

# Antecedents and Outcomes of Self-Determination in 3 Life Domains: The Role of Parents' and Teachers' Autonomy Support

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Due to conceptualizations of autonomy as detachment and independence, research on the parenting–autonomy relationship in adolescence has yielded inconsistent results. In the present study, self-determination is proposed as an alternative way of tapping into the construct of autonomy. An integrated model of the relationships between perceived parenting and teaching styles, self-determination in 3 life-domains (school, social competence, and job-seeking behaviors), and specific adolescent outcomes, was investigated and confirmed. In 2 samples of mid-adolescents ( $N = 328$  and  $N = 285$ ), autonomy-supportive parenting was significantly related to self-determination in all life-domains. Autonomy-supportive teaching added significantly to the prediction of self-determination in the domains of school and job-seeking behaviors. Self-determination, in turn, was positively and specifically associated with measures of adjustment in the specific life-domains under investigation. Finally, in both studies, indications were found that self-determination acts as an intervening variable in the relation between the perceived interpersonal environment and adolescent adjustment.

**KEY WORDS:** parenting style; teaching style; autonomy; self-determination; adjustment.

## INTRODUCTION

The developmental tasks individuals are confronted with during adolescence are primarily centered around issues of individuation and autonomy (Erikson, 1968; Hill and Holmbeck, 1986). The tendency toward experiencing a sense of autonomy and self-regulation manifests itself in multiple life domains, such as school, vocational careers, and peer competence. For instance, during middle adolescence, individuals start to develop more intimate, personal, and authentic peer relationships. Likewise, many adolescents decide to stop their studies

after secondary school, and are for the 1st time confronted with the difficult task of searching for a job that meets their personal interests and values. Socialization practices, particularly by parents, are considered to play a crucial role in the development of autonomy (Holmbeck *et al.*, 1995). A large body of research has addressed this hypothesis (e.g., Boles, 1999; Frank *et al.*, 1990; Quintana and Lapsley, 1990), but due to differences in conceptualizations of both parenting and autonomy, this research line has yielded a fragmented picture of the parenting–autonomy relationship.

## Autonomy as Self-Determination

Autonomy is a concept with many faces. According to Hill and Holmbeck (1986), 2 conceptualizations of autonomy have dominated recent research. They defined the 1st conceptualization as “detachment from parents,” and the 2nd as “freedom from social (largely parental) influence.” The notions of independence and separation underlie both conceptualizations. Most of the research on the parenting–autonomy relationship is based on such notions

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as well. Steinberg *et al.* (1989) for instance investigated relationships between parenting and self-reliance, based on the hypothesis that effective parents are likely to gradually stimulate their children's independence and self-assurance. However, conceptualizations of autonomy as independence have been criticized by a number of authors. Grotevant and Cooper (1986) for instance have stressed that autonomy is not a merely intrapsychic phenomenon that implies that individuals free themselves from the social environment. Instead, growth toward autonomy would involve a reciprocal interaction between higher levels of connectedness with parents and higher levels of personal individuation. Similarly, Ryan and Lynch (1989) argued that autonomy and dependence on others are not opposites. A parent can support autonomy while still caring for his child, or an adolescent can develop a secure relationship with his parents without feeling controlled in one's actions.

Moreover, there are also empirical reasons to question conceptualizations of autonomy as detachment or independence. From psychoanalytic theory, it can be hypothesized that the development of autonomy is a step toward higher personality functioning and ego maturation and is promoted by nurturant, effective parenting (Blos, 1979). In contrast with this, a number of studies using the Emotional Autonomy Scale (Steinberg and Silverberg, 1986), which primarily assesses adolescents' level of self-reliance and independence from parents, led to the conclusion that emotional autonomy is associated with negative outcomes, such as internal distress, deviant behavior, and lower school grades, as well as with lower feelings of connectedness with family members (Beyers and Goossens, 1999; Ryan and Lynch, 1989).

Apart from these criticisms and empirical anomalies, there is a lack of an overarching theoretical perspective from which clear definitions of autonomy and predictions about its antecedents and consequences can be drawn. One potential perspective to overcome these problems is Self-Determination Theory (SDT; Deci and Ryan, 1985, 2000). Within SDT, acting in an autonomous or self-regulated fashion implies being self-governing and being the initiator of one's own actions. Because an autonomous self-regulation pertains to actions that are freely endorsed and are based on integrated values and interests, the perceived locus of causality of their actions is internal (deCharms, 1968). By contrast, a controlled self-regulation implies that people feel like they have no other choice than to engage in the activity. In such case, a person experiences his actions as coming from outside pressures, rewards, or other forces external to the self. In attributional terms, controlled behaviors are characterized by an external perceived locus of causality. Autonomous and

controlled motivations both entail intention and motivation to act. Within SDT, the concept of amotivation is introduced to assess people's lack of intention and lack of motivation. When amotivated, people feel futile and have the feeling they cannot do anything to change the global course of events (Deci and Ryan, 2000). Amotivation represents the lowest type of self-determined functioning, and is therefore represented by an impersonal locus of causality (Deci and Ryan, 2000).

In the present study, the concept of self-determination was used as a way to tap into the construct of autonomy. Clearly, this construct differs strongly from concepts such as self-reliance or independence. In SDT, acting in an autonomous or self-determined way is largely orthogonal to independence (Chirkov *et al.*, 2003; Ryan, 1993). Whereas independence concerns not relying on others, self-determination has to do with the relative volition and authenticity of a person's actions.

According to SDT, experiencing a sense of autonomy and choicefulness in one's actions is critical for people's optimal functioning. Several studies in various life domains revealed the diverse positive consequences associated with acting in a self-determined fashion (for overviews see Deci and Ryan, 2000; Vallerand, 1997). For instance, in the educational domain, autonomous self-regulation is associated with higher feelings of self-perceived (Fortier *et al.*, 1995) and teacher-rated (Grolnick *et al.*, 1991) academic competence, with use of optimal learning strategies (Yamauchi *et al.*, 1999), with less defensive coping styles (Ryan and Connell, 1989) and, importantly, with higher school grades (Black and Deci, 2000; Vansteenkiste *et al.*, 2004b). The general aim of the present study is to extend this research on academic self-regulation by investigating the role of self-determined functioning for adolescents' functioning in 2 other domains with a particular developmental relevance for adolescents (see below), namely social competence and vocational identity. Based on SDT, it is expected that higher levels of self-determined functioning will predict better adjustment across these developmental areas. Apart from investigating the developmental outcomes of self-determination, the present study also addresses the role of parents and teachers in promoting self-determined functioning.

### Autonomy-Supportive Interpersonal Environments

Although, according to SDT, people are naturally prone to self-organize and self-initiate their actions in accordance with their values and interests, the social environment can easily detract people from such a

self-regulated functioning. When adolescents are placed within inconsistent or psychologically controlling parenting contexts, their self-determined regulation is expected to be inhibited (Grolnick *et al.*, 1997). By contrast, parents and teachers who are sensitive to their children's needs and who are able to provide choices to their children are expected to facilitate feelings of autonomy and choicefulness.

