light of these findings we subsequently conducted two CFAs, for mothers and fathers, respectively, whereby transformational parenting was specified as a unidimensional construct (Model b). In each case, the fit indices were acceptable but were inferior to the four-factor model (See Table 1). Specifically for mothers, χ^2 (67) = 545.2, $p < .001$, CFI = .892, TLI = .989, RMSEA = .093, factor loadings ranged from .62 to .84, CR = .96, AVE = .59, and for fathers, χ^2 (59) = 508.1, $p < .001$, CFI = .914, TLI = .991, RMSEA = .104, factor loadings ranged from .70 to .86, CR = .97, AVE = .66.

In light of these findings (see Table 1 for a comparison of fit between the models) and consistent with Beauchamp et al. (2010), we examined two second-order models (Model c), for mothers and fathers separately. In these models, the four first-order latent factors were specified as contributing toward a higher-order construct, termed *transformational parenting*, which recognizes the fact that the four transformational parenting dimensions are conceptually distinct, while also contributing toward a higher-order transformational parenting construct. For mothers, this second-order model of transformational parenting provided evidence of good model fit: χ^2 (66) = 413.4, $p < .001$, CFI = .921, TLI = .992, RMSEA = .080. Similarly, for fathers, this second-order model of transformational parenting also provided evidence of acceptable model fit: χ^2 (58) = 364.9, $p < .001$, CFI = .941, TLI = .994, RMSEA = .087. Pattern coefficients for this second-order model of transformational parenting for mothers and fathers were all significant (ranging from .66 to .86 for mothers and .73 to .89 for fathers) and are presented in Table 2. In addition, the reliability and convergent validity of this higher-order measurement model (including all 16 items) were also confirmed by the composite reliability values.

For mothers, the higher-order CR = .97 (idealized influence = .86, inspirational motivation = .86, intellectual stimulation = .81, individualized consideration = .84), and for fathers, the higher-order CR = .98 (idealized influence = .89, inspirational motivation = .89, intellectual stimulation = .87, individualized consideration = .87). Acceptable values were also observed for the average variance extracted. Specifically, for mothers, the higher-order AVE = .90 (idealized influence = .60, inspirational motivation = .59, intellectual stimulation = .51, individualized consideration = .55), and for fathers, the higher-order AVE = .94 (idealized influence = .68, inspirational motivation = .67, intellectual stimulation = .62, individualized consideration = .63).

Table 1 Comparison of Fit Indices

Model	χ^2	CFI	TLI	RMSEA	Loadings	CR[a]				AVE[b]			
						II	IM	IS	IC	II	IM	IS	IC
(a) Four-Factor Model													
Mothers	409.3*	.922	.992	.079	.66–.86	.89	.88	.84	.86	.67	.66	.57	.61
Fathers	339.9*	.946	.994	.084	.73–.89	.91	.91	.88	.89	.73	.71	.66	.68
(b) Unidimensional Model													
Mothers	545.2*	.892	.989	.093	.62–.84	————.96————				————.59————			
Fathers	508.1*	.914	.991	.104	.70–.86	————.97————				————.66————			
(c) Second-Order Model													
Mothers	413.4*	.921	.992	.080	.66–.86	.86	.86	.81	.84	.60	.59	.51	.55
Fathers	364.9*	.941	.994	.087	.73–.89	.89	.89	.87	.87	.68	.67	.62	.63

*$p < .01$.

II: idealized influence; IM: inspirational motivation; IS: intellectual stimulation; IC: individualized consideration.

[a]Ordinal Composite Reliability = $\sum$ (std. loadings)^2 / $\sum$ (std. loadings)^2 + $\sum$ (1 – std. loadings^2).

[b]Average Variance Extracted = $\sum$ (std. loadings^2) / $\sum$ (std. loadings^2) + $\sum$ (1 – std. loadings^2).

Table 2 Pattern Coefficients for Second-Order Confirmatory Model of Transformational Parenting for Mothers (n = 831) and Fathers (n = 706)

