

## EFFECTS OF AUTONOMY-SUPPORTIVE AND CONTROLLING STYLES ON SITUATIONAL SELF-DETERMINED MOTIVATION: SOME UNEXPECTED RESULTS OF THE COMMITMENT PROCEDURE<sup>1</sup>

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*Summary.*—Distinct and simultaneous effects of autonomy-supportive and controlling styles, usually considered as mutually exclusive, on situational self-determined motivation are tested. In Study 1, economics students ( $N=100$ ; 57 men, 43 women;  $M$  age = 21.5 yr.) were randomly assigned to one of the four experimental conditions (high vs. low) of autonomy supportive and/or controlling behaviors during a task. Results supported the independence of those constructs. An unexpected effect in regards to Self-determination Theory was found in the Low autonomy – High control condition in which self-determined motivation was observed. The interpretation for this specific condition, an effect due to the attempt to reduce cognitive dissonance triggered by the commitment procedure, was tested. In Study 2, sport students ( $N=80$ , 44 men, 36 women;  $M$  age = 19.2 yr.) were randomly assigned to one of the three experimental conditions: No commitment, Commitment plus self-affirmation, and Commitment without self-affirmation. Results supported Study 1's interpretation: motivation was lower when participants were recruited without a commitment procedure or when they were invited to self-affirm than when participants recruited with a commitment procedure.

A large part of the literature on self-determined motivation (Deci & Ryan, 1987, 2008) has highlighted that an important social factor influencing subordinates' motivation is the interpersonal style displayed by their supervisors. This factor has been found to influence self-determined motivation in various contexts such as sport (Gillet, Vallerand, Amoura, & Baldes, 2010), education (Black & Deci, 2000), or work (Gillet, Berjot, & Paty, 2010). The more supervisors support autonomy in their relationships with their subordinates, the more they satisfy subordinates' basic psychological need for autonomy and promote their autonomous motivation (for a review, see Moreau & Mageau, 2013), i.e., *“to behave with a sense of volition,*

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*willingness, and congruence; (...) to fully endorse and concur with the behavior one is engaged in"* (Deci & Ryan, 2012, p. 85). An autonomy-supportive style encourages subordinates' self-regulation by allowing them to make choices, thus supporting their need for autonomy. Conversely, a controlling style promotes subordinates' controlled motivation and amotivation by thwarting subordinates' need for autonomy (Deci, Eghrari, Patrick, & Leone, 1994; Grolnick, 2003; Reeve, 2009). A controlling supervisor pressures subordinates to think, feel, or behave in specific ways. According to the Hierarchical Model of Intrinsic and Extrinsic Motivation (HMIEM; Vallerand, 1997), this social factor affects self-determined motivation at three levels of generality (global, contextual, and situational).

Researchers often consider supervisors' behavior as either autonomy-supportive (and not controlling) or as controlling (and not autonomy-supportive; Deci, Schwartz, Sheinman, & Ryan, 1981; Vansteenkiste, Sierens, Goossens, Soenens, Dochy, Mouratidis, *et al.*, 2012). They thus imply that the supervisor's behavior cannot be perceived as both autonomy-supportive and controlling (Soenens & Vansteenkiste, 2010). However, in real life, supervisors' behaviors are often far more complex and can, at times, appear to be autonomy-supportive *and* controlling because a large array of behaviors is displayed (Grolnick & Ryan, 1989; Pelletier, Fortier, Vallerand, & Brière, 2001; Tessier, Sarrazin, & Ntoumanis, 2008; Amoura, Berjot, Gillet, Caruana, & Finez, 2013). The idea that both interpersonal styles can be displayed simultaneously has been more explicitly and recently highlighted in contexts such as sport (Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2010), health (Ng, Ntoumanis, & Thøgersen-Ntoumani, 2014), and parenting (Silk, Morris, Kanaya, & Steinberg, 2003). However, this literature is scarcer, and has mostly used correlational designs. Moreover, most experiments were run at a contextual level (Vallerand, 1997) and often only with measures of perceptions (by the way of autonomy-support/control scales). The goal of the current study is to test more directly the hypothesis of the independence of autonomy and control by using an experimental design in which controlling and/or autonomy-supportive behaviors are directly displayed by a supervisor while students perform a task. In addition, the effects of those behaviors on the situational self-determined motivation of students will be assessed.