Given these theoretical expectations, the present study examined parents' and teachers' autonomy support in relation to adolescents' adjustment and levels of self-determination in different life domains. The study of the autonomy support construct is a particularly important topic in current research on parenting. Although past research usually aggregated parenting dimensions in parenting typologies such as authoritarian or permissive, recent research witnesses a renewed interest in the specific effects of the autonomy support (vs. psychological control) dimension (Barber, 1996; Gray and Steinberg, 1999). Psychological control has been defined as characteristic of parents who are overly concerned about their personal position in the parent-child relationship and who make use of intrusive parenting techniques to demand compliance from their children (Barber, 1996; Barber and Harmon, 2002). In contrast, within SDT, parental autonomy support is defined as characteristic of parents who are empathic to their children's perspective, who provide choices and options to their children whenever it is possible, and help their offspring to explore and enact upon their personal values and interests (Grolnick, 2002; Ryan *et al.*, 1995).

Research has shown that *parental* autonomy support is positively associated with various adaptive outcomes, including academic competence, school achievement and ego development (Allen *et al.*, 1994; in the text Grolnick *et al.*, 1991), whereas it negatively predicts maladjustment, as indexed by distress in emotion-regulation and acting-out and learning problems (Grolnick *et al.*, 1997). Conversely, psychological control has been linked to a variety of maladjustment outcomes, including depression (Barber *et al.*, 1994), lower self-esteem (Soenens *et al.*, 2005), and externalizing problems (Barber, 1996). Most recently, psychological control was found to negatively predict academic performance (Aunola and Nurmi, 2004).

Similarly, research within educational psychology has shown that an autonomy-supportive *teaching style* is positively associated with more school engagement (Assor *et al.*, 2002), higher grades and better school adjustment (Patrick *et al.*, 2002; Ryan *et al.*, 1994; Wentzel, 2002). In contrast, teachers' support is negatively associated with students' experienced stress (Torsheim and Wold, 2001).

Moreover, in line with expectations derived from SDT, research has also provided evidence for a positive relationship between parents' and teachers' autonomy support and higher levels of self-determined learning (Grolnick *et al.*, 1991, 1997; Reeve *et al.*, 1999). It remains to be investigated, however, whether and how parents and teachers affect self-regulation in other life-domains than the academic domain. In addition, very few studies have compared the influence of parents on adolescents' self-determination in comparison to the influence of other significant figures in the adolescents' interpersonal environment, such as teachers. In the few studies (d'Ailly, 2003; Ryan *et al.*, 1994; Vallerand *et al.*, 1997) that investigated the relative contribution of both parents and teachers to adolescents' self-determination, it was found that positive representations of relationships to parents and teachers each uniquely predicted self-determination in the academic domain (Ryan *et al.*, 1994). The differential roles of parents and teachers have not been examined, however, in other life-domains such as peer competence and job search. These are precisely the domains under investigation in the present research.

Lastly, in order to obtain an even more differentiated picture of the influence of the interpersonal environment on adolescents' self-determination, the present study examined the relative impact of both parents separately. According to Grolnick and Farkas (2002), there is a dearth of studies addressing this topic. As a consequence, it remains to be investigated whether mothers and fathers independently contribute to their children's self-determination, or whether they differentially affect self-determination in specific life-domains. Several developmental psychologists indeed claim that mothers and fathers have differential roles: whereas mothers, as primary caregivers would be important for a broad range of outcomes and in particular for intimate and social areas (such as peer relationships and friendships), fathers would be particularly influential for instrumental, goal-oriented activities (such as the search for a future job) (Holmbeck *et al.*, 1995; Youniss and Smollar, 1985). One exception to the lack of studies including mothers and fathers is the study of d'Ailly (2003), who found that only maternal, but not paternal involvement and autonomy support contributed significantly to students' academic self-regulation. An important aim of the present study was to replicate these findings and extend them to other domains of life.

### Self-Determination as an Intervening Variable

According to SDT, adolescents' level of self-determination is a key motivational resource to experience

optimal functioning in diverse life-domains (Deci and Ryan, 2000; Grolnick *et al.*, 1997). Both parenting and teaching styles are thought to provide an environment which can either optimize or inhibit these motivational resources which, in turn, impact on individuals' functioning (Grolnick *et al.*, 1991). In other words, adolescents' self-determined functioning is considered as a motivational mediator of the relations between autonomy-supportive interpersonal environments and outcomes in specific life-domains (Deci and Ryan, 2000).

The aims of the present study are: (a) to investigate the role of self-determination in 3 domains of life (school, peer competence, and job-searching), (b) to explore the relative predictive power of perceived parenting (mother and father) in comparison to the role of teachers, and (c) to study both the hypothesized antecedents (i.e., parenting and teaching styles) and consequences (e.g., feelings of competence) of adolescents' level of self-determination into 1 integrated model. In the 2 studies presented, it is proposed that the perceived degree of parents' and teachers' autonomy support will be positively associated with self-determination, which will, in turn, predict better domain-specific outcomes (see Fig. 1).

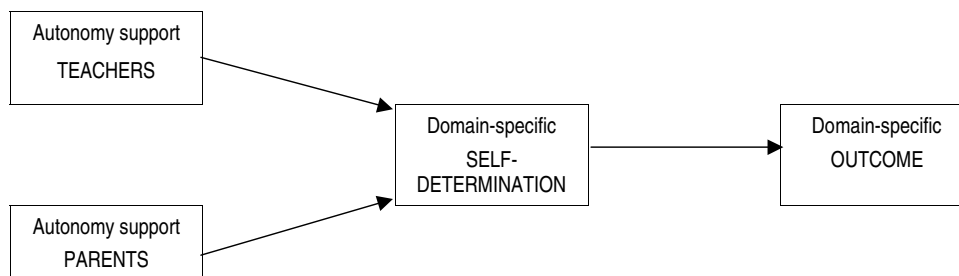
## STUDY 1

Because school and peer competence constitute important developmental areas for the individual during mid-adolescence (Holmbeck *et al.*, 1995), Study 1 focused on the degree of self-determination in both domains. During mid-adolescence, performance in school and school activities are becoming of great importance in the light of impending career choices. Moreover, relative to the relationships with parents, relationships with peers gain more importance and involve more intimate sharing of thoughts and emotions (Harter, 1999). Hence, it is of critical importance to study the antecedents and consequences of

adolescents' level of self-determination with respect to these 2 life domains.

Although past research has clearly documented the hypothesized linkages among autonomy-supportive environments and self-determination in school (see Grolnick, 2002 for a review), the present study is the 1st to examine relations between parenting, self-determination, and peer competence. Although there is a consensus in the extant literature that parenting affects children's competence in peer relationships, little is known about the underlying or intervening psychological processes to explain such effects (Ladd and Pettit, 2002). Recently, it was concluded by Mize *et al.* (2000) that past research has largely failed to find significant mediators of the parenting–social competence link. Based on SDT, we advance the hypothesis that autonomy-supportive parenting promotes the internalization of adolescents' reasons for engaging in peer relations. Autonomy-supportive parents are, by definition, parents who display an authentic interest in their children's needs and whereabouts and who avoid to manipulate the bond with their children for their own good (Ryan and Solky, 1996). The example set by an autonomy-supportive parent can thus be thought to result in a genuine, nonego-oriented orientation toward social relations in which the child does not feel pressured or internally controlled to relate to others, but instead identifies with the importance of and fully enjoys the company of peers and friends (Ryan, 1993). Hence, adolescents of autonomy-supportive parents are thought to build their peer relations on the basis of more self-determined motives that, in turn, would enhance their feelings of competence and satisfaction in peer relationships.

