



## The antecedents and consequences of autonomous self-regulation for college: A self-determination theory perspective on socialization

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### Abstract

Using self-determination theory, two studies investigated the relations among perceived need support from parents, their adolescents' autonomous self-regulation for academics, and the adolescents' well-being. Study 1 indicated that perceived need support from parents independently predicted adolescents' well-being, although when mothers' and fathers' data were examined separately, the relation was stronger for mothers than for fathers. In Study 2, autonomous self-regulation for planning to attend college was a significant partial mediator of the relation of adolescents' perceived need support to well-being. Thus, perceived need support from parents does seem important for the development of adolescents' autonomous self-regulation and well-being.

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## Introduction

Socialization is the process through which individuals learn and internalize the social precepts and mores that allow for effective functioning in society (Maccoby, 1984). Processes in the persons and in social contexts have been found to affect individuals' phenomenological experiences and to promote the internalization of attitudes, values, and regulatory processes. Self-determination theory's (SDT) view of socialization (Deci & Ryan, 1985) emphasizes an inherent orientation towards growth and development, energized and sustained, in part, by the fulfillment of the psychological needs for autonomy (deCharms, 1968), competence (White, 1959), and relatedness (Harlow, 1958). This natural, active propensity towards engagement with, and internalization of, social values is considered an important basis of healthy development, marked by the tendencies towards differentiation of personal and social structures and their integration into a coherent, unified, healthy sense of self (Ryan & Deci, 2000b). We thus consider the SDT view of need support and internalization in more detail.

### *Intrinsic and extrinsic motivation*

SDT suggests that humans are intrinsically motivated to approach activities that are interesting, optimally challenging, and spontaneously satisfying (Ryan & Deci, 2000a), and that this process promotes development. Intrinsically motivated behaviours (e.g., exploration) are undertaken in the absence of external contingencies or controls, so engagement with these behaviours does not require prompts by socializers. However, not all behaviours that are important for socialization are intrinsically motivating. Hence, initiation of socially prescribed but unenjoyable behaviours may require the use extrinsic motivators (Ryan, Deci, & Grolnick, 1995).

Extrinsically motivated behaviours that are consistent with societal values and norms, once prompted by external contingencies, are often carried out compliantly. However, compliance tends not to persist when the extrinsic contingencies are not present, and mere compliance has been associated with psychological discord and ill-being (Deci & Ryan, 2000). Therefore, the critical issue is whether socializing agents can facilitate adolescents' internalization of the extrinsic motivation in a way that will allow for self-regulation of the behaviours.

The process of internalization is necessary for the regulation of extrinsically motivated behaviours that are consistent with social norms to be transformed into personal values (Deci & Ryan, 1985). One of the primary concerns in the lives of many adolescents is getting into college, although academic achievement is often not considered to be intrinsically motivated. Some look forward to college because they feel external or internal pressures to attend, while others approach college with more volition, viewing it as personally important to their own life goals. Although pursuing college may not be endorsed by all parents, it is an important societal value in the extant environments of most adolescents. Thus, the two studies herein reported concern internalization of the value and regulation of high school students for pursuing college.

SDT proposes that initially external regulations and their implicit values can be internalized to differing degrees through the processes of introjection, identification, and integration. Introjection involves taking in a contingency or regulation without accepting it as one's own, such that the introjected regulation essentially controls the person (e.g., planning to attend college to avoid feelings of guilt). Identification involves identifying with the personal value of an activity so that

the person can regulate the behaviour more willingly or volitionally (e.g., planning to attend college because of its personal relevance). Finally, integration involves bringing that identification into coherence with other aspects of the self (e.g., planning to attend college because doing so resonates with other personal values and goals). Depending on the type of internalization, the resulting regulation will be relatively autonomous versus controlled, with integration being the basis for the most autonomous extrinsic motivation, followed, respectively, by identification and introjection. The more fully a regulation or value is internalized, the more advantageous it is expected to be for the person's well-being. Because full integration is relatively rare among adolescents, the current studies focus on external, introjected, and identified forms of extrinsic motivation.

This differentiated view of internalization involving differing degrees to which a value or regulation has been accepted by the person makes the SDT perspective on internalization different from those of most other developmental theories, which treat internalization as a dichotomous concept and suggest that a value or regulation has either been taken in by the person or it has not. For example, Harter (1982) and Kochanska (2002) both discussed internalization using a dichotomous conceptualization, although the two portrayed internalized regulation somewhat differently. Harter suggested that when children are able to view themselves as the object that their parents are rewarding, the children can begin to reward themselves as a way of being “self-regulating.” This description of internalization is very similar to SDT's use of the concept introjection, in which external contingencies have been taken in and are being used by the person to control himself or herself. In contrast, Kochanska used the term “committed compliance” to convey a child's being wholeheartedly willing to engage in a behaviour that had initially been prompted by parents. This type of “self-regulation” seems much more in line with what SDT refers to as identification. In short, then, these two theorists have both portrayed internalization as a unitary, rather than differentiated, concept, yet the two views of internalized regulation seem to be aligned with different types of internalization as outlined by SDT.