### *Interpersonal Style*

When behaving in an autonomy-supportive manner, a supervisor adopts students' perspectives and feelings, gives rationales when a request is made, and supports students' choice and self-regulation (Deci, *et al.*, 1994; Reeve & Jang, 2006; Jang, Reeve, & Deci, 2010). That autonomy-supportive style has been operationalized in prior studies through

behaviors such as (a) nurturing inner motivational resources (Stefanou, Perencevich, DiCinto, & Turner, 2004), (b) providing rationales (Reeve, Jang, Hardre, & Omura, 2002), (c) relying on non-controlling and informational language (Reeve & Jang, 2006), (d) displaying patience (Reeve & Jang, 2006), and (e) acknowledging and accepting expressions of negative affect (Reeve, 2009). The literature has clearly shown that those behaviors promote self-determined motivation. For instance, Moustaka, Vlachopoulos, Kabitsis, and Theodorakis (2012) have shown that participants who were involved in a fitness program in an autonomy-supportive context reported higher satisfaction of their needs for autonomy and competence, self-determined motivation, and subjective vitality, compared to a group in a non-autonomy-supportive context. Also, in an educational context, Sheldon and Filak (2008) have shown that autonomy-support, competence-support, and relatedness-support predicted students' intrinsic motivation and willingness to recommend the experience (Boggle puzzle) to another student. Finally, Reeve and Jang (2006) have shown that teachers' autonomy support, compared to controlling teachers, influenced significantly more students' perceived autonomy, interest, engagement, and performance in a puzzle task. Similar results were reported in the literature on Self Determination Theory (SDT: see also Reeve, 2009, for a review in the educational domain; Tsai, Kunter, Lüdtke, Trautwein, & Ryan, 2008).

Still, according to Reeve (2009), a controlling style consists of forcing subordinates to adopt the teacher's perspective, intruding into students' thoughts, feelings, or actions, and pressuring students to think, feel, or behave in a specific way. Controlling style is operationalized through behaviors such as relying on outer sources of motivation, neglecting rationales, relying on pressuring-inducing language, displaying impatience for students to produce the right answer, and asserting power to overcome students' complaints and expressions of negative affect. Again, the literature has shown that a controlling style promoted controlled forms of motivation (introjected and extrinsic regulations) and amotivation (Pelletier, *et al.*, 2001), because control thwarts basic psychological needs (Soenens, Vansteenkiste, Sierens, Dochy, & Goossens, 2012). The SDT literature also distinguishes externally from internally controlling techniques (Ryan, 1982; Plant & Ryan, 1985). Externally controlling techniques refer to tangible rewards (Deci, 1971), deadlines (Amabile, DeJong, & Lepper, 1976), surveillance (Lepper & Greene, 1975), controlling statements (Assor, Kaplan, Kanat-Maymon, & Roth, 2005), evaluations (Harackiewicz, Manderlink, & Sansone, 1984), or threats (Deci & Cascio, 1972), all of which have deleterious effects on self-determined motivation. Internally controlling techniques go further in thwarting people's basic psychological needs for autonomy, competence, and relatedness as they use guilt-inductions, shaming,

love withdrawal, and performance goals (Soenens & Vansteenkiste, 2010; Mageau, Ranger, Koestner, Moreau, & Forest, 2011; Moreau & Mageau, 2012). To the best of the authors' knowledge, internally controlling techniques have never been used in an experimental study, for evident ethical reasons.

If these two styles clearly refer to different behaviors, the way they are considered by researchers varies and no consensus has been reached. Indeed, supervisors' behaviors are complex.

#### *Relations Between Autonomy-supportive and Controlling Styles*

As already mentioned, autonomy support and control are the two major interactional styles and have for a long time been considered opposites and/or as mutually exclusive (Mageau & Vallerand, 2003; Silk, *et al.*, 2003; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004; Bartholomew, *et al.*, 2010; Soenens & Vansteenkiste, 2010). For instance, Mageau and Vallerand (2003) proposed a classification of autonomy-supportive behaviors in which they suggested that avoiding controlling behaviors (e.g., overt control, criticism and controlling statements, and tangible rewards) equates to autonomy support in the sense that controlling behaviors harm basic psychological needs satisfaction. Similar reasoning has been used in the context of education. Reeve, Jang, Carrell, Jeon, and Barch (2004) taught teachers to support students' autonomy and then asked independent judges to observe them during their classes. The observers had to fill a rating sheet which included bipolar items with autonomy-supportive behaviors at one end and their corresponding controlling behaviors at the other end. Their results showed that trained teachers used more autonomy-supportive behaviors while teaching compared to a control group. Then, as predicted, the more teachers displayed autonomy-supportive behaviors, the more students' engagement in class increased. This illustrates the underlying conceptualization of styles as being two ends of a single continuum.

However, this view is being challenged, as many behaviors can be displayed in real life settings by supervisors. For example, during a class teachers may at time allow choices and encourage students while at other times they may have to give specific orders, evaluate, or penalize students. So, autonomy-supportive and controlling behaviors might not be as mutually exclusive as thought if a succession of several behaviors must be considered over a period of time.