	Mothers			Fathers		
Item	Unstandardized Pattern Coefficients (*SE*)	Standardized Pattern Coefficients	R^2	Unstandardized Pattern Coefficients (*SE*)	Standardized Pattern Coefficients	R^2
First-Order Factor Estimates						
Idealized Influence (II)						
1	1.00 (.00)	.76	.58	1.00 (.00)	.82	.66
5	1.09 (.02)	.83	.68	1.05 (.02)	.86	.74
9	1.08 (.03)	.82	.68	1.05 (.02)	.85	.73
13	1.13 (.02)	.86	.73	1.09 (.02)	.89	.78
Inspirational Motivation (IM)						
2	1.00 (.00)	.77	.59	1.00 (.00)	.79	.63
6	1.11 (.03)	.85	.73	1.11 (.02)	.88	.78
10	1.05 (.03)	.81	.66	1.05 (.02)	.83	.69
14	1.03 (.03)	.80	.64	1.08 (.02)	.86	.74
Intellectual Stimulation (IS)						
3	1.00 (.00)	.66	.43	1.00 (.00)	.73	.53
7	1.09 (.04)	.71	.51	1.07 (.03)	.78	.61
11	1.23 (.04)	.81	.66	1.17 (.03)	.86	.73
15	1.26 (.05)	.82	.68	1.19 (.03)	.87	.76
Individualized Consideration (IC)						
4	1.00 (.00)	.76	.58	1.00 (.00)	.82	.67
8	1.01 (.03)	.77	.59	0.99 (.02)	.81	.66
12	1.07 (.03)	.81	.66	1.02 (.03)	.83	.69
16	1.03 (.03)	.78	.61	1.02 (.02)	.83	.70
Second-Order Factor Estimates						
II	1.00 (.00)	.97	.95	1.00 (.00)	.96	.93
IM	1.02 (.03)	.97	.95	0.99 (.02)	.98	.95
IS	0.81 (.03)	.92	.85	0.88 (.03)	.94	.89
IC	1.02 (.03)	.99	.98	1.03 (.02)	.99	.98

In sum, the four-factor models (Model a) produced better fit statistics (see Table 1) than the unidimensional models (Model b); however, these models lacked discriminant validity between the dimensions. The second-order models (Model c) specify that a higher-order transformational parenting factor underlies the data, and also allows researchers to create an overall indicator of transformational parenting for use in subsequent analyses. Taken together, the second-order measurement model represents the most appropriate operationalization of measures derived from the TPQ.

Relationships Between Transformational Parenting and Adolescent Self-Regulatory Efficacy and Life Satisfaction

Descriptive statistics and bivariate correlations between the variables are presented in Table 3. Relationships between adolescents' perceptions of transformational parenting and (a) self-regulatory efficacy for physical activity, (b) self-regulatory efficacy for healthy eating, and (c) life satisfaction were assessed through separate latent variable regression (LVR) analyses (using M*plus* Version 5.21). Latent variable regression allows the construction of unobserved (latent) variables (i.e., transformational parenting) from observed variables and simultaneously models the structural paths (i.e., theoretical relationships among latent variables) and measurement paths (i.e., relationships between a latent variable and its indicators). In this sense, latent variable regression analysis is preferable to techniques such as multiple regression analysis, which assumes error-free measurement and therefore potentially produces biased estimates (Muthén, 2002). For each LVR, adolescent rating of mothers' and fathers' transformational parenting behaviors (operationalized as second-order models) were specified as separate independent predictors and each of the self-regulatory cognitions and life satisfaction measures entered as dependent variables. In addition, to examine the relative importance of mothers' and fathers' transformational parenting behaviors on each adolescent health-related outcome, a relative Pratt index (RPI; Thomas, Hughes & Zumbo, 1998) was calculated for each outcome variable, which partitions the model variance (R^2) into the proportion attributable to each independent variable. Zumbo (2007) introduced the RPI for latent variable regression models. The RPI is computed in the following manner: the β weight is multiplied by the simple correlation and this number is divided by the R^2 value. An index score less than $1/(2 \times$ number of predictor variables) is classified as unimportant (Thomas, 1992). The cutoff value was .25 for each of the LVR analyses, indicating that any RPI value below this is considered unimportant (Thomas, 1992).

Self-Regulatory Efficacy for Physical Activity. Adolescent perceptions of transformational parenting explained 11.6% of the variance in adolescents' self-regulatory efficacy beliefs for physical activity, χ^2 (130) = 1032.1, $p < .001$, CFI = .940, TLI = .991, RMSEA = .090. Specifically, perceptions of both mothers' (β = .152, $p < .01$; latent variable correlation with self-regulatory efficacy for physical activity = 0.30) and fathers' (β = .216, $p < .001$; latent variable correlation with self-regulatory efficacy for physical activity = 0.32) transformational parenting behaviors were found to be significant predictors of self-regulatory efficacy for physical activity. The RPI was applied to the variables in the model to determine variable importance. Of the 11.6% accounted for by the model, mothers' transformational parenting accounted for 39.7% (RPI = .397) and fathers' transformational parenting accounted for 60.3% (RPI = .603).

