

Adolescents' responses to parental regulation: The role of communication style and self-determination

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ABSTRACT

This study examined whether adolescents' perceptions and reactions to parental regulation were predicted by parents' communication style and by adolescents' self-determination. Adolescents ($N = 294$; $M_{\text{age}} = 14.3$) reported their self-determination, and then read a hypothetical scenario of parental regulation of their academic behavior, whereby parents' communication style was either autonomy-supportive or psychologically controlling. Following the scenario, adolescents reported their perceptions of the situation (i.e., autonomy satisfaction, autonomy frustration, legitimacy) and their anticipated responses (i.e., oppositional defiance, negotiation). In response to psychological control, adolescents reported less autonomy satisfaction, more autonomy frustration, less legitimacy, and more defiance. Further, adolescents higher in self-determination reported less autonomy frustration, more legitimacy, less defiance, and more negotiation. Finally, self-determination moderated two effects of communication style: adolescents low on self-determination reported less legitimacy and more defiance in response to the psychologically controlling (vs. autonomy-supportive) situation. For adolescents high on self-determination, these between-vignette differences were not significant.

Introduction

It is important for children and adolescents that parents provide structure at home, which involves the provision of clear guidelines, expectations, and rules for the child's behavior, which are then followed up consistently (e.g., Fiese & Winter, 2010; Grolnick & Ryan, 1989; Grusec, Danyliuk, Kil, & O'Neill, 2017; Skinner, Johnson, & Snyder, 2005). However, regulating children's behavior is not always easy for parents. In fact, parental attempts to regulate their behavior can sometimes trigger parent-child conflict, especially when it is perceived as illegitimate or inappropriate (Brehm, 1966; Smetana, 2017). During adolescence, this may be particularly true for everyday issues, such as schoolwork, as adolescents increasingly question parents' rules and redefine the boundaries of what they conceive as falling under their personal, rather than their parents', legitimate authority (Smetana, 2011, 2018; Zimmer-Gembeck, Van Petegem, & Collins, 2018). Previous research based upon self-determination theory (SDT; Ryan & Deci, 2000, 2017) has indicated that adolescents' responses to their parents' regulatory behaviors are partly determined by the parents' communication style, with an autonomy-supportive style being related

to more constructive responses than a controlling style (Van Petegem, Soenens, Vansteenkiste, & Beyers, 2015; Van Petegem et al., 2015; Vansteenkiste, Soenens, Van Petegem, & Duriez, 2014).

Yet, adolescents' personal characteristics also may play an important role for understanding how adolescents respond to parental regulation. On the basis of transactional and dynamic family socialization models, which underscore that children actively shape their own socialization (e.g., Kuczynski, 2003; Smetana, 2011), adolescents' own beliefs and characteristics can also affect how adolescents perceive and react to parental regulation. However, few studies have explicitly examined how adolescents' personal characteristics are related to adolescents' responses to situations of parental regulation. Notably, even fewer studies have examined the effect of adolescents' personal characteristics in conjunction with the effect of parents' communication style, thereby considering the unique and interactive contribution of both adolescents' personal characteristics and parents' communication style (for an exception, see Soenens et al., 2018, which focused on the role of adolescents' cultural orientation). This is unfortunate, as scholars call for a more dynamic conception of the socialization process and its outcomes (e.g., Kuczynski & Parkin, 2007), in which both parents and

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adolescents are seen as active agents who construct meanings through their interpretations of messages communicated during social interactions (Kuczynski, Parkin, & Pitman, 2014; Soenens, Vansteenkiste, & Beyers, 2019).

Making use of a vignette-based methodology (Aguinis & Bradley, 2014), the present study aimed to examine the combined and interactive role of parents' communication style and adolescents' personal level of self-determination in the prediction of adolescents' ways of responding to a situation of parental regulation. We focused on parental regulation of academic issues, as school represents an important context of adolescents' lives (e.g., Eccles, 2004) and as academic achievement and competence are related to successful psychosocial adaptation during adolescence and beyond (e.g., Bryant, Schulenberg, O'Malley, Bachman, & Johnston, 2003; Fröjd et al., 2008; Westerlund, Gustafsson, Theorell, Janlert, & Hammarström, 2013). Adolescents read one of two possible vignettes that described a situation in which a parent responds to a hypothetical situation of failure at school. The two vignettes differed in the presentation of the parents' communication style as either autonomy-supportive or psychologically controlling. After reading the vignette, adolescents reported their appraisals (in terms of their experienced autonomy and perceived legitimacy) and their anticipated responses to the depicted situation (as indexed by their oppositional defiance and negotiation). We also investigated adolescents' self-determination, given that, according to SDT, the general level of self-determination (i.e., the tendency to regulate one's behavior upon one's personally endorsed values, preferences, and interests) would influence the way in which people process, interpret, and respond to specific situations (Hodgins & Knee, 2002; Skinner & Edge, 2002; Weinstein & Ryan, 2011). In this study, we therefore aimed to investigate whether adolescents' general level of self-determination helps to explain variability in adolescents' responses to a situation of autonomy-supportive versus psychologically controlling parental regulation of their academic behavior.

Adolescents' responses to parents' regulation

Parents' autonomy-supportive versus psychologically controlling communication style

Developmental scholars increasingly agree that the effectiveness of parental regulation depends, in part, upon parents' communication style, which pertains to the way parents convey and follow up upon rules and regulations (e.g., Grolnick & Pomerantz, 2009; Grusec et al., 2017; Joussemet, Landry, & Koestner, 2008; Soenens, Deci, & Vansteenkiste, 2017). An autonomy-supportive communication style creates room for choice and initiative and enables the child to act upon personally endorsed values and preferences (Grolnick, Deci, & Ryan, 1997; Soenens et al., 2007). In the context of parental regulation, parents may be autonomy-supportive in several ways. For instance, they could make use of inviting language when introducing or following up upon a rule or request, they could be empathic and solicit the child's perspective with respect to the situation, and they could offer an informational and reasonable explanation for a rule or request (Deci, Eghrari, Patrick, & Leone, 1994; Koestner, Ryan, Bernieri, & Holt, 1984). In contrast, a controlling communication style involves parents' use of pressure and coercion with the implicit or explicit goal of making the child think, act, or feel in parent-imposed ways (Grolnick & Pomerantz, 2009; Joussemet et al., 2008; Mageau et al., 2015). Psychological control involves a more specific type of parental manipulation that intrudes upon the child's psychological world, with strategies such as the induction of feelings of guilt or shame and the communication of conditional approval (e.g., Barber, 1996; Soenens & Vansteenkiste, 2010). Herein, we aimed to examine whether parents' autonomy-supportive versus psychologically controlling communication style related differentially to adolescents' perceptions of a situation of parental regulation and to their reactions to this situation.