Several studies have reported low to moderate links between autonomy-supportive and controlling styles when assessed with self-reported measures. Indeed, those measures often ask participants to report on a set of behaviors displayed by a supervisor for a time period. For example, in the sport context Pelletier, *et al.* (2001) assessed the perceptions of coaches' interpersonal style as being autonomy-supportive or controlling among a

sample of swimmers. The authors observed a moderate negative link between autonomy-supportive and controlling styles ( $\beta = -0.36$ ). Moreover, results from structural equation modeling indicated that the more the athletes perceived their coach as being autonomy-supportive, the more their motivation was self-determined and the more they persisted in the activity. The authors also found that perceptions of autonomy-supportive and controlling styles were both positively associated with introjected regulation (i.e., a form of controlled motivation), suggesting that both styles can be used simultaneously by coaches. In the parenting context, Silk, *et al.* (2003), who interviewed teenagers about their relationship with their parents, also reported a low negative correlation between autonomy-supportive and controlling style ( $\beta = -0.18$ ) and observed that “autonomy” and “control” were two distinct behaviors with different consequences.

Another way of showing that the two styles are independent is to study the process through which they affect outcomes. For example, in a health context, Balaguer, González, Fabra, Castillo, Mercé, & Duda (2012) showed that while an autonomy-supportive style predicted athletes' subjective vitality through needs satisfaction, a controlling style predicted athletes' burnout through needs thwarting. More directly, Ng, Ntoumanis, and Thøgersen-Ntoumani (2014) showed, using structural equation modeling, that the interpersonal style of a significant other influenced autonomous and controlled motivation to exercise as well as amotivation through different cognitive mediators. Autonomy support predicted autonomous motivation through needs satisfaction, while controlling behaviors predicted controlled motivation and amotivation through needs thwarting. The authors also showed that autonomous motivation positively predicted physical activity and healthy eating, while controlled motivation negatively predicted physical activity. Finally, amotivation predicted unhealthy eating. The authors directly challenged the bipolar conceptualization and affirmed that autonomy support and control may be inversely related but not two ends of a continuum.

Finally, some studies have used a person-based approach to challenge the bipolar conceptualization. For example, using cluster analysis, Amoura, *et al.* (in press) have shown that both styles were distinctly perceived by students as the analysis yielded to four distinct groups according to the level of autonomy and control students perceived in their teacher's behaviors. Moreover, self-determined motivation varied according to clusters. Students perceiving their teacher as displaying high autonomy-supportive behaviors and low control scored as more self-determined than those perceiving low autonomy-supportive behaviors and high control. The self-determination of students perceiving their teachers as displaying either high or low behavior on both measures (autonomy and control) was in-between.

In a second study, the authors further tested the independence of the two styles by studying the process through which both perceived styles affected self-determination. Results supported the hypothesis that perceived autonomy-supportive behaviors predicted positively self-determined motivation through the satisfaction of basic psychological needs; controlling behaviors predicted negatively self-determined motivation through the thwarting of basic psychological needs. Still using cluster analysis, Soenens, Vansteenkiste, and Sierens (2009) have shown in the parenting domain that the relation between autonomy support and control (as two ends of one continuum or distinct construct) depends on the way autonomy support is considered (promotion of independence or volitional functioning). Results of their study adds to the Silk, *et al.* (2003) study as far as they showed that parents may be perceived as being simultaneously autonomy-supportive (promotion of independence) and controlling. Parents with this perceived interpersonal style may encourage independence in a pressuring way.

More recent studies tend to favor the hypothesis that the two styles are independent. However, it is important to note that they mostly used correlational designs and self-report scales, *i.e.*, perceptions of subordinates of their supervisor's behaviors, not actual behavioral measures. This distinction is important insofar as actual behaviors may be perceived and interpreted differently by individuals according to context and personal characteristics. Other researchers have studied actual behaviors more directly. For example, Tessier, *et al.* (2008) set up training for teachers in Physical Education to favor autonomy support in their vocational activity and actually filmed the teachers' behavior. Results confirmed that autonomy-supportive and controlling behaviors are distinct and not mutually exclusive and also showed that teachers' attempts to be autonomy-supportive did not necessarily diminish their controlling behaviors, which were still observed by pupils after the training.

#### STUDY 1

More recent studies challenge the view that autonomy and control are two ends of a single continuum. However, as already mentioned, most designs were correlational and most used global perceptions of subordinates. In the current study, the effect of actual behaviors of supervisors on students' situational self-determination will be studied by manipulating the supervisor's display of autonomy-supportive and controlling behaviors during a short period of time. Only a few experimental studies have addressed the question of the effects of autonomy-supportive and controlling styles on self-determined motivation (Koestner, Ryan, Bernieri, & Holt, 1984; Deci, *et al.*, 1994; Vansteenkiste, *et al.*, 2004). This experimental design would permit observation in a real context of effects on students' self-determined motivation. Moreover, because of the experimental de-



sign, the effects of the interpersonal style will be studied at the situational level of generality (Vallerand, 1997; Vallerand, Carbonneau, & Lafrenière, 2009). According to the Hierarchical Model of Intrinsic and Extrinsic Motivation (HMIEM; Vallerand, 1997), the effect of social factors such as interpersonal styles are the same at all levels of generality.