SDT proposes that satisfaction of the basic psychological needs for autonomy, competence, and relatedness is necessary for effective internalization and for psychological growth, integrity, and well-being (Deci & Ryan, 2000). The need for autonomy is conceptualized in terms of experiencing a sense of choice, endorsement, and volition with respect to initiating, maintaining, and terminating behavioural engagement. The need for competence concerns the feeling of effectiveness in interacting with the social or physical world. The need for relatedness refers to the warmth and caring received from interactions with others, resulting in a general sense of belonging. In the current studies we examined only the needs for autonomy and relatedness because the development of satisfying relationships and an autonomous sense of self are critical during adolescence, because parents can turn these two needs against each other through the use of contingent love (Assor, Roth, & Deci, 2004), and because satisfaction of both needs has been found to be important (Solky-Butzel & Ryan, 1997).

### *Psychological needs and well-being*

Need support is theorized to be paramount for healthy adjustment, and research has supported this view among adolescents. For example, teens who felt strongly related to their parents were more autonomous in their self-regulation and experienced higher well-being than their

counterparts whose need for relatedness was not well satisfied by their parents (Ryan, Stiller, & Lynch, 1994), thus indicating that adolescents who experience autonomy and relatedness during socialization seem to be freer to pursue their interests and to be better adjusted.

When needs are not met, human distress is theorized to follow (Deci & Ryan, 2000). Although socializers may believe that pressuring adolescents into compliance is effective in accomplishing socialization, such controlling practices tend to hinder internalization and thwart the adolescents' development of autonomy and well-being (Grolnick & Ryan, 1989; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). Similarly, thwarting of the need for relatedness has also been found to yield negative consequences for autonomous self-regulation and well-being (e.g., Ryan et al., 1994).

Parents are typically the most salient socializers for their adolescents, and they vary considerably in the degree to which their styles tend to support versus thwart their offspring's need satisfaction. SDT suggests that parents who support their children's needs for relatedness and autonomy will be more beneficial to development than parents who tend to thwart these needs (Ryan & Deci, 2002). Thus, the degree to which adolescents experience need satisfaction from socializers will influence the degree to which they have internalized important ambient values and regulations, such as attending college.

In short, the effectiveness of internalization depends on whether adolescents experience need support when encountering social norms. When parents support their adolescents' psychological needs, the adolescents are likely to internalize ambient values and norms more fully, to regulate themselves more autonomously, and to evidence greater psychological health.

### *The present studies*

This research focused on high school students' motivation for wanting to attend college. In the first study, we examined high school juniors and seniors in an American middle-class suburb where a very high percentage of students go on to post-secondary education. The second study focused on Belgian adolescents who were at a level comparable to being a high school senior in the US and who indicated their intent to pursue further education. In these studies we explored the relations of perceived need support from parents to the students' well-being. Then, in Study 2, we examined whether autonomous self-regulation for planning to attend college would mediate the relations from the more general constructs of perceived need support from parents to their adolescents' well-being. We also explored differences between these relations for mothers and fathers. Analyses were done using structural equation modeling (SEM) with latent variables in AMOS 4.0 (Arbuckle & Wothke, 1999).

### **Study 1**

Study 1 explored the unique relations of perceived need support from mothers and fathers to their adolescents' psychological health, in light of the debate regarding the influence of fathers on their children's psychological health. Many theories grant mothers the primary role in supporting their children's emotional development (Bowlby, 1985), but Videon (2005) found that mothers and fathers were equally important in supporting the development of their children's

psychological health. We hypothesized that need support from both mothers and fathers would contribute independent variance to the prediction of their adolescents' well-being and ill-being.

## Method

### *Participants and procedure*

The district superintendent, principals, and teachers all provided assent to the research and the assistant superintendent then wrote a letter to all parents emphasizing the districts' commitment to this research and indicating that any parents who did not want their children to participate should contact her.

Participants were 231 (99 male and 132 female) juniors and seniors in high school. The majority of participants were 17 years old (51.1%), while the rest were 16 (29.4%), 18 (18.2%), and 19 (1.3%) years old. The majority of the sample identified themselves as "Caucasian" (87%), while the rest were "Asian" (3%), "African American" (2.6%), "Hispanic" (2.2%), "Native American" (0.4%), and unidentified (4.8%). Family annual income was as follows: 1.3% under \$15,000; 7.8% from \$15,000 to \$30,000; 26.8% from \$30,000 to \$50,000; 28.1% from \$50,000 to \$75,000; 23.8% from \$75,000 to \$100,000; and 12.1% failed to report family income. Most participants lived with both parents (89.2%).