It is important to note that the predictions that follow from our view on autonomy as self-determination differ markedly from the perspective of autonomy as independence or emotional autonomy. Within separation-individuation theory, it is assumed that adolescents, by



**Fig. 1.** Model of the hypothesized relationships between perceptions of the interpersonal environment, self-determination, and psychosocial outcomes.

shedding off emotional ties with parents, tend to depend more on peers, which may result in more affiliation with (potentially antisocial) peers and groups (Steinberg and Silverberg, 1986). An important implication of the latter view is that parents and peers exert an opposite or even conflictual influence on adolescents. An adolescent either remains dependent upon parents, or breaks up with his parents and resorts to the company of peers, which may even result in antisocial tendencies. Research has indeed shown that high levels of emotional separation go hand in hand with less prosocial behavior and more problem behaviors (e.g., Beyers and Goossens, 1999). By contrast, SDT's view on autonomy as self-determination indicates that autonomous functioning does not imply the loosening of ties with parents. In contrast, autonomy-supportive and responsive parents are thought to enhance adolescents' feelings of comfort and competence in peer contacts by promoting a more self-determined regulation of interpersonal relations. As a consequence, this view is more in line with the recent recognition of the fact that the social worlds of parents and peers are interconnected rather than conflictual (Ladd and Pettit, 2002).

To summarize, it is hypothesized that parental autonomy-support is associated with higher levels of self-determination, both in the domain of school and in the domain of peer competence. Furthermore, the interpersonal style used by teachers is expected to be specifically related to the development of self-determination with respect to school activities, and thus, will have specific and additional predictive value for the level of academic self-determination. We expect that domain-specific levels of self-determination predict domain-specific outcomes (Vallerand, 1997). Hence, it is hypothesized: (a) that higher levels of scholastic self-determination positively predict how well adolescents feel they are doing in school (i.e., scholastic competence), as well as their school grades and (b) that higher levels of self-determination with respect to peer relations predict how competent adolescents feel when they are among friends (i.e., social acceptance or social competence). Finally, self-determination is thought to function as an intervening variable in the relationship between parenting or teaching styles and outcomes.

## Methods

### *Participants and Procedure*

The sample comprised 328 adolescents from 2 secondary schools (Grades 10–12) in the Dutch-speaking part of Belgium. Their age ranged from 15 to 21 years

with a mean of 17 years. There were 244 (74%) boys and 84 (26%) girls in our sample. This unbalanced gender distribution was not due to a self-selective bias in the sampling procedure, rather it mirrored the distribution in the student population of the 2 schools involved in this study. Data gathering took place during school time and did not take more than 50 min. Students participated voluntarily in small group sessions. Anonymity was guaranteed.

### *Measurements*

All questionnaires included in the present study were translated from English to Dutch, the participants' mother tongue, according to the guidelines of the International Test Commission (Hambleton, 1994). Items were always scored on 5-point Likert scales, ranging from 1 *strongly disagree* to 5 *strongly agree*.

*Parental Autonomy-Support Versus Psychological Control.* Two scales were administered, 1 assessing autonomy support and 1 assessing psychological control. Items for the psychological control scale were derived from the Parenting Scales (Lamborn *et al.*, 1991), whereas autonomy support was tapped with 5 items from the autonomy support scale of the Perceptions Of Parents Scales (POPS, Grolnick *et al.*, 1991). Psychological control (Barber, 1996) measures the degree to which adolescents perceive their parents as intruding upon their need for autonomy by such means as love withdrawal (or "contingent love"), guilt induction, and instilling anxiety (7 items, e.g., "My mother/father is less friendly to me if I don't see things like he/she does"). Autonomy support taps the extent to which parents encourage their children to pursue their own interests and values. (5 items; e.g., "My mother/father, whenever possible, allows me to choose what to do."). Cronbach's alphas of the psychological control scale were 0.81 and 0.78 for mothers and fathers, respectively. Cronbach's alphas of the Autonomy Support Scale were 0.76 and 0.75 for mothers and fathers, respectively. In line with the idea that autonomy-support as defined within SDT and psychological control are highly incompatible parenting styles (Grolnick *et al.*, 1997), both styles were found to be strongly negatively correlated in the present sample,  $r = -.56$ ;  $p < 0.001$  for mothers and  $r = -.57$ ;  $p < 0.001$  for fathers. Furthermore, a principal component analysis indicated that all items loaded on 1 single factor for both mothers and fathers. For these reasons and to avoid problems of multicollinearity, psychological control items were reversed and summed with the autonomy-support items to form an autonomy-support versus psychological control composite.

*Teachers' Autonomy Support.* Participants completed the 6-item version of the Learning Climate Questionnaire (Williams and Deci, 1996). Because we were interested in the general perceived learning climate, participants were asked to rate the items with respect to the autonomy-support of the teachers in general. Cronbach's alpha of this 6-item scale (e.g., "I feel that my teachers provide me choices and options.") was 0.84.

*Self-Determination.* Participants' reasons for doing their school work (SRQ-A; Ryan and Connell, 1989) and for engaging in a friendship relationship (SRQ-F) were assessed. For each questionnaire, 5 different self-regulatory styles were assessed. We measured to what extent the participants engaged in each of these activities for external reasons (caused by external forces or pressures), for introjected reasons (derived from internal pressures such as guilt or social approval), for identified reasons (reflecting the person's own values) or for intrinsic reasons (motivated by intrinsic pleasure of the activity). Because a full motivational analysis should also include a scale tapping people's lack of motivation to engage in the activity (Ryan and Deci, 2000; Vallerand, 1997), we added 6 items to assess the construct of amotivation in both domains.

As predicted by SDT (e.g., Ryan and Connell, 1989), the correlational pattern between the several self-regulatory styles of both questionnaires indicated an acceptable simplex structure (Gutman, 1957) with concepts further apart from each other on the continuum being less strongly correlated with each other than constructs that are closer to each other. This allowed us to create a Relative Autonomy Index (RAI) by assigning a weight to the items of the self-regulation styles as a function of their positions on the self-determination continuum (see for instance Grolnick and Ryan, 1987; Sarrazin *et al.*, 2002; Senécal *et al.*, 2001 for this method). Thus, amotivation items were assigned a weight of  $-2$ , and external regulation and introjected regulation items were assigned weights of  $-1$  because they represent controlled forms of motivation. Intrinsic motivation and identified regulation items, as self-determined forms of motivation, were assigned respectively the weights of  $+2$  and  $+1$ . The final Cronbach's alpha of the relative autonomy index with respect to school activities was 0.77 and with respect to engaging in friendships was 0.73.