Self-Regulatory Efficacy for Healthy Eating. Adolescent perceptions of transformational parenting explained 13.1% of the variance in self-regulatory efficacy for healthy eating, χ^2 (119) = 640.9, $p < .001$, CFI = .953, TLI = .993, RMSEA = .072. Specifically, perceptions of both mothers' (β = .244, $p < .001$; latent variable correlation with self-regulatory efficacy for healthy eating = 0.35) and fathers' (β = .146, $p < .05$; latent variable correlation with self-regulatory efficacy for healthy eating = 0.32) transformational parenting behaviors were found

Table 3 Descriptive Statistics and Intercorrelations for Transformational Parenting Scores and Adolescent Health-Related Outcomes

Variable		*M*	*SD*	1	1a	1b	1c	1d	2	2a	2b	2c	2d	3	4	5
1	Transformational Parenting (M)	61.34	14.03	—	.93*	.92*	.88*	.93*	.70*	.56*	.59*	.56*	.57*	.30*	.35*	.50*
1a	Idealized Influence (M)	15.25	3.99		—	.80*	.75*	.83*	.54*	.53*	.50*	.47*	.50*	.27*	.30*	.43*
1b	Inspirational Motivation (M)	15.61	3.79			—	.75*	.83*	.57*	.51*	.59*	.50*	.52*	.27*	.30*	.41*
1c	Intellectual Stimulation (M)	14.80	3.73				—	.73*	.54*	.48*	.50*	.54*	.52*	.23*	.30*	.38*
1d	Individualized Consideration (M)	15.57	3.79					—	.57*	.52*	.55*	.51*	.53*	.24*	.30*	.42*
2	Transformational Parenting (F)	59.81	15.58						—	.93*	.94*	.92*	.94*	.32*	.32*	.49*
2a	Idealized Influence (F)	14.91	4.27							—	.82*	.79*	.85*	.28*	.28*	.40*
2b	Inspirational Motivation (F)	15.35	4.14								—	.83*	.85*	.28*	.28*	.40*
2c	Intellectual Stimulation (F)	14.79	4.17									—	.85*	.28*	.28*	.37*
2d	Individualized Consideration (F)	14.23	4.34										—	.27*	.27*	.43*
3	Adolescents' SR Efficacy (PA)	67.15	21.37											—	.33*	.21*
4	Adolescents' SR Efficacy (Diet)	64.26	23.04												—	.24*
5	Adolescents' Life Satisfaction	3.54	.96													—

Note. *$p < .001$. Scale ranges include 0–80 for transformational parenting, 0–20 for the separate behavioral dimensions, 0–100 for self-regulatory (SR) efficacy, and 1–5 for life satisfaction. M = mothers, F = fathers.

to predict self-regulatory efficacy for healthy eating. The RPI revealed that of the 13.1% accounted for by the model, mothers' transformational parenting accounted for 64.4% (RPI = .644) and fathers' transformational parenting accounted for 35.6% (RPI = .356).

Life Satisfaction. Adolescent perceptions of transformational parenting also explained 28.8% of the variance in adolescent satisfaction with life, χ^2 (147) = 526.5, $p < .001$, CFI = .943, TLI = .993, RMSEA = .055. Specifically, perceptions of both mothers' ($\beta = .322$, $p < .001$; latent variable correlation with life satisfaction = 0.50) and fathers' ($\beta = .260$, $p < .001$; latent variable correlation with life satisfaction = 0.49) transformational parenting behaviors were found to be significant predictors of adolescent satisfaction with life. The RPI for this regression analysis indicated that of the 28.8% of the variance accounted for by the model, 56.4% was accounted for by mothers' transformational parenting (RPI = .564) and 43.6% was accounted for fathers' transformational parenting (RPI = .436).

Discussion

It has been argued that transformational leadership is, in many ways, synonymous with effective parenting (Popper & Mayseless, 2003). As parents have considerable potential to support the health-enhancing behaviors of adolescents, and buffer the adoption of health-compromising behaviors among this population, applying transformational leadership theory to the parenting domain provides a sound conceptual framework in which to understand and potentially foster parenting behaviors in relation to adolescent health and well-being (Morton et al., 2010). In spite of the potential of transformational leadership theory to inform our understanding of the influence of parenting behaviors in relation to adolescent development, research in this area has been largely restricted by the absence of an instrument to measure transformational parenting. Taken together, the results of this study provide initial support for the construct validity of measures derived from the TPQ. To develop the TPQ, we made use of a variety of instrument development procedures (e.g., focus groups, expert reviewers) to ensure that evidence was provided for content and substantive aspects of validity and that items were appropriate for use with adolescents. Furthermore, the current study provides initial evidence for structural validity, with a second-order model fitting the data well and representing the most empirically supportable operationalization of the TPQ.