### *Measures*

#### *Provision of need support*

The Perceptions of Parents Scale (POPS; Robbins, 1994) assessed adolescents' perceptions of their mothers' and fathers' provision of support for autonomy (seven items; e.g., My mother allows me to decide things for myself) and relatedness (six items; e.g., My father makes me feel very special). Responses were made on a 5-point Likert-type scale, ranging from 1 (*not at all true*) to 5 (*very true*). The reliability for each subscale was as follows: autonomy support from mothers ( $\alpha = .88$ ), relational support from mothers ( $\alpha = .90$ ), autonomy support from fathers ( $\alpha = .88$ ), and relational support from fathers ( $\alpha = .89$ ).

#### *Depressive symptoms*

The Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977) assessed participants' experience of depressive symptoms during the past month (six items, e.g., I felt sad). Responses were made on a 5-point Likert-type scale, ranging from 1 (*not at all*) to 5 (*very much*). The reliability for this measure was  $\alpha = .86$ .

#### *Affect*

The Positive Affect Negative Affect Scale (PANAS; Watson, 1988) assessed participants' positive (10 items, e.g., interested) and negative (10 items, e.g., ashamed) affect experienced over the past month. Responses were made on a 5-point Likert-type scale, ranging from 1 (*not at all*) to 5 (*extremely*). The reliability for the positive affect subscale was  $\alpha = .90$ , and the reliability for the negative affect subscale was  $\alpha = .88$ .

### Life satisfaction

The Satisfaction with Life Scale (Pavot, Diener, & Suh, 1998) assessed participants' present life satisfaction (five items, e.g., I am satisfied with my life). Responses were made on a 5-point Likert-type scale, ranging from 1 (*not at all true*) to 5 (*very true*). The reliability for this measure was  $\alpha = .84$ .

## Results

Table 1 presents means, standard deviations, and intercorrelations for need support from mothers and fathers and their adolescents' psychological health. Independent samples *t*-tests with Bonferroni protection revealed no significant male–female differences on any of the observed variables used in the model.

### Measurement model

The primary analyses were performed with SEM. We expected support for autonomy and relatedness from mothers and fathers to load positively onto two latent constructs termed “need support from mothers” and “need support from fathers,” respectively; positive affect and life satisfaction to load positively onto a latent construct termed “well-being;” and negative affect and depression to load positively onto a latent construct termed “ill-being.”

The Confirmatory Factor Analysis (CFA) on the latent variables, using established criteria for acceptable fit (Kline, 1998), yielded an excellent fit of the measurement model to the data,  $\chi^2(14) = 17.24$ , *ns*;  $\chi^2/df = 1.23$ ; AGFI = .95; NNFI = .99; CFI = .99; RMSEA = .03. All factor loadings were significant ( $p < .01$ ). Gender was included in the CFA as a predictor of all observed variables in the model. Females reported significantly higher levels of support for autonomy ( $\beta = .16$ ) and relatedness ( $\beta = .13$ ) from mothers, support for relatedness ( $\beta = .13$ ) from fathers, and depression ( $\beta = .14$ ) (all  $p$ 's < .05). Thus, we controlled for gender in the subsequent analysis to examine the comparability of the model across gender.

Table 1  
Associations among study measures: Study 1

| Measures                       | 1      | 2      | 3      | 4      | 5      | 6      | 7     | 8    |
|--------------------------------|--------|--------|--------|--------|--------|--------|-------|------|
| 1. Autonomy support, mothers   | —      |        |        |        |        |        |       |      |
| 2. Autonomy support, fathers   | .33**  | —      |        |        |        |        |       |      |
| 3. Relational support, mothers | .75**  | .27**  | —      |        |        |        |       |      |
| 4. Relational support, fathers | .41**  | .79**  | .43**  | —      |        |        |       |      |
| 5. Positive affect             | .21**  | .29**  | .25**  | .29**  | —      |        |       |      |
| 6. Life satisfaction           | .39**  | .35**  | .45**  | .38**  | .46**  | —      |       |      |
| 7. Negative affect             | -.23** | -.27** | -.25** | -.30** | -.38** | -.43** | —     |      |
| 8. Depression                  | -.31** | -.30** | -.34** | -.31** | -.46** | -.55** | .69** | —    |
| <i>M</i>                       | 3.62   | 3.46   | 4.05   | 3.70   | 3.46   | 3.35   | 2.63  | 2.72 |
| <i>SD</i>                      | .86    | .92    | .87    | .99    | .78    | .90    | .85   | .99  |

Note: \* $p < .05$ , \*\* $p < .01$ .