*Social and Scholastic Competence.* As an index of social competence, we used the Social Acceptance Subscale of Harter's (1988) Self-Perception Profile for Adolescents (SPPA). The Dutch adaptation of the SPPA, developed by Straathof and Treffers (1988), was modified with respect to its item format. In the original format, participants are asked to make a choice between 2 items, each describ-

ing an adolescent with opposite characteristics. We used the less cumbersome item format proposed by Wichstrom (1995), in which only 1 statement is used for each item. Cronbach's alpha of this 5-item scale was 0.76. From the SPPA, we also derived the scholastic competence scale (Harter, 1988). Cronbach's alpha of this 5-item scale was 0.57.

*Grade Point Average (GPA).* The measure of school performance in this study was the student's self-reported grades on their most recently completed series of exams. Strong evidence exists that self-reported school grades are accurate reflections of the school grades actually obtained (Herman *et al.*, 1997).

## Results and Brief Discussion

### *Descriptives and Correlational Analyses*

Preliminary analyses were conducted to investigate gender and age differences in the study variables. A significant multivariate effect of gender on the study variables was found (Wilks's  $\Lambda = 0.75$ ;  $F(8, 276) = 11.3$ ;  $p < 0.001$ ). Girls reported higher autonomy support by mother ( $M = 3.87$ ;  $SD = 0.77$ ) than boys ( $M = 3.65$ ;  $SD = 0.66$ ;  $F(1, 283) = 5.66$ ;  $p < 0.05$ ). In addition, girls showed higher levels of self-determination for school ( $M = 1.85$ ;  $SD = 0.69$ ) and friendships ( $M = 3.45$ ;  $SD = 0.56$ ) than boys ( $M = 1.50$ ;  $SD = 0.63$  and  $M = 3.05$ ;  $SD = 0.62$ , respectively;  $F(1, 283) = 16.51$ ;  $p < 0.001$  and  $F(1, 283) = 24.82$ ;  $p < 0.001$ , respectively). Finally, girls displayed lower levels of social competence ( $M = 3.44$ ;  $SD = 0.71$ ) but obtained a higher grade point average ( $M = 71.00$ ;  $SD = 7.17$ ) compared to boys ( $M = 3.75$ ;  $SD = 0.69$  and  $M = 66.71$ ;  $SD = 7.43$ , respectively;  $F(1, 283) = 11.29$ ;  $p < 0.001$  and  $F(1, 283) = 18.91$ ;  $p < 0.001$ , respectively).

With respect to age differences in the study variables, significant correlations were obtained between age and both self-determination for friendships ( $r = -.14$ ;  $p < 0.05$ ) and grade point average ( $r = -0.24$ ;  $p < 0.001$ ). With increasing age, adolescents were less self-determined in the domain of friendships and obtained lower grades. Given that both gender and age differences were evident in a number of study variables, we controlled for the effects of these variables in all primary analyses.

Correlations among all variables are presented in Table I. In line with earlier research, low positive correlations were found between autonomy-supportive parenting and grade point average. Maternal and paternal autonomy support was also significantly associated with the adolescent's scholastic competence. Both maternal and paternal

**Table I.** Correlations Among All Variables (Study 1)

Measures	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Autonomy support mother	1							
(2) Autonomy support father	.49***	1						
(3) Autonomy support teachers	.16**	.17**	1					
(4) Relative autonomy school	.14**	.15**	.29***	1				
(5) Relative autonomy friendship	.15**	.10	.01	.21**	1			
(6) Grade point average (GPA)	.14**	.09	.02	.32***	.08	1		
(7) Scholastic competence	.14**	.13*	.05	.18**	.04	.38***	1	
(8) Social competence	.09	.09	.06	-.10	.20**	-.02	.35***	1

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

autonomy support were unrelated to feelings of social competence.

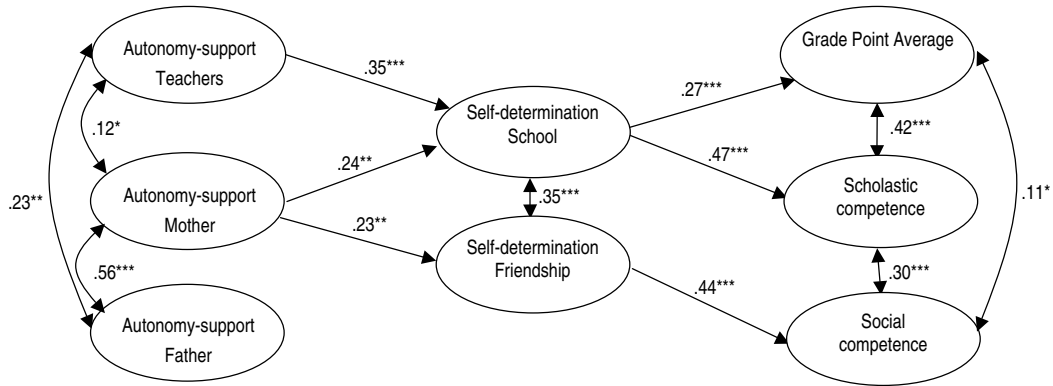
In line with our hypotheses, paternal and maternal autonomy support was positively associated with self-determination in the domain of school and in the domain of friendship. Teacher autonomy-support was not significantly associated with scholastic competence, nor with grade point average. However, as predicted, teacher autonomy-support was positively related to scholastic self-determination, but not to the level of self-determination with respect to friendship. Finally, scholastic self-determination was positively associated with school results (GPA) and scholastic competence, and self-determination with respect to friendship was positively correlated with social acceptance and competence.

#### Primary Analyses: Structural Equation Modeling

In order to (a) examine the relative contribution of the interpersonal style of father, mother, and teachers to the development of self-determination, (b) assess the degree of specificity in the hypothesized relationships between self-determination and its outcomes, and (c) investigate the potentially intervening role of self-determination, a path-model including these 3 sets of variables was tested (see Fig. 1). To test the proposed model, structural equation modeling with latent variables was performed, using Lisrel 8.54 (Jöreskog and Sörbom, 1996). To evaluate the goodness-of-fit of the models, the Standardized Root Mean Square Residual (SRMR; Bentler, 1995) and the Root Mean Squared Error of Approximation (RMSEA; Steiger and Lind, 1980) were selected. According to Hu and Bentler (1999), the combined cut-off values of 0.09 for SRMR and 0.06 for RMSEA indicate a good model fit. In addition, we also inspected the Comparative Fit Index (CFI) with values of 0.90 or above indicating acceptable fit (Bentler, 1990).

SEM with latent variables requires multiple indicators for all the constructs that are assessed. Instead of using separate items as indicators, we created 3 parcels of items for the constructs (in a random fashion) and used these as indicators of the latent constructs. This procedure was followed for each construct, except for grade point average, which was indexed by a single indicator. According to Marsh *et al.* (1998), parceling has some advantages with respect to the modeling of latent factors. Parceling results in a smaller number of indicators per latent factor, individual parcels are likely to have a stronger relation to the latent factor, are less likely to be influenced by method effects, and are more likely to meet the assumptions of normality. In addition, the reliability of the factors is unaffected by the use of parcels since the same items are used to form the latent factor.