We focused on parental regulation of academic issues (and, in particular, in response to academic failure) because parents are an important resource for their children's academic functioning. Parents can indeed facilitate or undermine children's motivation and academic achievement in many ways (e.g., Fan & Chen, 2001; Grolnick & Slowiaczek, 1994; Hill & Taylor, 2004). Parents' degree of involvement tends to decrease throughout adolescence (e.g., Eccles & Harold, 1996; Pomerantz, Wang, & Ng, 2005), and adolescents, as compared to elementary-school children, may experience some types of involvement differently. For instance, Pomerantz and Eaton (2001) found that, as children grow older, parental assistance with schoolwork is increasingly viewed as indicative of children's incompetence. Nevertheless, as children and adolescents progress through school, parents continue to play a significant role, for instance through their quality of involvement (e.g., in terms of autonomy support vs. control; Hill & Taylor, 2004; Pomerantz, Moorman, & Litwack, 2007). Indeed, there is a considerable amount of research, using a diversity of methods, showing that parents' autonomy-supportive (vs. controlling) involvement generally enhances (vs. undermines) children's performance, effects that persist into the adolescent years (for a review, see Pomerantz, Grolnick, & Price, 2005). Herein, the aim was to examine whether parents' (autonomy-supportive vs. psychologically controlling) responses to a situation of academic failure specifically related to adolescents' perceptions and reactions to such a situation, and whether such associations differed as a function of adolescent self-determination.

Autonomy satisfaction, autonomy frustration, and legitimacy

Parents' communication style has been described as having important implications for adolescents' perceptions of parental regulation (e.g., Koestner et al., 1984; Van Petegem, Vansteenkiste, et al. (2017)) and for their experience of autonomy in particular (Grolnick & Ryan, 1989; Soenens et al., 2007). In SDT, autonomy is described as a universal human need and involves experiencing a sense of personal choice, volition, and psychological freedom in one's actions (Deci & Ryan, 2000; Ryan & Deci, 2017; Soenens, Vansteenkiste, & Van Petegem, 2015). When parents use a psychologically controlling, rather than an autonomy-supportive, communication style, adolescents are more likely to perceive the situation as autonomy-frustrating (rather than autonomy-satisfying), as they would feel pressured and coerced to act in certain ways. This may be especially the case throughout the adolescent years, when issues of autonomy become particularly salient (e.g., Smetana, 2018; Van Petegem et al., 2013; Zimmer-Gembeck et al., 2018). In line with this, previous studies among middle and late adolescents found that parents' psychologically controlling, relative to autonomy-supportive, communication style related to more autonomy need frustration in the context of a parental request to study more for school (e.g., Chen, Soenens, Vansteenkiste, Van Petegem, & Beyers, 2016; Van Petegem, Soenens, et al., 2015) or to consume less alcohol (Baudat, Zimmermann, Antonietti, & Van Petegem, 2017).

Moreover, we also examined associations with adolescents' beliefs about parental authority, as adolescents may differ substantially in the degree to which they perceive their parents as having the legitimate authority to regulate their behavior (e.g., Kuhn & Laird, 2011). Previous research documented decreases from middle to late adolescence in adolescents' beliefs of parents having the legitimate authority to regulate schoolwork issues (Smetana, Metzger, Gettman, & Campione-Barr, 2006). However, adolescents with weaker legitimacy beliefs typically exhibit more problem behavior, and are more often involved with antisocial peers (e.g., Cumsille, Darling, Flaherty, & Martínez, 2009; Trinkner, Cohn, Rebellon, & Van Gundy, 2012). Herein, we expected that a psychologically controlling communication style would undermine adolescents' legitimacy beliefs. In line with this prediction, in a study making use of hypothetical scenarios of rule-breaking situations, Mageau et al. (2018) found that autonomy-supportive strategies are perceived as more acceptable than psychologically controlling

strategies. Similarly, in a study on parents' prohibitions in the domains of friendships and morality, Van Petegem et al. (2017) found that parental prohibitions are experienced as more legitimate when parents used an autonomy-supportive communication style. Taken together, theory and research indicate that parents' communication style may have implications for adolescents' appraisal of a situation of parental regulation of their academic behavior.

Oppositional defiance and negotiation

Parents' communication style is also expected to have implications for adolescents' behavioral reactions to parental regulation. Herein, we focused on oppositional defiance and negotiation as two potential responses to parental regulation. These two responses reflect adolescents' resistance to a parental request, as both strategies involve expressions of agency in the parent-adolescent relationship (Burke & Kuczynski, 2018; Parkin & Kuczynski, 2012). However, they seem to be different developmental trajectories and may have different implications for adolescent functioning.

Oppositional defiance is assumed to be a maladaptive and reactive way of resisting parental authority, as it involves a blunt rejection of the parental authority and an inclination to do exactly the opposite of what is expected (Deci & Ryan, 1985; Koestner & Losier, 1996; Vansteenkiste et al., 2014). Previous longitudinal research indicates that adolescents' oppositional defiance generally declines throughout the adolescent years (Van Petegem, Vansteenkiste, Soenens, Beyers, & Aelterman, 2015). Moreover, higher levels of oppositional defiance in middle and late adolescence are associated with greater maladjustment, including more internalizing and externalizing problems (e.g., Aelterman, Vansteenkiste, & Haerens, 2019) and with a sense of being alienated from one's personally valued goals and interests (Van Petegem, Vansteenkiste, et al., 2015). Further, previous studies among middle adolescents have found that a controlling, relative to an autonomy-supportive, communication style by parents is associated with more adolescent oppositional defiance, both cross-sectionally (e.g., Baudat et al., 2017) and longitudinally (Vansteenkiste et al., 2014). Parental regulation as such is not consistently predictive of adolescent oppositional defiance; this association is found only when parents attempt to regulate adolescents' behavior in a controlling way (Soenens, Vansteenkiste, & Niemiec, 2009; Van Petegem, Soenens, et al., 2015).

Negotiation, in contrast to oppositional defiance, is a more constructive formulation of disagreement with a parental regulation, where one tries to find a compromise between the parents' goals and one's personal goals and preferences through dialogue, and where consensus is more likely to occur (Parkin & Kuczynski, 2012; Skinner & Edge, 2002). As negotiation involves an attempt to engage in a bidirectional process of give-and-take and a willingness to take parental views into consideration, negotiation is considered a more adaptive strategy during childhood, as well as during adolescence (Burke & Kuczynski, 2018; Parkin & Kuczynski, 2012). In previous research among middle and late adolescents, negotiation tended to be unrelated to parents' communication style (e.g., Van Petegem et al., 2017). Instead, negotiation may be related more strongly to more general personal and social resources, such as the quality of the general family climate and adolescents' individual characteristics (Skinner & Edge, 2002; Soenens et al., 2015). Consistent with transactional and interactive models of context \times person interplay in development (e.g., Kiff, Lengua, & Zalewski, 2011), in the present study we examined whether adolescents' general level of self-determination, as a personal resource, would moderate the relation between parental communication style and adolescents' responses.

Adolescents' self-determination as a personal resource

According to SDT, individuals differ in the degree to which they generally experience self-determination in their life, and this level of

self-determination would affect how they approach both intrapersonal and interpersonal experiences (Deci & Ryan, 1985; Hodgins & Knee, 2002; Weinstein & Ryan, 2011). Self-determination refers to the tendency to regulate behavior in accordance with one's personal values, preferences, and interests, which enables people to experience a sense of personal choice and volition in their behavior and in their life in general. People low in self-determination, by contrast, feel alienated from their personal values and preferences, and they tend to regulate their behavior according to pressuring external contingencies and rigid internal demands. As a consequence, they often feel like they "have to" (rather than "choose to") act in a certain way (Deci & Ryan, 1985; Sheldon, Ryan, & Reis, 1996). The development of self-determination would be important throughout the lifespan, and inter-individual differences in self-determination would be the result of a dialectic interplay between the active organism and the dynamic environment (e.g., the family context; Deci & Ryan, 2000; Grolnick, Gurland, Jacob, & Decourcey, 2002; Soenens et al., 2017).