In addition to establishing support for the psychometric properties of the TPQ, the external validity findings are equally noteworthy. First, adolescents' perceptions of both their mothers' and fathers' transformational parenting behaviors predicted adolescents' self-regulatory efficacy beliefs for both physical activity and healthy eating. Even though some may consider the overall predictive power of these LVR models to be "small" (i.e., 13.1% and 11.6% of the variance in self-regulatory efficacy for healthy eating and physical activity, respectively), even small amounts of explained variance are still considered important, especially in applied research (Prentice & Miller, 1992). From an adolescent health perspective, this finding is particularly salient because a growing body of evidence indicates that adolescent self-regulatory efficacy is an important predictor of both physical activity (Ryan & Dzewaltowski, 2002; Shields et al., 2008) and healthy eating (Anderson et al.,

2007). Interestingly, although both mothers' and fathers' transformational parenting scores were significant predictors of self-regulatory efficacy for both physical activity and healthy eating, (a) mothers' behaviors were a stronger predictor in relation to healthy eating beliefs, whereas (b) fathers' behaviors were a stronger predictor of adolescents' perceived physical activity capabilities (as determined by the RPIs in the respective regression models). This finding is consistent with recent research that indicates a stronger influence of fathers on the physical activity of adolescents (Gustafson & Rhodes, 2006) and the stronger relative influence of mothers on adolescent nutrition (Scaglioni, Salvioni, & Galimberti, 2008).

In addition to the prediction of self-regulatory beliefs, adolescents' perceptions of their parents' transformational behaviors explained 28.8% of the variance in their reports of life satisfaction. Satisfaction with life represents a major component of subjective well-being and has consistently been found to be an important psychological strength that facilitates adaptive development among adolescents (Antaramian et al., 2008). For example, adolescents who perceive their satisfaction with life to be high demonstrate higher levels of social functioning and physical health than youth with low life satisfaction (Greenspoon & Saklofske, 2001). Of note, perceptions of both mothers and fathers demonstrated equivalent effects in relation to adolescent life satisfaction (i.e., as indicated by the RPIs for this regression model). This is consistent with previous research that has shown both parents to be important in the establishment of subjective well-being in adolescents (Young, Miller, Norton, & Hill, 1995).

Despite evidence of the external aspect of construct validity, limitations within the research should be noted. First, the design of this study was cross-sectional in nature and, as such, potentially increases the possibility of common method variance in participants' responses. With that said, it should be noted that a different response format was used in the assessment of the predictor and criterion measures, and this has been shown to mitigate common method bias in behavioral research (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In future, both longitudinal and experimental research will be required to more accurately ascertain the predictive validity of the transformational parenting construct in relation to both adolescent self-regulation and indices of well-being, and to enable causal inferences about transformational parenting. Second, while measures derived from the TPQ predicted three important health-enhancing cognitions, we did not assess the predictive utility of the transformational parenting construct in relation to objective measures of health behavior among adolescents (e.g., physical activity, healthy diet). Given that a significant amount of variance in both self-regulatory efficacy for physical activity (11.6%) and healthy eating (13.1%) was explained by adolescents' perceptions of their parents' behaviors, future prospective and experimental research is encouraged that examines the extent to which transformational parenting behaviors predict objective measures of adolescent physical activity and healthy eating, and whether these relationships are mediated by adolescents' perceived self-regulatory capabilities.

Another limitation of the current study surrounds the operationalization of transformational parenting as a globalized construct (as reflected by a higher-order transformational parenting factor) in the prediction of adolescent health-related cognitions. Indeed, one of the drawbacks in leadership research has been an oversimplification of the factors underlying the conceptualization of transformational

leadership (cf. Antonakis, Avolio, & Sivasubramaniam 2003). The relative usefulness of separate subscale scores (a *differentiated* approach) or a higher-order transformational parenting score (a *globalized* approach) is an empirical matter that warrants further research. For example, the separate behaviors have been demonstrated to be empirically distinct at a measurement level and have also been shown to differentially predict outcomes (e.g., Antonakis et al., 2003; Callow, Smith, Hardy, Arthur, & Hardy, 2009; Hardy et al., 2010) despite high interfactor correlations. In addition, in terms of designing, implementing, and evaluating future transformational parenting interventions, separate transformational parenting scale scores may provide more informed feedback to parents with regards to their relative strengths and weaknesses. In spite of these limitations, this study provides preliminary support for the application of transformational leadership theory to the domain of parenting and suggests that transformational parenting behaviors (conceptualized as a global/higher-order construct) may represent an important predictor of adaptive adolescent growth and development.