Initial estimation of the complete measurement model with 22 observed variables (i.e., parcels) and 8 latent factors by means of confirmatory factor analysis indicated an acceptable model fit ( $\chi^2(210) = 368.20$ ; SRMR = 0.058; RMSEA = 0.054; CFI = 0.93). All of the parcels had a strong loading on their corresponding latent factor (mean  $\lambda = 0.61$ ). In sum, a reliable measurement model was obtained for the constructs in our study. Next, we tested the hypothesized structural model, in which parenting and teaching styles only have indirect effects on the outcome variables through their influence on adolescents' levels of self-determination. In order to control for the effects of gender and age, both variables were included in the model as additional predictors. Initial testing of this model yielded an acceptable fit ( $\chi^2(227) = 418.16$ ; SRMR = 0.085; RMSEA = 0.057; CFI = 0.90). Inspection of the structural coefficients revealed that 2 of the hypothesized paths were not significant, namely the paths from paternal autonomy support to both self-determination in school and in friendships. In order to arrive at the most parsimonious model, the model was re-estimated without these paths, resulting in an equally well-fitting model ( $\chi^2(229) = 418.97$ ; SRMR = 0.085;



**Fig. 2.** Standardized path coefficients for the model predicting relationships between autonomy support (of mother, father, and teachers), the relative autonomy index (RAI; with respect to motivation for school and for friendships), grade point average (GPA), scholastic competence and social competence. For sake of clarity, the effects of gender and age are not shown. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

RMSEA = 0.057; CFI = 0.90). This model is shown in Fig. 2.

To determine whether self-determination acts as an intervening variable between autonomy-supportive teaching and parenting and the outcome variables, it was inspected whether the addition of direct paths from parenting or teaching style to the outcome variables would result in a better fitting model. The modification indices, however, did not suggest adding any direct path, indicating that the indirect effects model yields the most parsimonious and best-fitting description of the data. Further evidence for the intervening role of self-determination was obtained from inspection of the significance of the indirect effects of parenting and teaching on the outcome variables through self-determination. Significant indirect effects were found from maternal autonomy support to grade point average ( $\beta = 0.07$ ;  $p < 0.05$ ), to social competence ( $\beta = 0.10$ ;  $p < 0.01$ ), and to scholastic competence ( $\beta = 0.11$ ;  $p < 0.05$ ). Significant indirect effects were also obtained from the autonomy-supportive teaching style to grade point average ( $\beta = 0.10$ ;  $p < 0.01$ ) and to scholastic competence ( $\beta = 0.16$ ;  $p < 0.01$ ).

Inspection of the final, best-fitting model (Fig. 2) reveals that our hypotheses were generally supported. Perceived autonomy-supportive parenting was related to self-determination in 2 life-domains, school and friendship, and perceived teacher autonomy-support was specifically related to self-determination in school. Fathers' parenting style, however, did not contribute significantly to the level of self-determination in addition to the contribution of mothers' parenting style.

Furthermore, in line with our hypotheses, relationships between self-determination and outcome variables were specific and well differentiated. Whereas scholas-

tic self-determination was positively related to scholastic competence and better school results, self-determination in the friendship domain was positively related to social competence only. Finally, consistent evidence was obtained for the intervening role of self-determination between parenting or teaching style and the outcome variables. It was found that (maternal) parenting and teaching styles only exert an indirect influence on scholastic competence and grade point average through their effect on scholastic self-determination. Likewise, (maternal) parenting style only influenced social competence indirectly through an effect on self-determination in the friendship domain.

## STUDY 2

Because we wanted to (a) cross-validate the model proposed in Study 1, and (b) extend the study of self-determination into another life domain, a 2nd study was conducted. Study 2 focused again on the development of self-determination in school, but also looked for the 1st time at the domain of searching for a job. Again, we investigated the degree of self-determination in these domains in relationship to the interpersonal context offered by parents and teachers.

During their last year of high school, many students in the lower educational disciplines are confronted with the normative task of looking out for a future job. Given the importance of this choice for their further lives, it is interesting to investigate individual differences in the way adolescents approach the process of job-search and how the social environment can predict those differences. Previous SDT-studies (Vansteenkiste *et al.*, 2004a,



2005) found, in line with SDT, that unemployed people who feel controlled in their job-search, or who feel futile and amotivated experience their unemployment as more negatively and display lower well-being. In contrast, autonomous job-search motivation was positively related to self-actualization, and was the only positive predictor of self-reported past job-search behavior. In the present study, we explore whether a more self-determined job-search regulation is associated with more adaptive functioning in the vocational domain even among participants who had not entered the labor market yet but who were about to do so. Participants' intention to search for a job and the dimensions of their vocational identity served as outcome variables (Flum and Blustein, 2000).

Two dimensions are thought to be crucial in defining one's vocational identity, that is, exploration and commitment (Marcia, 1980; Schmitt-Rodermund and Vondracek, 1999). Exploration implies experimenting with different vocational options and possibilities. Commitment refers to the determined adherence to the choice one made about a future job. Higher levels of identity development are characterized by committed choices that have been made after a period of profound exploration. Adolescents with self-determined motives to search for a job are, by definition, likely to engage in job-search activities with a sense of volition. Because they experience their job seeking as more volitional, they are more likely to actively search for a job (job-search intention) and they are more likely to thoroughly explore the job market in order to find a job that meets their personal, authentic goals and needs (exploration). Finally, given that self-determined adolescents base their actions and decisions upon self-endorsed goals, they are expected to feel more certain and confident about the job choice they ultimately make (commitment).

The study of self-determination may shed a new light on past research about autonomy and vocational identity. Past research within the domain of vocational career development has tended to rely on a conceptualization of autonomy as separation-individuation. Most of these studies have found weak or no support for a relation between psychological separation or independence and students' career decision-making abilities (Santos and Coimbra, 2000) and vocational self-concept (Tokar *et al.*, 2003). It has been argued that this lack of consistent relations may be due to the fact that the effects of separation or independence are moderated by the extent to which this process occurs within a secure and supportive attachment relationship (Blustein *et al.*, 1991). As argued earlier, self-determination does not exclude such a positive parent-child relationship: instead, it is thought to be promoted by responsive and autonomy-supportive interpersonal relationships. Hence, in contrast to the equivocal evidence

obtained within separation-individuation research, we expect that self-determined motives for job seeking will be strongly positively associated with high school students' vocational identity.

As in Study 1, it is hypothesized that autonomy-supportive parenting is positively associated with self-determination, both in the domain of school activities and the domain of job search. Moreover, it can be expected that, in our sample of students from the lower educational disciplines, the motivation to look for a job is shaped for an important part in the school context, because the education these students receive focuses very strongly on developing the concrete abilities they will need in their future jobs. For these adolescents, the school environment and their vocational aspirations are closely intertwined. Therefore, we expect that teacher autonomy-support is positively associated with scholastic self-determination, but also with self-determination in the domain of job search.

Further, we predicted that: (a) scholastic self-determination is positively associated with students' school results, and (b) higher levels of self-determination in the domain of job search are positively related to both dimensions of vocational identity, and to the intention to actually search for a job. Finally, as in Study 1, we expected adolescents' specific level of self-determination to act as an intervening variable between parenting and teaching styles and their identity development and grade point average.