*Need support from mothers and fathers and adolescents' psychological health*

We examined a model with direct paths from need support from both mothers and fathers to their adolescents' well-being and ill-being in order to investigate the unique relations of need support from each parent to their adolescents' psychological health. The model for these analyses is depicted in Fig. 1 and includes correlations between the error terms for well-being and for ill-being ( $r = -.71, p < .01$ ) and the error terms for need support from mothers and fathers ( $r = .47, p < .01$ ). In addition, gender was controlled for by using it as a predictor of all observed variables in the structural model. Gender had the same relations as in the CFA, so it will not be repeated. Further, the fit of this model was the same as the fit of the measurement model, so the fit indices will also be omitted. When competing for variance, adolescents' well-being was related to need support from both mothers ( $\beta = .47, p < .01$ ) and fathers ( $\beta = .30, p < .01$ ). Adolescents' ill-being was also related to need support from both mothers ( $\beta = -.33, p < .01$ ) and fathers ( $\beta = -.21, p < .01$ ).

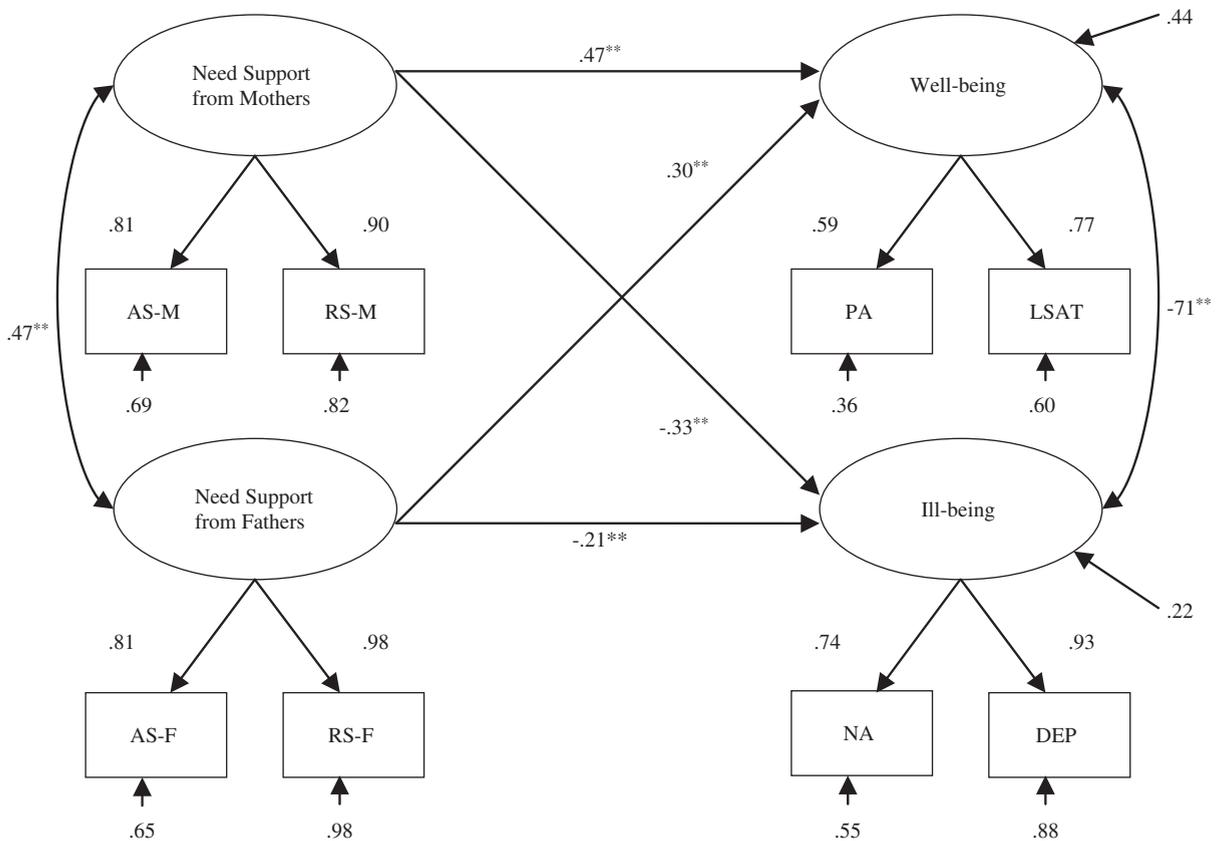


Fig. 1. Direct paths from need support from mothers and fathers to adolescents' psychological health: Study 1. Notes: For simplicity we do not depict gender in the model, although gender was controlled for. Latent variables were used to represent all constructs, and the path coefficient, factor loadings, and residuals are standardized estimates. M = Mother, F = Father, AS = Autonomy Support, RS = Relational Support, PA = Positive Affect, LSAT = Life Satisfaction, NA = Negative Affect, DEP = Depression. \* $p < .05$ , \*\* $p < .01$ .