Self-determination plays an important role in the way individuals process, interpret, and respond to different types of situations (Hodgins & Knee, 2002; Skinner & Edge, 2002; Weinstein & Ryan, 2011). In general, self-determination would promote non-defensive and less biased processing of information and a positive approach to challenging or stressful situations. For instance, a higher level of self-determination has been associated with more open (and effective) processing of an emotionally charged situation (Weinstein & Hodgins, 2009), with a more accepting stance towards positive and negative autobiographical memories (van der Kaap-Deeder, Vansteenkiste, Van Petegem, Raes, & Soenens, 2016), and with a more open and information-oriented style when exploring identity options (Soenens, Berzonsky, Vansteenkiste, Beyers, & Goossens, 2005). Further, in studies among adults (Hodgins, Yacko, & Gottlieb, 2006; Koestner & Zuckerman, 1994) and children (Boggiano & Barrett, 1985), those higher in self-determination showed more persistence and better performance after failure, which suggests that self-determination promotes the appraisal of stressful events as challenging, rather than as threatening (Skinner & Edge, 2002; Weinstein & Ryan, 2011). Thus, these findings indicate that general self-determination might serve as a resource of resilience, promoting more positive and constructive interpretations of a situation.

For this reason, we expected that adolescents higher in self-determination would respond to a situation of parental regulation more constructively, that is, responding more often with negotiation and less often with oppositional defiance (Hodgins & Knee, 2002; Skinner & Wellborn, 1994). Indirectly supporting this hypothesis, previous research among adults found that a higher level of self-determination was associated with a lower likelihood of using defensive coping strategies (particularly denial; Knee & Zuckerman, 1998). Further, in a study on conflict within romantic relationships, self-determination was associated with more constructive (e.g., exploring the other's point of view) and less defensive strategies (e.g., wanting to walk away) (Knee, Lonsbary, Canevello, & Patrick, 2005). Hence, we generally expected that self-determination would be associated with more negotiation and less oppositional defiance in response to parental regulation of any kind (i.e., either autonomy-supportive or psychologically controlling).

Moreover, in line with a protective factor model of adolescent resilience (e.g., Fergus & Zimmerman, 2005; Masten, 2001), we not only expected a main effect of self-determination on adolescents' perceptions and responses to the situation, but we also expected self-determination to moderate the relation between parents' communication style and adolescent perceptions and reactions to parental regulation. According to Skinner and Wellborn (1994), people high on self-determination are less likely to experience coercion and pressure, even under controlling circumstances. Because adolescents high on self-determination are more likely to perceive external circumstances, even controlling ones, as having informational value rather than in evaluative terms, personal self-determination could buffer against the negative perceptions that are elicited by a controlling communication style (Hodgins & Knee,

2002; Skinner & Wellborn, 1994). In a similar way, Skinner and Wellborn (1994) argued that, particularly in situations that are experienced as coercive or controlling, highly self-determined people would be more likely to respond in flexible ways, such as through negotiation, rather than through aggression or oppositional defiance (see also Skinner & Edge, 2002).

The present study

Adolescents' responses to their parents' regulation have been found to be associated with parents' use of an autonomy-supportive versus psychologically controlling communication style (e.g., Baudat et al., 2017; Van Petegem, Zimmer-Gembeck, et al., 2017). However, few studies have tested whether adolescents' personal characteristics also play a role in their perceptions and reactions to situations of parental regulation of their academic behavior. The overall purpose of the present study was to examine the unique and interactive role of parents' communication style and adolescents' self-determination within a situation of parental regulation in a sample of middle adolescents (i.e., ranging in age between 13 and 16 years). Our hypotheses, presented below, were based on the premise that both parents and adolescents are active agents dynamically shaping the socialization process (Kuczynski et al., 2014; Soenens et al., 2019). In addition, our hypotheses about adolescents' self-determination were drawn from theory and evidence suggesting that self-determination can serve as a factor of resilience by promoting constructive appraisals and responses in general (implying a main effect of self-determination) and by protecting against the adverse consequences typically associated with psychologically controlling communication in particular (implying a moderating effect of self-determination in the association between parental communication style and adolescent responses) (Fergus & Zimmerman, 2005; Masten, 2001). We thereby focused on middle adolescence, as this is a key developmental period during which parental authority may be challenged through adolescent resistance and disagreement with parental authority (e.g., Parkin & Kuczynski, 2012; Smetana, 2005). Moreover, whereas the frequency of parent-adolescent conflict has been reported to peak in early adolescence, conflict intensity especially seems to peak during middle adolescence (Laursen, Coy, & Collins, 1998), which is partly due to shifts in middle adolescents' legitimacy beliefs regarding different types of activities and issues, including schoolwork (Smetana et al., 2006).

The first research goal was to examine associations of parental communication style and adolescents' self-determination with adolescents' perceptions of the situation of parental regulation, in terms of autonomy satisfaction, autonomy frustration, and perceived legitimacy. We hypothesized a main effect of both parental communication style and adolescent self-determination, such that a psychologically controlling, relative to an autonomy-supportive, communication style and lower levels of adolescent self-determination would relate to less favorable adolescent perceptions (i.e., more autonomy frustration, less autonomy satisfaction, and less perceived legitimacy). Further, we hypothesized that adolescent self-determination would moderate the relation between communication style and adolescents' perceptions. That is, we expected significant associations between parents' communication style and adolescents' responses when adolescents' self-determination is low. Associations were expected to be non-significant when adolescents were high in self-determination.

The second research goal was to examine associations of parental communication style and self-determination with adolescents' reactions to the situation of parental regulation, in terms of oppositional defiance and negotiation. We hypothesized a main effect of communication style on oppositional defiance (but not on negotiation), with a psychologically controlling communication style predicting more defiance. We also hypothesized a main effect of self-determination on oppositional defiance and negotiation, with higher levels of self-determination relating to lower levels of oppositional defiance and higher levels of

negotiation. In addition, we expected that self-determination, as a source of resilience, would moderate the associations between communication style and adolescents' reactions. Specifically, we expected that, when adolescents were low on self-determination, a psychologically controlling communication style would predict more oppositional defiance (but would be unrelated to negotiation); however, when adolescents were high on self-determination, we expected that a psychologically controlling communication style would relate to more negotiation (but would be unrelated to oppositional defiance).