## Method

### *Participants and Procedure*

The sample comprised 285 adolescents from 3 secondary schools in the Dutch-speaking part of Belgium. All participants in this study were in the last grade (Grade 12 or 13) of high school. For the purpose of this study, students were drawn from the lower educational disciplines, that is, the technical and vocational training classes. Their age ranged from 17 to 22 years with a mean of 18.71 years. There were 129 (46%) boys and 150 (54%) girls in our sample (6 participants did not denote their gender). Data gathering took place during school time and did not take more than 50 min. Students participated voluntarily in small group sessions. Anonymity was guaranteed.

### *Measurements*

All measures included in the present study were in Dutch, the participants' mother tongue. Items were always

scored on 5-point Likert scales, ranging from 1 *strongly disagree* to 5 *strongly agree*.

*Parental Autonomy-Support Versus Psychological Control.* The same scales as described in Study 1 were used to assess parenting styles. Cronbach's alphas of the psychological control scale were 0.80 and 0.78 for mothers and fathers, respectively. Cronbach's alphas of the autonomy support scale were 0.77 and 0.68 for mothers and fathers, respectively. As in Study 1, the psychological control and autonomy support scales were strongly negatively correlated  $r = -.56$ ;  $p < 0.001$  for mothers and  $r = -.58$ ;  $p < 0.001$  for fathers. Hence, as in Study 1, an autonomy support versus psychological control composite was computed by reversing the psychological control items and summing them with the autonomy-support items.

*Teachers' Autonomy Support.* Cronbach's alpha of the 6-item version of the Learning Climate Questionnaire was 0.80. See Study 1 for a description of this scale.

*Self-Determination in School.* Participants completed the same measure as described in Study 1. Cronbach's alpha was 0.77.

*Self-Determination in Job Search.* Students completed the Job Search Self-regulation Questionnaire (SRQ-JS; Vansteenkiste *et al.*, 2004a), which is an adaptation of the original self-regulation questionnaires (Ryan and Connell, 1989). Participants were asked to rate 21 reasons to search for a job in the future. Each reason was an indicator of 1 specific self-regulatory style (i.e., amotivation, external regulation, introjection, identification, and intrinsic motivation). As a measure of overall self-determined motivation with respect to job-seeking behavior, the relative autonomy index was calculated in the same way as in Study 1. Cronbach's alpha was 0.71.

*Grade Point Average.* Participants were asked to indicate the global score they obtained on their most recently completed series of exams.

*Job-Search Behavior.* Participants responded to 7 items about their intention to engage in job-search activities after their graduation. Examples of job-search activities are writing a letter of application, using the internet to find a job, and contacting employers. Cronbach's alpha was 0.90.

*Vocational Identity.* Participants completed the societal identity scales of the U-GIDS (Meeus, 1996). The commitment scale (5 items; e.g., "My future choice of profession gives me security in life.") measures the extent to which students feel committed to, and derive self-confidence from their career choice and their future job. The exploration scale (5 items; e.g., "I try to find out a lot about my future job.") taps the degree to which adolescents are actively engaged in ex-

ploring their future job. Cronbach's alphas were 0.86 and 0.79.

## Results

### *Descriptives and Correlational Analyses*

As in Study 1, preliminary analyses investigated gender and age differences in the study variables. A significant multivariate effect of gender on the study variables was found (Wilks's  $\Lambda = 0.81$ ;  $F(9, 205) = 5.42$ ;  $p < 0.001$ ). Similar to Study 1 girls showed higher levels of self-determination for school ( $M = 2.03$ ;  $SD = 0.63$ ) and job-searching ( $M = 2.27$ ;  $SD = 0.66$ ) than boys ( $M = 1.72$ ;  $SD = 0.58$  and  $M = 2.10$ ;  $SD = 0.50$ , respectively;  $F(1, 233) = 13.37$ ;  $p < 0.001$  and  $F(1, 213) = 4.71$ ;  $p < 0.05$ , respectively). In addition, girls again obtained a higher grade point average ( $M = 69.34$ ;  $SD = 8.05$ ) and reported more job-search intentions ( $M = 3.57$ ;  $SD = 1.04$ ) than boys ( $M = 65.28$ ;  $SD = 7.98$  and  $M = 3.08$ ;  $SD = 1.14$ , respectively;  $F(1, 213) = 13.71$ ;  $p < 0.001$  and  $F(1, 213) = 10.76$ ;  $p < 0.01$ , respectively). Adolescents' age did not significantly correlate with any of the study variables. As a consequence, we only controlled for the effects of gender in the primary analyses.

Correlations among all variables are presented in Table II. As in Study 1, both maternal and paternal autonomy support were positively associated with school grades. In line with expectations, autonomy-supportive parenting by both father and mother was positively related self-determination, both in the domain of school and in the domain of job searching. Furthermore, teacher autonomy-support was significantly positively associated with students' grade point average, as well as with exploration and commitment. Also confirming our hypothesis, teacher autonomy-support was positively associated with self-determination in both the domain of school and job searching. In turn, scholastic self-determination was positively associated with school grades. Moreover, self-determination with respect to job-seeking behaviors was positively associated with both dimensions of vocational identity, and with job-search intention.

### *Primary Analyses: Structural Equation Modeling*

As in Study 1, we created 3 parcels of items for the constructs (in a random fashion) and used these as indicators of the latent constructs except for grade point average, which was indexed by a single indicator. Initial estimation of the complete measurement model with 25 observed variables (i.e., parcels) and 9 latent factors by

**Table II.** Correlations Among All Variables (Study 2)

Measures	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Autonomy support mother	1								
(2) Autonomy support father	.33***	1							
(3) Autonomy support teachers	.04	.03	1						
(4) Relative autonomy school	.24***	.16**	.25***	1					
(5) Relative autonomy job-search	.26***	.23***	.22**	.30***	1				
(6) Grade point average (GPA)	.13*	.13*	.19**	.22**	.05	1			
(7) Exploration	.00	.01	.30***	.22**	.27***	.14*	1		
(8) Commitment	-.02	.06	.30***	.13*	.32***	.10	.63***	1	
(9) Job search intention	.09	.08	.11*	.14*	.12*	-.06	.14*	.09	1

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

means of confirmatory factor analysis indicated an acceptable model fit ( $\chi^2(256) = 300.03$ ; SRMR = 0.049; RMSEA = 0.029; CFI = 0.97). In addition, each parcel had a strong loading on its corresponding latent factor (mean  $\lambda = 0.77$ ).

Next, we tested the hypothesized structural model, in which parenting and teaching styles only have indirect effects on the outcome variables through their influence on adolescents' levels of self-determination. Gender was entered in this model as a control variable. Initial testing of this model yielded a good fit ( $\chi^2(279) = 358.58$ ; SRMR = 0.072; RMSEA = 0.037; CFI = 0.96). Inspection of the structural coefficients revealed that 2 paths were not significant, namely the path from paternal autonomy-support to scholastic self-determination and from maternal autonomy-support to self-determination in the job-search domain. Evidently, re-estimation of this model without these paths did not result in a significant loss in fit ( $\chi^2(281) = 363.02$ ; SRMR = 0.073; RMSEA = 0.037; CFI = 0.96). This model is shown in Fig. 3.