$p < .01$ ). These results suggest that perceived need support from both parents had unique relations to their adolescents' psychological health.

We followed the procedure outlined by Meng, Rosenthal, and Rubin (1992) to evaluate whether the relation of need support from mothers to their adolescents' psychological health was different from that of need support from fathers. The relations of need support from mothers and fathers to their adolescents' ill-being ( $z = 1.76$ , ns) were not significantly different, but the relations of need support to their adolescents' well-being ( $z = 2.76$ ,  $p < .01$ ) were significantly different. Need support from mothers, relative to fathers, had a significantly stronger relation to their adolescents' well-being.

## **Brief discussion**

In Study 1 we found that when need support from mothers and fathers competed for variance, both were significant predictors of their adolescents' psychological health. This stringent test of the unique relations for each parent provided strong support for the association of need support from each parent with their adolescents' psychological health. Further, the relation of need support from mothers to their adolescents' well-being was significantly stronger than the relation for fathers. This is consistent with past research showing that mothers, relative to fathers, promote greater security of attachment in their adolescents (LaGuardia, Ryan, Couchman, & Deci, 2000). The present study advances this work and suggests that adolescents also experience greater well-being through need support from mothers, relative to fathers. Finally, we examined adolescents' gender as a moderator of the relations of need support from mothers and fathers to their adolescents' well-being and ill-being. Although gender did significantly predict several observed variables, the model fit was acceptable when gender was included. Thus, we conclude that the hypothesized relations of need support to psychological health were not moderated by gender.

## **Study 2**

Study 1 showed that there were significant relations from perceived need support from both mothers and fathers to both the well-being and the ill-being of their adolescents. Therefore, in Study 2, to simplify the model in order to examine mediation, we assessed perceived need support from "parents" rather than assessing it separately for mothers and fathers. The study examined whether the relations of adolescents' perceived need support from parents to their own psychological health would be mediated by autonomous reasons for going on to college. Previous work has related need support from parents to autonomous self-regulation for academics and has related autonomous self-regulation to adjustment outcomes (Grolnick & Ryan, 1989). The present work goes beyond that not only to test mediation by autonomous self-regulation of the links from perceived need support from parents to students well-being and ill-being, but it specifically examines whether the autonomous self-regulation of high school seniors for pursuing college would be a significant mediator of these relations. Attending college is of central importance to many high school seniors, so we expected this specific type of autonomous self-

regulation to be a significant mediator, but we expected only partial mediation because the mediating variable is domain specific, whereas perceived need support, well-being, and ill-being were assessed globally (Vallerand, 1997).

## Method

### *Participants and procedure*

Participants were 241 Belgian students in their final year of a technical high school with about two-thirds male students. Because our central hypothesis concerned adolescents' reasons for going on to college, analyses were performed only on data from students who intended to pursue further education. The final sample consisted of 202 students (140 males and 62 females). Participants ranged in age from 18 to 21 years, with a mean age of 19.

### *Measures*

Questionnaires were translated from English to Dutch, the participants' mother tongue, using the procedures recommended by the International Test Commission (Hambleton, 1994).

### *Provision of need support*

As in Study 1, we used the perceived autonomy support subscale of the POPS (Robbins, 1994), this time worded in terms of parents rather than mothers or fathers (seven items, e.g., My parents seem to know how I feel about things). To assess adolescents' perceptions of relational support from parents, we used the Parenting Scales (Lamborn, Mounts, Steinberg, & Dornbusch, 1991) (seven items, e.g., I can count on them to help me out, if I have some kind of problem), which was already available in Dutch. Responses were made on a 5-point Likert-type scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The alpha reliabilities for these measures were .80 for autonomy support and .82 for relational support.

### *Self-regulation*

The Self-regulation Questionnaire (SRQ; Ryan & Connell, 1989) asked "Why are you motivated to continue your studies next year?" Participants' rated responses that had been pre-selected to reflect four types of regulation: external (e.g., because others expect me to do so), introjected (e.g., because I would feel ashamed if I didn't do so), identified (e.g., because it is personally valuable), and intrinsic (e.g., because I like to study). Responses were made on a 5-point Likert-type scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). There were three items per subscale with reliabilities of  $\alpha = .74, .75, .77,$  and  $.91,$  respectively.