Method

Participants and procedure

The sample consisted of 294 Swiss adolescents in their penultimate or last year of mandatory school (i.e., 8th and 9th grades), aged between 13 and 16 years (mean age = 14.3 years; 53% girls), recruited in one school of the French-speaking part of Switzerland. Of our participants, 54.3% followed an academic-oriented track, 29.4% followed a general-oriented track, and 16.4% followed a professional-oriented track. Most of our participants (68.4%) came from intact two-parent families, 29.3% from divorced families, 1.4% from families with one of the parents deceased, and 1% reported having another family structure. The majority of the participants endorsed Swiss nationality (72.1%) or the nationality of another European country (22.7%). The remaining participants (5.2%) had a non-European nationality.

Data collection took place at school during a regular class period. Prior to participation, students were informed about the anonymous treatment of the data and the voluntary nature of participation. Participants first completed a general questionnaire measuring their level of self-determination. Following this questionnaire, they read and responded to a vignette describing a situation of parental regulation of their academic behavior, with adolescents being randomly assigned to a psychologically controlling (49.3%) or an autonomy-supportive vignette (50.7%). Developed and validated originally by Van Petegem, Soenens, et al. (2015), the vignette first describes a hypothetical situation in which a teenager comes home from school with a bad grade. In response to this situation, a mother then reacted either in an autonomy-supportive way (e.g., by showing empathy and providing a rationale) or in a psychologically controlling way (e.g., by shaming and threatening with punishment). The vignettes are presented in Table 1.

Respondents were asked to imagine they were in the situation, and then completed questionnaires assessing their perceived autonomy satisfaction, autonomy frustration and legitimacy, and their anticipated responses in terms of oppositional defiance and negotiation. In the present study, adolescents also rated the validity of described situation (without the maternal reaction), by responding to the question whether they believed the situation was credible, and whether they believe this situation happens frequently to teenagers of their age, using a 7-point Likert-type scale, ranging from 1 = completely disagree to 7 = completely agree. Adolescents rated the situation as credible ($M = 5.07$, $SD = 1.67$) and as happening frequently ($M = 5.53$, $SD = 1.52$). Using a 7-point Likert scale, adolescents also responded to the question whether they felt that the maternal reactions was credible and realistic. They rated the reaction as credible ($M = 4.32$, $SD = 2.16$) and realistic ($M = 4.12$, $SD = 2.03$). A MANOVA indicated that these scores did not differ significantly between the autonomy-supportive and the psychologically controlling situation, $F(4, 278) = 0.91$, $p = .46$.

Measures

Participants completed French versions of questionnaires. Some of these measures (autonomy satisfaction/frustration, oppositional defiance) had been used in previous research (Baudat et al., 2017); the other questionnaires were translated through a translation and back-translation procedure. For all measures, items were averaged to form

Table 1
Hypothetical vignettes (Van Petegem, Soenens, et al., 2015).

Description of situation	Imagine the following situation: One day you come home from school with a lower grade than usual for an important course. Because initially you thought the test went fairly well, you expected good points, and this is also what you told to your mother. When you now tell your mother what grade you got, she says the following:
Psychologically controlling reaction	Your bad grade disappoints me, I really expected better from you. This poor result is really not what I hoped for so I can't be happy with it. You probably didn't work much for the test? Doing well on a test is not just about being able to do the test, but also about wanting to do well. Look, it is clear that such failures cannot be repeated in the future and that your next grade will have to be much better. From now on, you have to study when I say so and I will check up on you regularly. I'm not doing this for fun, but you leave me no other option. I don't want you to disappoint me and yourself again with a bad grade.
Autonomy-supportive reaction	Aw, I know you had a good feeling about it and you probably expected to do better. I can imagine this grade is not what you hoped for and that you're not very happy with it. Why do you think you got this result? It happens that you sometimes you do better on a test than other times. Ok, I know it didn't go well this time but you can try to learn from what went wrong. Perhaps you can try to see it as a challenge and think about other ways that you can try to learn the study material? If you need help, you can always rely on me.

total scores.

Adolescents' general self-determination

Adolescents' general level of self-determination was measured using the Self-Determination Scale (Sheldon et al., 1996), which includes 10 items that assess awareness of feelings and sense of self, choice and self-determination in actions. For each item, participants were asked to select which of two statements best described them (e.g., A. "I always feel like I choose the things I do" versus B. "I sometimes feel that it's not really me choosing the things I do"; A. "I do what I do because it interests me" versus B. "I do what I do because I have to"), using a five-point Likert-type scale ranging from 1 (only A feels true) to 5 (only B feels true). Some items were reverse-scored, before averaging all items, such that higher scores reflect greater self-determination. In the present study, Cronbach's α was 0.81.

Adolescents' perceptions of the situation

After reading the hypothetical vignette, participants reported upon their perceptions of the maternal reaction, in terms of experienced autonomy satisfaction, autonomy frustration, and perceived parental legitimacy. For autonomy satisfaction and frustration, adolescents completed two 4-item subscales of the Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2015). Items were adapted in previous research (Van Petegem, Soenens, et al., 2015) in order to assess the degree to which the participants would experience autonomy need satisfaction and frustration in the hypothesized situation (e.g., "If my mother would react like this, I would..." "... experience a sense of choice and freedom", "...feel that I am able to do what I really want", for autonomy satisfaction; "... feel forced to do things I wouldn't choose to do", "... feel obliged to do certain things", for autonomy frustration). Participants rated the items on a five-point Likert-type scale ranging from 1 (completely untrue) to 5 (completely true). Cronbach's α s were 0.81 and 0.78 for autonomy need satisfaction and frustration, respectively.

To assess adolescents' perception of legitimacy, they completed three items assessing the degree to which they believed their own mother to have the legitimate authority to make the request described in the vignette (Smetana & Asquith, 1994; Trinkner et al., 2012). Example items are "I would think it is OK for my mother to ask this", and "I would think my mother has the right to make this request". Items were rated on a five-point Likert-type scale ranging from 1 (completely untrue) to 5 (completely true). Cronbach's α was 0.78.

Adolescents' responses to the situation

To assess oppositional defiance, adolescents reported upon the degree to which they would be inclined to simply defy the maternal request described in the vignette. This was done using a 4-item

questionnaire of oppositional defiance (Vansteenkiste et al., 2014) that was adapted in previous research to the situational context (Van Petegem, Soenens, et al., 2015; e.g., "I would simply disregard the request", "I would do exactly the opposite, and study less"). To assess negotiation, respondents completed five items (e.g., "I would explain my mother how I think about it", "I would voice my opinion about this issue") that have been used previously in the context of parenting vignettes (e.g., Chen et al., 2016; Soenens et al., 2018). Respondents rated items on a five-point Likert-type scale ranging from 1 (completely untrue) to 5 (completely true). In the present study, Cronbach's α s were 0.82 and 0.86 for oppositional defiance and negotiation, respectively.