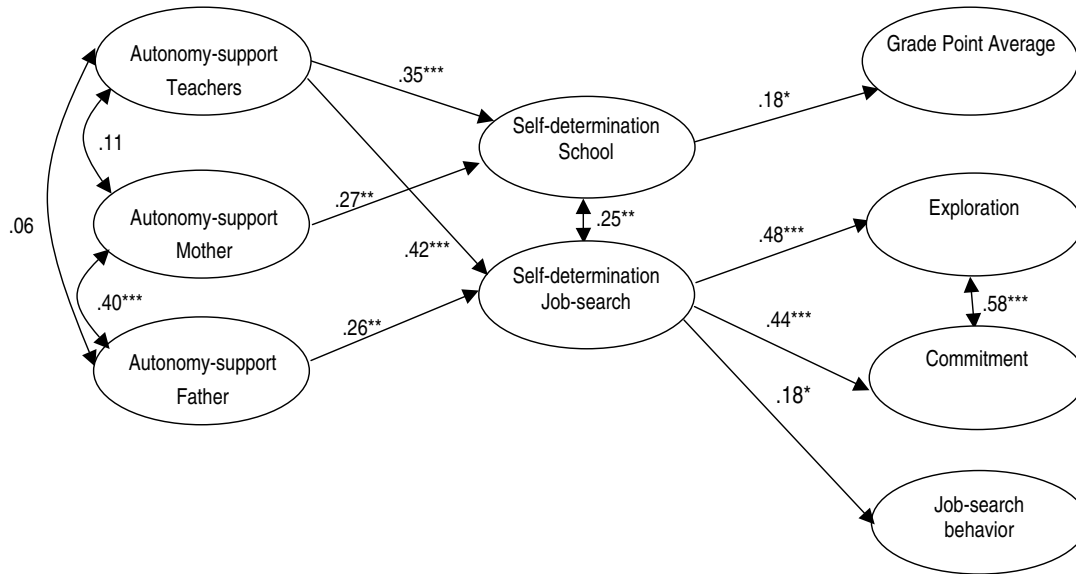
The modification indices did not suggest adding any direct path between parenting or teaching style and any of the outcome variables, indicating that the indirect effects model yields the most parsimonious and best-fitting description of the data. Moreover, inspection of the indirect effects further attested to the significant role of self-determination as an intervening variable; Significant indirect effects were found from maternal autonomy-support to grade point average ( $\beta = 0.05$ ;  $p < 0.05$ ) and from paternal autonomy-support to exploration ( $\beta = 0.13$ ;  $p < 0.01$ ) and to commitment ( $\beta = 0.13$ ;  $p < 0.01$ ). In addition, teachers' autonomy-support was indirectly linked to grade point average ( $\beta = 0.06$ ;  $p < 0.05$ ), exploration ( $\beta = 0.20$ ;  $p < 0.01$ ), and commitment ( $\beta = 0.18$ ;  $p < 0.01$ ).

The results of Study 2 cross-validate the results of Study 1, and provide further evidence for the integrated model proposed in Fig. 1. As expected, autonomy-

supportive parenting was positively associated with adolescents' degree of self-determination in specific life domains. However, in the structural model, evidence was found for an interaction between the gender of the parent involved and the domain of self-determination. Fathers' parenting style was uniquely associated with self-determination in the job-search domain, and mothers' parenting style was uniquely associated with scholastic self-determination. Interestingly, the latter finding is in line with Study 1, in which fathers' parenting style and scholastic self-determination were also unrelated when mothers' parenting style was taken into account (see Fig. 2).

In addition to the variance explained by parents' autonomy-support, the perceived autonomy-support by teachers positively predicted the degree of self-determination in both domains. This confirms our hypothesis that, at least for students from the lower educational classes, the school environment and their vocational competencies are strongly connected. This was further evidenced by the finding that teacher support was strongly positively correlated with the 2 dimensions of vocational identity, that is exploration and commitment.

In line with SDT, self-determination with respect to job search is positively associated with job-search intention and with both dimensions of vocational identity. The latter finding not only indicates that self-determination is an important determinant of the psychosocial development of adolescents in this specific domain of life, it also provides evidence for the conceptual convergence between identity development and self-determination proposed by some authors (e.g., Flum and Blustein, 2000). As in Study 1, scholastic self-determination was positively associated with students' GPA. Finally, no significant direct paths were evidenced from the parenting or teaching styles to the dependent variables when self-determination was included in the model as an intervening



**Fig. 3.** Standardized path coefficients for the model predicting relationships between autonomy support (of mother, father, and teachers), the relative autonomy index (RAI; with respect to motivation for school and job search), grade point average (GPA), vocational identity and job search activities. For sake of clarity, the effects of gender are not shown. \*\*\*  $p < 0.001$ . \*\*  $p < 0.01$ . \*  $p < 0.05$ .

variable. In line with hypotheses and the findings of Study 1, this again suggests that the self-determination serves as an intervening variable in explaining linkages between parenting/teaching styles and domain-specific outcome variables.

## GENERAL DISCUSSION

Previous research on the relationship between autonomy, parenting and adolescents' psychosocial development has yielded results that are inconsistent with theoretical expectations. Theoretically, the development of autonomy is considered as an important step toward ego maturation and higher levels of psychosocial functioning (Blos, 1979). Moreover, psychoanalytic theory suggests that the development of autonomy is maximally promoted by responsive, nurturant parenting styles. Empirically however, some measures of autonomy are negatively correlated with both indices of positive functioning, and measures of nurturant, effective parenting (Beyers and Goossens, 1999; Ryan and Lynch, 1989). According to a number of authors (e.g., Hill and Holmbeck, 1986; Ryan and Lynch, 1989), this discrepancy is due to the fact that the notions of "detachment" or "independence" undergird most conceptualizations of autonomy.

In the present study, we studied self-determination as a way to tap into the concept of adolescent auton-

omy. Self-determined behaviors are self-endorsed, and are based on self-chosen, authentic values and personal interests. Importantly, behaving according to these volitional, authentic goals and values do not imply that an individual detaches oneself from influences of the social context (Ryan and Lynch, 1989). In contrast, SDT predicts that social contexts that are responsive and autonomy supportive promote the development of this volitional or self-governing functioning. Self-determination would, in turn, lead to better adjustment and higher levels of psychosocial functioning (Deci and Ryan, 2000). The findings of both studies provide considerable support for this model.

### Antecedents of Self-Determination: Perceptions of the Interpersonal Environment

In both studies, autonomy-supportive parenting contributed significantly to the prediction of self-determination in specific life domains. In Studies 1 and 2, perceived autonomy-support by teachers added significantly to the prediction of self-determination in school in addition to the variance explained by parenting styles, and in Study 2, support by teachers also added significantly to the prediction of self-determination in the domain of job search. In sum, the findings suggest that both parents and teachers contribute to the development of self-determined

behaviors in adolescents. This is an important finding given the fact that, in the literature, there is little interplay between research in the domain of educational psychology (which tends to focus on the learning and teaching climate) and research in developmental psychology (which tends to focus on the influence of parents) (Ryan *et al.*, 1994).