Ryan and Connell (1989) introduced the concept of a Relative Autonomy Index (RAI) to combine the subscales into an overall autonomy score. This is done by weighting the subscales as follows: external (−2), introjected (−1), identified (+1), and intrinsic (+2). In order to use the RAI as a latent variable in the SEM analyses, we computed three separate RAI indicators as follows. One item from each of the four subscales was randomly selected and these individual items were weighted as outlined above. The four weighted items were added to create an RAI

variable that became one of the three indicators for the latent variable. This process was repeated two more times to create the other two indicators.

### *Vitality*

The Vitality Scale (Ryan & Frederick, 1997) assessed participants' vitality experienced over the past month (seven items; e.g., I feel energized). Responses were made on a 5-point Likert-type scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The reliability for this measure was  $\alpha = .85$ .

### *Life satisfaction*

The same Satisfaction with Life Scale (Pavot et al., 1998) used in Study 1 was used here, with a 5-point Likert-type response scale. The alpha was .76.

### *Depressive symptoms*

The same six items from the CES-D scale (Radloff, 1977) used in Study 1 were used here, with a 4-point Likert-type response scale. The alpha was .84.

### *Externalizing problems*

The Deviant Behaviour Scale (Weinmann, 1992) assessed participants' engagement in deviant behaviours (14 items; e.g., I have smoked one or more cigarettes). Responses were made on 4-point Likert-type scale, ranging from 0 (*never*) to 3 (*often*). The reliability for this measure was  $\alpha = .84$ .

## Results

Table 2 presents means, standard deviations, and intercorrelations among perceived need support from parents and adolescents' psychological health. Independent samples *t*-tests with

Table 2  
Associations among study measures: Study 2

| Measures                       | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8     | 9   |
|--------------------------------|--------|--------|--------|--------|--------|--------|--------|-------|-----|
| 1. Autonomy support, parents   | —      |        |        |        |        |        |        |       |     |
| 2. Relational support, parents | .61**  | —      |        |        |        |        |        |       |     |
| 3. Relative Autonomy Index 1   | .25**  | .16*   | —      |        |        |        |        |       |     |
| 4. Relative Autonomy Index 2   | .34**  | .18**  | .67**  | —      |        |        |        |       |     |
| 5. Relative Autonomy Index 3   | .36**  | .20**  | .43**  | .52**  | —      |        |        |       |     |
| 6. Vitality                    | .24**  | .20**  | .18**  | .24**  | .03    | —      |        |       |     |
| 7. Life satisfaction           | .30**  | .23**  | .20**  | .15*   | .06    | .62**  | —      |       |     |
| 8. Externalizing problems      | -.24** | -.21** | -.15*  | -.23** | -.24** | -.13   | -.15*  | —     |     |
| 9. Depression                  | -.34** | -.20** | -.21** | -.18** | -.01   | -.40** | -.42** | .23** | —   |
| <i>M</i>                       | 3.73   | 3.42   | .18    | .21    | .73    | 3.30   | 3.45   | .75   | .75 |
| <i>SD</i>                      | .72    | .92    | .95    | .91    | .98    | .71    | .74    | .49   | .66 |

Note: \* $p < .05$ , \*\* $p < .01$ .

Bonferroni protection showed only one significant male–female difference. Females ( $M = 3.59$ ) reported significantly higher levels of vitality than did males ( $M = 3.17$ ),  $t(200) = 4.08$ ,  $p < .01$ . Because the male and female data were so similar gender is not considered further.

### *The measurement model*

We expected support for autonomy and relatedness from parents to load positively on to a latent construct termed “need support from parents;” the three observed RAIs to load positively onto a latent construct termed “RAI;” vitality and life satisfaction to load positively onto a latent construct termed “well-being;” and depressive symptoms and externalizing problems to load positively onto a latent construct termed “ill-being.”

The CFA on the latent variables yielded an adequate fit of the model to the data,  $\chi^2(21) = 45.22$ ,  $p < .01$ ;  $\chi^2/df = 2.15$ ; AGFI = .90; NNFI = .92; CFI = .95; RMSEA = .07. All factor loadings were significant ( $p < .01$ ).

### *Perceived need support from parents and adolescents’ psychological health*

SEM was used to test a model with direct paths from perceived need support to adolescents’ psychological health, including a correlation between the error terms for well-being and for ill-being ( $r = -.68$ ,  $p < .01$ ). The model had an excellent fit,  $\chi^2(6) = 5.75$ ,  $ns$ ;  $\chi^2/df = .96$ ; AGFI = .97; NNFI = 1.00; CFI = 1.00; RMSEA < .01. As expected, need support positively predicted well-being ( $\beta = .37$ ,  $p < .01$ ) and negatively predicted ill-being ( $\beta = -.55$ ,  $p < .01$ ).