Overview of data analyses

We first tested whether missing data were missing at random, thereby using Little's (1988) MCAR test, we examined correlations between all measures, and we tested for associations with sex and age, using a MANCOVA which included sex as a fixed factor and age as a covariate, and with autonomy satisfaction and frustration, legitimacy, defiance and negotiation as dependent variables. Then, we addressed the first research goal (i.e., associations of parental communication style, adolescent self-determination and their interaction in relation to adolescents' perceptions of the situation of parental regulation) by performing three regression analyses, one for each of the dependent variables of interest (i.e., autonomy satisfaction, autonomy frustration, and legitimacy). In each regression, we entered communication style and self-determination as independent variables (where communication style was dummy coded, 0 = autonomy-supportive communication style, 1 = psychologically controlling communication style, and self-determination was centered), as well as the interaction term between the dummy-coded term of communication style and the centered term of self-determination (cf. West, Aiken, & Krull, 1996). When the interaction was significant, we performed a simple slope test to examine whether there was a significant association between communication style and the dependent variable at a high level (+1 SD) and a low level (-1 SD) of self-determination (Cohen, Cohen, West, & Aiken, 2003; Dawson, 2014). Given that communication style was a dichotomous variable, this procedure can also be described as a test of whether the level of the dependent variable (e.g., autonomy satisfaction) differed between communication style conditions (autonomy-supportive vs. psychologically controlling) at a high level (+1 SD) and at a low level (-1 SD) of self-determination. Finally, we addressed the second research goal (i.e., associations of parental communication style, adolescent self-determination and their interaction in relation adolescents' reactions the situation of parental regulation) by performing two additional regression analyses (one with negotiation and one with oppositional defiance as the dependent variable), using the same data-analytical procedure. Throughout our main analyses, we controlled for sex and age. Analyses were performed using R Version 3.3.2 (R Development Core Team, 2016).

Table 2
Means, standard deviations and correlations among the study variables.

	N	Mean (AS)	SD (AS)	Mean (PC)	SD (PC)	Range	1	2	3	4	5
1. Self-determination	290	3.68	0.68	3.57	0.74	1–5					
2. Autonomy need satisfaction	292	3.03	0.88	2.32	0.98	1–5	0.08				
3. Autonomy need frustration	292	2.87	0.98	3.40	0.97	1–5	−0.16**	−0.27***			
4. Perceived legitimacy	292	3.69	0.82	3.16	1.04	1–5	0.13*	0.20***	−0.09		
5. Oppositional defiance	292	1.81	0.86	2.07	0.97	1–5	−0.21***	0.02	0.24***	−0.44***	
6. Negotiation	292	3.64	0.96	3.69	1.06	1–5	0.32***	0.05	0.03	0.22***	−0.15**

Note. AS = autonomy-supportive communication style situation, PC = psychologically controlling communication style situation.

- * $p < .05$.
- ** $p < .01$.
- *** $p < .001$.

Results

Preliminary analyses

There was 0.6% missing data. Little's (1988) MCAR-test yielded a non-significant result, indicating that data were likely to be missing completely at random, $\chi^2(46) = 51.98, p = .25$. We therefore used hot deck imputation to replace these missing data (Andridge & Little, 2010). Means, standard deviations, and bivariate correlations are presented in Table 2. In general, higher levels of self-determination related to more positive perceptions of the situation of parental regulation (i.e., more perceived legitimacy and less autonomy frustration) and more constructive responses (i.e., more negotiation, less oppositional defiance). Adolescents' perceptions were significantly related to their anticipated responses, with autonomy frustration relating to more oppositional defiance and with perceived legitimacy relating to less oppositional defiance and more negotiation. The MANCOVA, which tested for age and sex differences yielded no multivariate effect for sex, $F(5, 281) = 1.58, p = .17$, or for age, $F(5, 281) = 0.81, p = .54$. Nevertheless, we controlled for sex and age in subsequent analyses.

Regression analyses predicting adolescents' responses

Research goal 1: associations with adolescents' perceptions of autonomy and legitimacy

We first examined the associations of parental communication style (autonomy-supportive vs. psychologically controlling) and adolescent self-determination with adolescents' perceptions of the situation of parental regulation, thereby also testing for the interaction between communication style and self-determination. Results of the regression analyses are presented in Table 3 (left half), and they supported our hypotheses regarding the effects of parental autonomy-supportive

versus psychologically controlling communication style on adolescents' perceptions. Adolescents who read the psychologically controlling situation reported less autonomy satisfaction, more autonomy frustration and less legitimacy, as compared to those who read the autonomy-supportive situation. Also, as predicted, adolescents' self-determination was associated with less autonomy frustration and more perceived legitimacy, but, in contrast to our hypothesis, self-determination was not significantly associated with autonomy satisfaction.

The communication style \times self-determination interaction terms were not statistically significant in the models predicting autonomy satisfaction and frustration. However, the interaction term was significant in the model of perceived legitimacy. Subsequent simple slope analyses indicated that communication style related significantly to perceived legitimacy among adolescents who reported low levels of self-determination. Specifically, when self-determination was low, adolescents in the psychologically controlling communication style condition reported a lower level of perceived legitimacy compared to adolescents in the autonomy-supportive condition, $B = 0.88, SE = 0.15, t(288) = 5.76, p < .001$. When self-determination was high, there was no significant difference between parent communication style conditions for legitimacy, $B = 0.16, SE = 0.15, t(288) = 1.15, p = .30$ (see Fig. 1).

In sum, when parents use a psychologically controlling communication style, all adolescents, regardless of their level of self-determination, are more likely to perceive the situation of parental regulation as autonomy-constraining, as indexed by lower autonomy need satisfaction and higher autonomy frustration. In terms of legitimacy, the findings are more nuanced suggesting that only adolescents low in self-determination perceive a psychologically controlling, relative to an autonomy-supportive, style as illegitimate. Said differently, self-determination seemed to buffer the negative effects of a psychologically controlling communication style on perceived legitimacy.

Table 3

Results of regression analyses examining adolescents' responses to parental regulation as a function of parents' communication style, adolescents' self-determination, and the Interaction between communication style and self-determination.

	Perceptions, B (SE)			Reactions, B (SE)	
	Autonomy satisfaction	Autonomy frustration	Perceived legitimacy	Oppositional defiance	Negotiation
Sex ^a	−0.14 (0.11)	−0.18 (0.12)	−0.04 (0.11)	−0.26 (0.11)*	0.10 (0.12)
Age	−0.08 (0.07)	0.00 (0.07)	−0.07 (0.07)	0.05 (0.06)	0.04 (0.07)
Communication style ^b	−0.72 (0.11)***	0.50 (0.11)***	−0.52 (0.11)***	0.21 (0.10)*	0.10 (0.11)
Self-determination	−0.01 (0.11)	−0.29 (0.11)**	0.37 (0.10)***	−0.47 (0.10)***	0.57 (0.11)***
Communication style \times self-determination	−0.11 (0.15)	−0.16	0.51 (0.15)***	−0.40 (0.15)**	0.27 (0.16)
R ²	0.14***	0.10***	0.12**	0.10***	0.11***

^a 0 = boy, 1 = girl,

^b 0 = autonomy-supportive communication style, 1 = psychologically controlling communication style. Unstandardized parameter estimates are shown in the table, standard errors are reported between brackets.

- * $p < .05$,
- ** $p < .01$,
- *** $p < .001$.