Another goal of the present study consisted in comparing the relative predictive power of mothers' and fathers' parenting style separately. This approach, which is rarely applied in research on parenting, revealed some interesting interactions between the gender of the parent and the adolescent's self-determined regulation in the life domain involved. In Study 1, it was found that, in addition to mothers' parenting style and teachers' autonomy support, fathers' autonomy-support did not contribute significantly to the adolescents' self-regulation in the domains of friendships and school. Study 2 replicated the latter finding, which is also consistent with previous research (d'Ailly, 2003). Furthermore, Study 2 revealed that paternal autonomy-support was specifically associated with job-search self-regulation. Theory and research about the differential roles of mothers and fathers in rearing children suggests that fathers are primarily important in guiding their children's relationships to the outer world, whereas mothers have more influence on the inner world and the more direct social environment of their adolescents (e.g., Grolnick *et al.*, 1996; Verschueren and Marcoen, 1999; Youniss and Smollar, 1985). The development of peer competence and the regulation of school activities can indeed be considered as part of the primary concerns and the direct social environment of the adolescent, that is, domains in which mothers are thought to be strongly influential. Looking for a job, by contrast, involves taking in a position in the broader society, and hence, can be considered as a life domain in which fathers may be more important. In sum, our findings provide an empirical illustration of the specialized roles that mothers and fathers may play in their children's development in specific life-domains and, as such, further testify to the importance of studying mothers' and fathers' rearing style separately.

### **Consequences of Self-Determination: Psychosocial Functioning**

A large number of studies have provided evidence for the claim of self-determination theory that higher levels of self-determination are associated with better adjustment and more positive functioning (see Deci and Ryan, 2000 for a review). It has been shown for instance that self-determination in scholastic activities is associated with

feelings of academic competence, better learning strategies, and with higher school grades (Black and Deci, 2000; Fortier *et al.*, 1995; Grolnick *et al.*, 1991; Yamauchi *et al.*, 1999). These findings are clearly confirmed in the present studies. It appears that more self-determined motivation to engage in scholastic activities is associated with more perceived competence, as well as with higher actual grades.

To the best of our knowledge, friendship and looking for a future job, 2 life domains that are equally important in the period of adolescence, have not been investigated from a self-determination perspective. Our findings provide clear preliminary evidence that a higher degree of self-determination in these domains is associated with favorable outcomes. Self-determination in friendship is positively associated with feelings of social competence, and self-determination in the job-seeking domain is associated with (a) the intention to actually engage in job-seeking behaviors, and (b) adolescents' vocational identity development, the latter findings extending earlier findings by Vansteenkiste *et al.* (2004a). Moreover, the results of our path analyses suggest that the relationships between self-determination and outcome variables are highly specific, confirming Vallerand's (1997) hypothesis that self-determination in 1 domain of life is specifically related to the individual's functioning in that domain.

It should be noted that these consistent and clear-cut findings are in contrast with past research findings linking dimensions of separation-individuation to social competence and vocational identity, respectively. Within the domain of peer competence, for instance, separation-individuation theory has assumed that the relation between the social worlds of parents and peers is a conflictual one (Steinberg and Silverberg, 1986): either an adolescent maintains a close bond with parents *or* he or she sheds off the parental ties and seeks refuge in the company of peers. More recent theoretical accounts, however, stress that parents and peers are interconnected rather than conflictual socialization contexts (Ladd and Pettit, 2002). Within the latter view, parents who are responsive, warm, and empathic toward the child's needs and goals would contribute to, rather than hinder, the child's peer competence. Consistent with this view, the construct of self-determination does not exclude the possibility of warm and close parent-child relationships. Instead, it is assumed that responsive and autonomy-supportive parenting promotes self-determination (Ryan and Solky, 1996), which, in turn, results in more social competence. The results of Study 1 clearly support the latter view.

Similarly, the results of Study 2 may shed a new light on past findings about the role of separation-individuation in the domain of job-searching and vocational self-concept. Although it is hypothesized that the

process of separation-individuation is crucial for a successful negotiation of the task of career development, research has largely failed to find consistent relations between measures of separation-individuation and vocational self-concept (Tokar *et al.*, 2003) or career indecision (Santos and Coimbra, 2000). On the basis of SDT it was anticipated in the present study that the extent to which adolescents engage in their search for a job with a sense of volition is more fundamental to their vocational identity than the extent to which they separated themselves from their parents. In line with this idea, Study 2 clearly demonstrated that there are strong linkages between adolescents' self-determined motives for job searching and both the extent to which they thoroughly explore their vocational options and the strength of their adherence to and certainty with respect to the choices they make.

### Self-Determination as an Intervening Variable

The present studies examined both the hypothesized antecedents and the hypothesized consequences of self-determination. This allowed us to investigate whether self-determination acts as an intervening variable in the relationship between perceptions of the interpersonal environment and psychosocial outcomes. This research question is an important one because several scholars have recently called for an exploration of the mechanisms that may explain linkages between parental autonomy support (vs. psychological control) and adjustment (Grolnick, 2002; Barber and Harmon, 2002). Within SDT, self-determination is explicitly conceptualized as a motivational resource that accounts for effects of the interpersonal environment on domain-specific outcomes (Grolnick *et al.*, 1991). Confirming this idea, clear evidence for the intervening role of self-determination was obtained. In each of the 2 studies presented, a model without direct paths from the parenting/teaching styles to the outcome variables was found to provide the best fit to the data. Moreover, many significant indirect effects were found from parenting/teaching styles to the outcome variables, through the effect of self-determination. These results suggest that the interpersonal environment as perceived by adolescents impacts on their self-determined functioning rather than directly on domain-specific outcomes.

### Limitations and Directions for Future Research

Although the present study extends earlier research in many ways, it has some shortcomings. First, all rela-

tionships were investigated in a cross-sectional design. Longitudinal research would not only allow to study the long-term effects of self-determination, but also to shed more light on the direction of effects found in the present study. From the present studies, it cannot be concluded whether parenting/teaching styles influence the level of self-determination in adolescents, or whether more self-determined adolescents give their parents more opportunities to be nurturant and effective in their parenting style. A second shortcoming of these studies is that all measures included were self-reports. This implies that some of our findings might be influenced by shared method variance. Therefore, it would be useful for future research to include teachers' and observer reports of both the interpersonal context and the psychosocial functioning of adolescents. Finally, for the purpose of this study, the assessment of parenting and teaching styles was limited to the dimension of autonomy support (vs. psychological control). It may be interesting for future research to explore the relative contribution of 2 other crucial dimensions of the interpersonal environment, namely responsiveness (warmth) and regulation (structure) (Grolnick *et al.*, 1997) to the prediction of self-determined functioning. In particular, future research could elaborate both theoretically and empirically on the concept of "teacher support." Most studies on the teaching environment tend to assess either a very global level of support (e.g., Torsheim and Wold, 2001) or a specific aspect of teaching styles. It might be interesting to apply the different dimensions proposed in the parenting literature to the teaching environment. Wentzel (2002) has undertaken preliminary steps in this direction.

### Conclusion

The present research demonstrates that the extent to which adolescents regulate their behavior on the basis of volitional or self-determined motives helps clarify the impact of autonomy-supportive parenting and teaching for adolescents' optimal development in 3 critical life domains, that is, schooling, social competence, and job search. We hope that this conceptualization of autonomy might stimulate other research to further understand the impact of parenting and teaching styles for adolescents' functioning.

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