The present study provided evidence of several aspects of construct validity (e.g., content, substantive, structural and external aspects). Future studies should also seek to establish evidence of the *generalizability* aspect of validity (i.e., the extent to which scores on the TPQ generalize across different populations, such as younger children or older adolescents). Furthermore, future studies should look to cross-validate measures derived from the TPQ using another sample to confirm the factor structure demonstrated in the current study. Validity is seen as an ongoing process of "hypothesis generation, data collection and testing, critical evaluation and logical inference" (Downing, 2003, p. 831). With this in mind, future research should examine other theoretically plausible mediators of the relationships between transformational parenting and healthy adolescent development and well-being (Morton et al., 2010). These may include additional intrapersonal (adolescents' self-perceptions) mediators of parenting and adolescent health, such as self-determined motivation and self-esteem. In addition, relevant interpersonal (adolescents' perceptions of their parents) mediators of parenting and adolescent health might also be examined, such as parental attachment and trust in the parent. Future research might also focus on whether transformational parenting behaviors are related to other behaviors associated with adolescent development, such as the extent to which transformational parenting might act as a protective resource against adolescents engaging in health-compromising activities (e.g., smoking, alcohol consumption, illicit drug use), which tend to emerge during this same critical developmental period (Williams, Holmbeck, & Greenley, 2002). Consistent with the tenets of transformational leadership theory, one might expect that adolescents would engage in fewer health-compromising behaviors when parent–adolescent interactions are characterized by (a) demonstration of personally held values (idealized influence), (b) a compelling vision of a healthful future (inspirational motivation), (c) respect for the rationality of adolescents (intellectual stimulation), and (d) consideration of adolescents' psychological and physical needs (individualized consideration).

From an applied perspective, research has consistently demonstrated that transformational behaviors can be developed through intervention (Barling, Weber, & Kelloway, 1996; Hardy et al., 2010). Given that adolescence is a critical period during which both health-enhancing and health-compromising cognitions and behaviors are developed, future research is also warranted that tests the efficacy

of transformational parenting interventions in relation to improving parenting behaviors and also targets the healthy development and subjective well-being of adolescents (Morton et al., 2010). In conclusion, the results of this research provide preliminary evidence for the construct validity of measures derived from the TPQ.

Research in this area provides exciting opportunities to not only test the external validity of transformational leadership theory in relation to healthful adolescent development, but also to develop evidence-based interventions that support the adaptive growth, well-being, and enhancement of prosocial behaviors among this population.

Notes

1. As the respondents discussed aspects of the preliminary measure, the analysis focused on problematic and alternative interpretations of items. Some items were modified slightly in terms of wording (e.g., "Gets me to question my own and others' ideas" was changed to "Gets me to think for *myself*"). In addition, a few adolescents perceived some of the items to be difficult to comprehend and these items were omitted (e.g., "Talks about his/her personal values and beliefs"). Finally, changes were made to the verbal anchors affixed to each response option. Initially (and in line with other transformational leadership measures) the response format was a 0–4 scale that asked about the *frequency* of leadership behaviors. However, some respondents discussed that the "frequency" response was difficult to comprehend for some items: "It would be better to have 'agree' or 'disagree' because 'frequently' is a timely basis and not all of these are done every day—they don't *always* do it but it's still there." As a result, the final version of the questionnaire comprised a *strongly disagree* to *strongly agree* format.

2. When examining results of these analyses, it is important to note that WLSMV χ^2 statistics and degrees of freedom are calculated in a way different from that used for common estimation methods such as maximum likelihood (see M*plus User Guide* for details; Muthén & Muthén, 2006).

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Appendix: Transformational Parenting Questionnaire Items

1. Acts as a person that I look up to
2. Is optimistic about what I can accomplish
3. Gets me to think for myself
4. Displays a genuine interest in my life
5. Behaves as someone that I can depend on
6. Demonstrates that s/he believes in me
7. Encourages me to look at issues from different sides
8. Helps me when I am struggling
9. Behaves as someone that I can trust
10. Is enthusiastic about what I am capable of achieving
11. Encourages me to freely express my own ideas and opinions
12. Shows comfort and understanding when I am upset/frustrated
13. Treats me in ways that build my respect for him/her
14. Encourages me to achieve my goals
15. Shows respect for my ideas and opinions
16. Displays genuine care and concern for me

Note. Idealized influence (II items: 1, 5, 9, and 13); inspirational motivation (IM items: 2, 6, 10, and 14), intellectual stimulation (IS items: 3, 7, 11, and 15); and individualized consideration (IC items: 4, 8, 12 and 16).