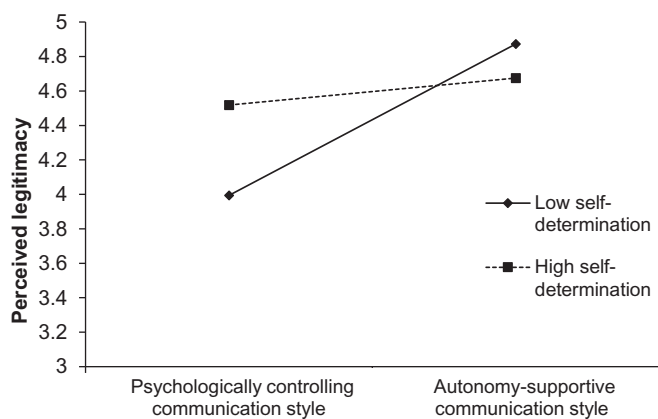


Fig. 1. Interaction between communication style and self-determination in the prediction of perceived legitimacy. Scores on perceived legitimacy range from 1 to 5. The slope of communication style was statistically significant at low (-1 SD) levels of self-determination ($B = 0.88$, $SE = 0.15$, $p < .001$), but not at high ($+1$ SD) levels of self-determination ($B = 0.16$, $SE = 0.15$, $p = .30$).

Research goal 2: associations with adolescents' anticipated responses of oppositional defiance and negotiation

We next examined the associations of communication style and adolescent self-determination with adolescents' reactions to the situation of parental regulation, again also testing for the interaction between communication style and self-determination. Results of the two regression analyses are also presented in Table 3 (right half). With regards to oppositional defiance, adolescents having read the psychologically controlling situation reported higher levels of expected oppositional defiance compared to those having read the autonomy-supportive situation. Further, adolescents who reported more self-determination reported they would respond with less oppositional defiance. The communication style \times self-determination interaction was statistically significant as well. Specifically, simple slope analyses indicated that the exposure to a psychologically controlling (relative to an autonomy-supportive) communication style condition, related to higher expected oppositional defiance among adolescents low in self-determination, $B = -0.49$, $SE = 0.15$, $t(288) = -3.35$, $p < .001$, but not among those high in self-determination, $B = 0.08$, $SE = 0.15$, $t(288) = 0.51$, $p = .61$ (see also Fig. 2).

In the model predicting adolescents' negotiation, there was no statistically significant main effect of communication style. However, the

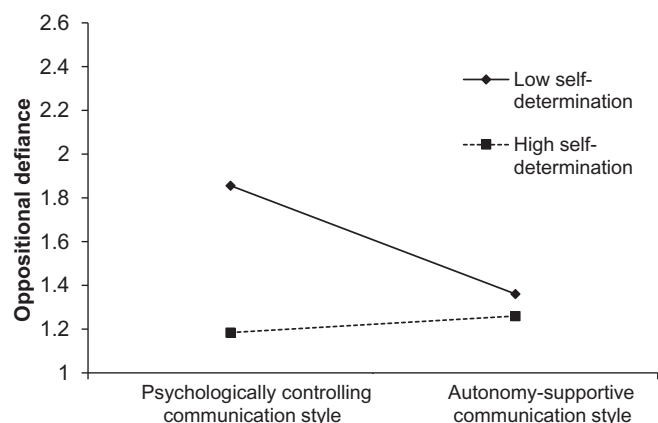


Fig. 2. Interaction between communication style and self-determination in the prediction of oppositional defiance. Scores on oppositional defiance may range from 1 to 5. The slope of communication style was statistically significant at low (-1 SD) levels of self-determination ($B = -0.49$, $SE = 0.15$, $p < .001$), but not at high ($+1$ SD) levels of self-determination ($B = 0.08$, $SE = 0.15$, $p = .61$).

relation between self-determination and negotiation was positive and statistically significant, that is, adolescents reporting more self-determination reported they would respond with more negotiation. The interaction between communication style and self-determination was not significant.

In sum, these results indicate that a psychologically controlling communication style predicts more anticipated oppositional defiance (but not negotiation) relative to an autonomy-supportive communication style. In addition, adolescents higher in self-determination were less likely to respond through oppositional defiance and more likely to respond through negotiation. Finally, self-determination moderated the association between parental communication style and adolescent oppositional defiance such that a psychologically controlling communication style predicted more oppositional defiance only among adolescents low in self-determination.

Discussion

Conveying rules and regulations may be challenging for parents, as adolescents may experience parental regulation as illegitimate and intrusive and may react with opposition and defiance (Smetana, 2017). In the present investigation, our purpose was to explain adolescents' perceptions and reactions to a situation of parental regulation of their academic behavior, by considering the unique and conjoint contributions of parents' communication style and adolescents' own level of self-determination. We thereby made use of a vignette methodology, which allowed us to separate adolescents' exposure to standardized descriptions of parental communication styles from their perception of these parental interventions. We found that adolescents had more negative perceptions of the situation and were more likely to defy the parents' regulation, when it was conveyed with a psychologically controlling style, as compared to when it was conveyed with an autonomy supportive style. Further, adolescents' self-determination directly contributed to their responses to the situation of parental regulation. That is, adolescents reporting more self-determination anticipated they would respond with more negotiation and less oppositional defiance. Moreover, self-determination moderated some of the negative effects of a psychologically controlling communication style. The findings are discussed in greater detail below.

Adolescents' perceptions: autonomy experiences and legitimacy

Our first research goal was to examine associations of parental communication style and adolescents' personal self-determination with adolescents' perceptions of the situation of regulation, in terms of autonomy satisfaction and frustration, and perceived legitimacy. In line with previous research (e.g., Baudat et al., 2017; Chen et al., 2016; see also Koestner et al., 1984), when parents attempt to regulate adolescents' behavior using a psychologically controlling communication style, which included threats of love withdrawal and guilt induction, adolescents not only tend to feel more frustrated in their need for autonomy, they also are more inclined to believe that their parents have less legitimate authority to regulate their behavior. In contrast, when parents made use of an autonomy-supportive communication style, which included attempting to take the child's perspective and offering an explanation, adolescents are more likely to feel satisfied in their need for autonomy and to perceive the parents' regulation as a legitimate request, corroborating previous research (e.g., Van Petegem, Vansteenkiste, et al., 2017). Given that adolescents' feelings of autonomy and their legitimacy perceptions are important levers that facilitate the internalization of rules and values of the parents and of the society at large, these findings illustrate the importance of autonomy-supportive communication for adolescent positive behavior and emotional health (e.g., Grolnick et al., 1997; Kuhn & Laird, 2011; Tyler, 2006).

Adolescent self-determination, which refers to individual

differences in adolescents' feelings of volition and personal choice in life (Deci & Ryan, 1985; Sheldon et al., 1996), also played an important role. Self-determination was found to have only small and mostly nonsignificant direct associations with perceptions of the situation, with only one significant negative association between self-determination and autonomy frustration. However, interaction analyses indicated that adolescents' self-determination moderated the relation between communication style and adolescents' legitimacy perceptions. That is, only among adolescents low in self-determination, a psychologically controlling communication style yielded lower legitimacy perceptions relative to an autonomy-supportive communication style; thus, adolescents with low self-determination especially perceived their parents' regulation of their behavior as illegitimate when it is conveyed in a psychologically controlling way. By contrast, legitimacy perceptions did not differ by parents' communication style among adolescents high in self-determination.