### *Mediation by autonomous self-regulation*

Mediation was tested using the Baron and Kenny (1986) method. As reported above there were significant direct relations from need support (the IV) to well-being and to ill-being (the DVs), thus satisfying Step 1. Next, a model was examined with (1) a direct path, and (2) an indirect path from the IV to each DV through RAI (the MV). This model has the same variables and paths that were used as the measurement model. Thus, the fit of the model at each subsequent step was the same as the fit of the measurement model, so fit indices are not repeated. In Step 2, the relation of the IV to the MV was significant ( $\beta = .40$ ,  $p < .01$ ). In Step 3, while controlling for the relation of the IV to the MV, there were significant relations from the MV to well-being ( $\beta = .27$ ,  $p < .01$ ) and to ill-being ( $\beta = -.36$ ,  $p < .01$ ). In Step 4, we examined the reduction of the relations from the IV to the DVs when controlling for the MV. When both direct and indirect paths were included in the model, the relation of the IV to well-being was reduced from .37 to .29 and remained significant ( $p < .01$ ), indicating partial mediation of the direct relation. Also, the relation of the IV to ill-being was reduced from  $-.55$  to  $-.48$  and remained significant ( $p < .01$ ), signifying partial mediation of the direct relation. The model for these analyses is depicted in Fig. 2. The procedure outlined by MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) was used to test the significance of the indirect paths from perceived need support from parents to their adolescents’ well-being and ill-being through their self-regulation. The  $z'$ -test indicated that adolescents’ autonomous self-regulation for pursuing college was a significant partial mediator of the relations from perceived need support to well-being ( $z' = 1.46$ ,  $p < .05$ ) and to ill-being ( $z' = -1.43$ ,  $p < .05$ ).

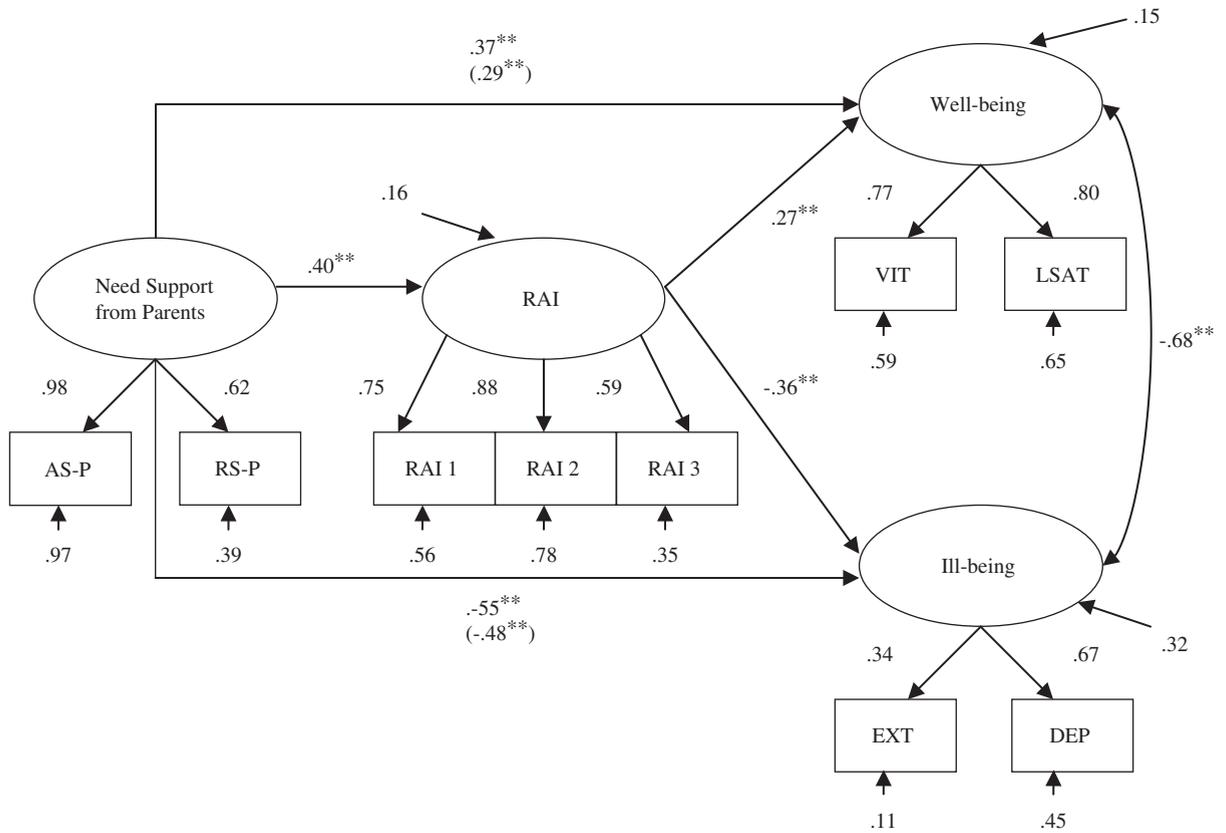


Fig. 2. Mediation by autonomous self-regulation for college of the relations of perceived need support from parents to adolescents’ well-being and ill-being: Study 2.