The observation that adolescents high in self-determination were more likely to perceive their parents' request for additional effort as legitimate, even when communicated in a psychologically controlling way, is interesting to consider in conjunction with the main effects of a psychologically controlling style on experiences of autonomy as such. Although adolescents high in self-determination do experience a psychologically controlling communication style as autonomy-constraining, they also hold the belief that parents do have the right to intervene when they obtain poor grades. This suggests an open and accepting way of processing information, even when the situation is experienced as emotionally challenging or threatening (e.g., Weinstein & Hodgins, 2009; Weinstein & Ryan, 2011). That is, adolescents high in self-determination seem capable of understanding the parents' attempt to intervene, presumably because they can better take their parents' perspective, even under circumstances that are experienced as autonomy-thwarting (cf. Skinner & Edge, 2002).

Adolescents' anticipated reactions: oppositional defiance and negotiation

The second research goal was to examine associations of parent communication style and adolescents' personal self-determination with adolescents' reactions to the situation of parental regulation, in terms of oppositional defiance and negotiation. In line with previous studies (e.g., Van Petegem, Soenens, et al., 2015; Vansteenkiste et al., 2014), the results indicated that adolescents reported responding with more oppositional defiance when confronted with a psychologically controlling (relative to an autonomy-supportive) communication style. Yet, similar to the interaction finding obtained for legitimacy, only adolescents low in self-determination reacted to a psychologically controlling communication style with elevated oppositional defiance (when compared to adolescents that read the autonomy-supportive situation). For adolescents high in self-determination, oppositional defiance did not differ between the autonomy-supportive vs. psychologically controlling communication style situation. Presumably this is because adolescents with high self-determination tended to perceive the request as more legitimate (cf. Tyler, 2006). Supporting this interpretation, legitimacy was related negatively to oppositional defiance.

In addition to moderating some of the effects of a psychologically controlling communication style, self-determination also yielded direct associations with adolescents' anticipated responses of oppositional defiance or negotiation. Specifically, adolescents reporting more self-determination anticipated they would respond with more negotiation and less oppositional defiance. These findings are also consistent with previous research (e.g., Van Petegem, Zimmer-Gembeck, et al., 2017) and indicate that adolescents' tendency to negotiate about the parental request was not so much determined by the parents' situation-specific communication style, but rather by adolescents' general tendency to act self-determined ways in life (cf. Skinner & Edge, 2002). Overall then, self-determination seemed to function as a source of resilience contributing to more benign appraisals and more constructive responses to

parental regulation (cf. Weinstein & Ryan, 2011).

The development self-determination

The current findings raise the question of why some children and adolescents develop and experience higher levels of self-determination than others. Likely, this development is determined by a dynamic interaction between a history of social experiences that have been need-supportive, and more individual characteristics such as temperament (Grolnick et al., 2002). Cross-sectional research has shown that higher levels of self-determination are strongly associated with higher levels of perceived autonomy-supportive parenting (e.g., Soenens et al., 2007) and a secure attachment style (e.g., Frodi, Bridges, & Grolnick, 1985). Of course, the socialization process is bidirectional and transactional in nature (Kuczynski, 2003; Paschall & Mastergeorge, 2016). Accordingly, longitudinal research is needed to test the directionality of effects and, in particular, the question whether need-supportive contexts would foster the development of a sense of self-determination among children, and/or whether at the same time highly self-determined children are also more likely to perceive and elicit need-supportive behaviors (cf. Van der Giessen, Branje, & Meeus, 2014). Past research found oppositional defiance to predict decreases in autonomy-supportive communication across time (Vansteenkiste et al., 2014), suggesting the presence of a cascading negative cycle that further compromises adolescents' level of self-determined functioning. It remains to be tested whether parents would respond in autonomy-supportive ways in reaction to adolescent negotiation, which would suggest the presence of an alternative positive and upward cycle, accounting for the development of increasing self-determination.

Whereas a high level of self-determination seems to be a protective factor that makes children more resilient to deal more constructively with potentially challenging situations, a low level of self-determination can be a risk factor (Rolf, Masten, Cicchetti, Nuechterlein, & Weintraub, 1990; Sameroff, 1999), as these children were found to respond in less positive and adaptive ways when confronted with the psychologically controlling vignette. Such findings are in line with SDT (Deci & Ryan, 1985, 2000; Hodgins & Knee, 2002), which claims that people low in self-determination (with a "controlled" motivational orientation) are more susceptible to external demands and pressure in their processing of information and in their regulation of behavior. This is because an insecure and vulnerable sense of self-esteem would underlie such a motivational orientation. That is, the sense of self-worth of people with a controlled orientation would be more readily dependent upon external approval. For such individuals, external situations that are perceived as potentially threatening their self-worth (e.g., criticisms or negative feedback) more easily elicit distorted processing of information and defensive reactions in order to protect their sense of self-worth (Deci & Ryan, 1995; Heppner & Kernis, 2011; Hodgins & Knee, 2002). However, future research would be needed to directly test these assumptions.

Applied implications

Findings from this study have potential applied value. First, these results may give indications to parents, counselors, and clinicians about the nature of optimal parenting during the adolescent years. That is, the present research contributes to previous findings showing that parents should not refrain from setting reasonable rules and having certain expectations about acceptable and unacceptable behavior, as long as these regulation attempts are generally conveyed and discussed in an autonomy-supportive (rather than psychologically controlling) way (e.g., Van Petegem, Soenens, et al., 2015). In that respect, one specific parenting program that may help parents learn specific autonomy-supportive strategies is the "How to talk so kids will listen & listen so kids will talk" program (Faber & Mazlish, 1980, 2010), which draws upon the humanistic writings of Ginott (1965), and which specifically

targets improving the parents' communication with the child. Preliminary evidence underscores the effectiveness of this program in improving parents' need-supportive style and in promoting child mental health (Joussemet, Mageau, & Koestner, 2014; Joussemet, Mageau, Larose, Briand, & Vitaro, 2018).

Second, the present findings underscore the importance of working with adolescents directly. Adolescents' resilience may be strengthened by fostering their sense of self-determination, that is, by helping them getting better in touch with their personal values and interests and by teaching them to develop the skills to act upon these values and interests in constructive ways. The school context, for instance, could be an environment in which reflection, exploration, and self-initiative are stimulated (e.g., Assor, Kaplan, & Roth, 2002; Covington, 1992). Even more broadly, societies also may encourage a greater freedom to self-direct within the contexts of adolescents' lives (Hansen & Jessop, 2017). In addition, interventions directly targeting adolescents' identity development may be a direct in-road to foster adolescents' awareness of their personal goals and values and promote adolescents' self-determined functioning (e.g., Berman, Kennerley, & Kennerley, 2008; Weymeis, 2016). Moreover, targeting both the parents and the adolescents may increase the likelihood of breaking a vicious downward spiral where "the poor only get poorer" (Laursen, DeLay, & Adams, 2010). Indeed, from a systemic point of view, it is expected that change in one part of the family system may cause change and have implications for the whole family system's functioning (Watzlawick, Bavelas, & Jackson, 2011).

Finally, our findings are consistent with the notion that children actively shape the socialization process through their interpretation of others' behaviors and, although not directly measured in the present study, through their own behaviors (cf. Kuczynski, 2003; Zimmer-Gembeck, 2016). This insight is important to avoid the pitfalls of blaming parents, and to help practitioners and parents to be aware that adolescents' behavior is the result of a complex and dynamic interplay between the environment and individual characteristics. Particularly in adolescence, parenting is a challenging task with unavoidable periods of conflict and episodes of emotional upheaval (Soenens et al., 2019). On certain days, parents may lack the emotional or motivational resources to deal with certain situations in an optimal way – and instead may turn to more punitive or coercive strategies (e.g., Conger, Ge, Elder, Lorenz, & Simons, 1994; Grolnick & Seal, 2008; van der Kaap-Deeder, Vansteenkiste, Soenens, & Mabbe, 2017). However, as suggested by the present findings, highly self-determined adolescents are likely to have the skills to react to such a situation in more constructive ways.

Limitations and directions for future research

A number of limitations should be acknowledged. First, our study is cross-sectional in nature. As previously mentioned, longitudinal research would be needed to test for the directionality of certain effects (e.g., the relation between autonomy-supportive parenting and adolescent self-determination). Yet, we did manipulate parental regulation through the use of hypothetical vignettes, providing a mix of experimental and cross-sectional findings (Aguinis & Bradley, 2014).

Second, given the use of such a manipulation, we had to make decisions about the focus of the situation and the responses to assess. Herein, we focused on an academic issue, which is of importance to most adolescents (Eccles, 2004); in addition, adolescents believe that academic issues fall, to some degree, under the parents' authority (Smetana et al., 2006). Importantly, according to social domain theory (Smetana, 2006, 2018), adolescents believe that parents have more legitimate authority about certain domains, compared to other domains. In particular, parental regulation of personal issues (e.g., friendships) may be more challenging and may be experienced as more illegitimate and autonomy frustrating than parental regulation of academic issues (Smetana & Daddis, 2002; Soenens et al., 2009). In line

with this assumption, recent research found that parental prohibitions about friendship issues (as opposed to moral issues) are more likely to be experienced as illegitimate and to trigger oppositional defiance (Van Petegem, Vansteenkiste, et al., 2017). However, the correlates of an autonomy-supportive (as opposed to controlling) communication style were relatively similar across social domains. Future research would do well to also examine these dynamics in other social domains. In addition, we focused on two possible (and common) responses to parental regulation (i.e., oppositional defiance and negotiation). Future research is needed, however, because adolescents may also simply comply with a parental request, and there is variability in the reasons for why they may do so. Indeed, adolescents may follow the parents' request, either because they accept or endorse the parents' authority or because they may feel fearful and pressured (e.g., Skinner & Edge, 2002; Soenens et al., 2009; Van Petegem, Zimmer-Gembeck, et al., 2017). Future research should incorporate alternative responses to parental regulation, thereby also including responses reflecting adolescent willing and enforced compliance.

A third limitation is that the parental expectation of studying more, described in the vignettes, is a rather indirect expectation, rather than an explicit and firm rule. Research among adolescents indicates that the large majority of parental rules and expectations are conveyed in indirect and implicit ways (Goodnow, 1997; Parkin & Kuczynski, 2012). Yet, in the future, research could examine whether the perceived clarity of parents' expectations also explains differences in adolescents' responses to an autonomy-supportive versus psychologically controlling parental communication style. In the family socialization literature, it is proposed that parental rules are more likely to be perceived accurately when they are clear and consistent, which would eventually foster rule acceptance (Goodnow, 1997; Grusec & Goodnow, 1994). Although past research found that the parents' psychologically controlling (vs. autonomy-supportive) parenting style, rather than the presence versus absence of clear expectations, is especially predictive of autonomy frustration and oppositional defiance (Van Petegem, Vansteenkiste, et al., 2017), other studies indicate that young adolescents' perceptions of clear rules and expectations related to less antisocial behavior (Grolnick, Beiswenger, & Price, 2008).

A fourth limitation concerns the generalizability of our findings across parental gender and socio-economic differences. Given that our vignettes focused solely on the mother and that we did not collect information on the socio-economic status of participants, it needs to be demonstrated whether the findings would apply to fathers and individuals with different socio-economic status. Although during recent decades, fathers have become increasingly involved with their children (e.g., Gray & Anderson, 2010), mothers are still generally seen as having the primary responsibility for childcare, spending more time with their children (Bornstein, 2015). However, we did not mean to imply that the impact of paternal regulation is less important (see e.g., Wall & Arnold, 2007, for a discussion of this issue) and we believe it is important for future research to explicitly focus on fathers' regulation of adolescents' behaviour as well. In addition, future research should take socio-economic status into account as well, as it may influence parenting dynamics in several ways (e.g., Bornstein, 2015).

There are additional areas that could be addressed in future research as well. For instance, we have argued that it is the autonomy-supportive vs. psychologically controlling nature of the parents' communication style that accounts for the strong mean-level differences in adolescents' perceptions and responses. However, there are alternative explanations for these differences. For example, the parent's emotional tone in the psychologically controlling situation was more negative than the tone in the autonomy-supportive situation. This is not surprising, as previous research has found that psychologically controlling parenting practices in the context of schoolwork often are associated with more negative parental affect, which in turn may undermine children's and adolescents' motivation and performance (Pomerantz, Grolnick, & Price, 2005; Pomerantz et al., 2007; Silinskas, Kiuru,

Aunola, Lerkkanen, & Nurmi, 2015; see also Weinstein, Zougkou, & Paulmann, 2018). Thus, it is possible that parents' emotional tone partly explains between-vignette differences in our dependent variables. Moreover, in the psychologically controlling vignette, the parent explicitly refers to regular process checks (i.e., following the adolescent up), which is rather assumed to be a facet of structure (Reeve, 2006). The presence vs. absence of process checks could explain certain between-vignette differences as well. Taken together, future research could test a number of potential alternative explanations for between-vignette differences, including the presence or absence of clear expectations, variations in emotional tone, and the presence or absence of regular process checks. Such manipulations could pinpoint exactly when and why adolescents believe parental regulation to be more or less illegitimate, and when parental regulation may trigger more defiance, and why especially among adolescents low in self-determination.

Conclusion

The present study provides further evidence that adolescents' perceptions and responses to parental regulation differ depending on whether parents use an autonomy-supportive or a psychologically controlling communication style. That is, adolescents perceived a situation of parental regulation as more autonomy-frustrating and reported a stronger inclination to defy to the parents' regulation when it was communicated in a psychologically controlling fashion. Furthermore, our study adds to the literature by also considering how adolescents' personal characteristic of self-determination relates to their appraisals and responses (e.g., Kuczynski, 2003; Smetana, 2011). Adolescents' overall sense of self-determination related to more negotiation about the situation and cancelled out some of the negative interpretations and responses of a psychologically controlling communication style. Specifically, when adolescents are highly self-determined, they appear more likely to perceive a psychologically controlling situation as legitimate and they are less likely to defy their parents' request, suggesting that high self-determination serves as a source of resilience. More broadly, the present results indicate that processes involved in parental regulation are complex and that adolescents, as active agents in the socialization process, actively construct meaning and choose different responses to handle even psychologically controlling parent-child interactions.

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