Notes: Latent variables were used to represent all constructs, and the path coefficients, factor loadings, and residuals are standardized estimates. The numbers in parentheses refer to the coefficients for the direct paths when the mediator is included in the model. P = Parents, AS = Autonomy Support, RS = Relational Support, RAI = Relative Autonomy Index, VIT = Vitality, LSAT = Life Satisfaction, EXT = Externalizing Problems, DEP = Depression. \* $p < .05$ , \*\* $p < .01$ .

**Brief discussion**

The results of Study 2 suggest that adolescents who perceived their parents as providing more need support are likely to experience greater psychological health. Second, need support from parents was a significant predictor of their adolescents’ autonomous self-regulation for continuing their education. Third, students’ autonomous self-regulation for college partially mediated the relation of need support from parents to their own psychological health. In other words, need support from parents prompted the development of autonomous self-regulation in their adolescents, which in turn supported the adolescents’ well-being.

As expected, the mediation was significant but only partial, which we believe to be a function of the different levels of generality of the variables. Need support and psychological health are general, cross-domain variables, whereas self-regulation is a domain-specific variable. For

autonomous self-regulation to be a more complete mediator, it would likely have to be assessed at a more general level. Together, the studies elucidate the dynamics of parental need support in promoting adolescents' autonomous self-regulation and well-being.

## General discussion

Two studies examined the relations of adolescents' perceptions of support for autonomy and relatedness from their parents to the adolescents' autonomous self-regulation for pursuing college and their psychological health. In Study 1, need support from both mothers and fathers contributed unique variance to well-being and to ill-being, although mothers' influence was somewhat stronger than fathers'. In the second study, we considered need support from parents as a single latent variable, and it too related to both well-being and ill-being. Perceived need support also facilitated adolescents' autonomous self-regulation for further education, which in turn related to well-being and to ill-being, representing partial mediation of the relations of need support to psychological health. In general, these findings provide support for our SDT-based hypotheses by indicating that both interpersonal and intrapersonal motivational dynamics relate to adolescents' psychological health. In other words, experiencing support for the basic needs for autonomy and relatedness is essential for the inherent growth tendency to function effectively, resulting in greater autonomous self-regulation and psychological health.

Study 2 provided support for partial mediation of the relation from need support to psychological health by autonomous self-regulation for college. As noted, we expected only partial mediation because of the domain-specific level of autonomous self-regulation relative to the general level of perceived need support from parents and psychological health. As suggested by Vallerand's (1997) hierarchical model, motivational constructs are most strongly related at comparable levels of generality, thus suggesting that if autonomous self-regulation had been assessed at a global level the mediation may have been fuller. In fact, a new study by Soenens et al. (2005) that assessed adolescents' global autonomous functioning found it to fully mediate the relation of autonomy support from parents to adolescents' well-being. Of course, there are also other plausible explanations for the partial mediation. For example, Study 2 assessed high school students' reasons for *planning* to attend college. It is possible that if we had assessed college students' reasons for *attending* college, their autonomous self-regulation would have accounted for more of the variance in the relation from perceived need support from parents to well-being and ill-being. Further, non-motivational (e.g., cognitive) variables may also have been mediators.

## Limitations

There were several limitations to the present studies. First, all data were reported from the same source, which likely created a response bias. It is important to evaluate these hypotheses using measures from multiple sources to increase the external validity of the results. Second, both studies used cross-sectional designs. Thus, it is not possible to determine the causal direction of the relations that were examined. Longitudinal, prospective, and experience sampling methods could be used in future studies to validate causal relations among the motivational constructs. Third, both samples were relatively homogenous (i.e., adolescents living with their parents while

in secondary school). It is important for future studies to replicate these results among younger and older students.

## Conclusion

In conclusion, perceived need support from parents was found to have a strong relation to their adolescents' autonomous self-regulation and psychological health. These results underscore the impact of socializers', especially parents', providing social environments that allow adolescents to satisfy their psychological needs for autonomy and relatedness. When parents fail to provide for their children's needs, adolescents' self-regulation is likely to be more controlled, and their well-being is likely to suffer. Thus, the important role of parents as providers of need support and facilitators of their adolescents' autonomous self-regulation and psychological health seems quite apparent.

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