Based on the literature about the effect of styles on motivation (Pelletier, *et al.*, 2001; Silk, *et al.*, 2003; Soenens, *et al.*, 2009; Bartholomew, *et al.*, 2010; Ng, *et al.*, 2014) and the more rare literature on the affect of actual behaviors on motivation (Reeve, *et al.*, 2004; Tessier, *et al.*, 2008):

*Hypothesis 1.* Participants in the High autonomy and Low control condition will show the highest situational self-determined motivation.

*Hypothesis 2.* Participants in the Low autonomy and High control condition will show the lowest situational self-determined motivation.

*Hypothesis 3.* Participants in the High autonomy and High control condition should present moderate situational self-determined motivation because of the controlling aspects of the interpersonal style of the experimenter.

*Hypothesis 4.* Participants in the Low autonomy and Low control condition should also present moderate situational self-determined motivation because of the absence of autonomy support.

## METHOD

### *Participants*

The participants were 100 French third-year economy students (57 men, 43 women). The mean age was 21.5 yr. ( $SD = 1.2$ ). Students were from four different classes (belonging to the same academic topic). Each class was assigned to a condition<sup>2</sup> ( $ns = 31, 16, 30, \text{ and } 23$ ).

### *Measures*

*Manipulation check.*—Two simple and direct questions were asked to assess how students perceived the behavior of the experimenter during the study on a 7-point Likert-type scale, with anchors 1: Completely

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<sup>2</sup>This way of doing permits the experimenter to display specific behaviors according to experimental conditions. As in most French universities, students are distributed in classes according to their family names. Students with a family name beginning with a A or B belong to class 1 (they fill a class up to 30 students). So, students don't have the choice of their timetable (again, this is the administration that decides which group will get the 8 o'clock class). Note that the four groups did not differ on their contextual academic motivation ( $F_{3,96} = 0.62, p = .60$ ).

disagree and 7: Completely agree. One item assessed the perceived autonomy-supportive style of the experimenter (“During the experiment, I think that the experimenter gave me autonomy”) and the other assessed the perceived controlling style of the experimenter (“During the experiment, I think that the experimenter exercised control over me”).

*Situational motivation.*—Situational self-determined motivation was assessed using the French version of the Situational Intrinsic Motivation Scale (Guay, Vallerand, & Blanchard, 2000) while adapting it to the specificity of the task. This scale is composed of 16 items and measures four forms of motivation<sup>3</sup>: 4 items assessed intrinsic motivation (“Because I think that this activity is interesting”;  $\alpha = .93$ ), 4 items assessed identified regulation (“Because I am doing it for my own good”;  $\alpha = .89$ ), 4 items assessed external regulation (“Because I am supposed to do it”;  $\alpha = .74$ ), and 4 items assessed amotivation (“There may be good reasons to do this activity, but personally I don't see any”;  $\alpha = .77$ ). Items were rated on a 7-point scale with anchors 1: Corresponds not at all and 7: Corresponds exactly. A situational Relative Autonomy Index (RAI), which refers to the global self-determination level, was calculated (Grolnick & Ryan, 1987).<sup>4</sup> This scale has been found reliable and valid in various contexts such as sport (Gillet, Vallerand, *et al.*, 2010), health (Labbrozzi, Robazza, Bertollo, Bucci, & Bartoli, 2013), and education (Johnson, Prusak, Pennington, & Wilkinson, 2011).

### *Procedure*

Contextual motivation toward studies was assessed 3 mo. before, during a lecture, and no differences on the RAI and sex were observed between the four groups.<sup>5</sup> Students were informed of the deontological rules underlying research in human sciences (the anonymous results, the possibility to stop the experiment at any time, and respect of the rights and welfare of participants).

All four groups were randomly assigned in one of the four experimental conditions. All students took part in the experiment the same day (a Friday). Groups followed one another, and the first three groups

<sup>3</sup>Introjected and integrated regulations, two types of extrinsic motivation, are not included in the scale. According to the authors, this is because their inclusion would result in a too long questionnaire. The SIMS is designed to be used in various life settings and needs to be a “versatile and brief measure of ongoing self-regulatory processes.”

<sup>4</sup>The situation Relative Autonomy Index was calculated as follows:  $SRAI = (\text{intrinsic motivation} * 2) + \text{identified regulation} - \text{external regulation} - (\text{amotivation} * 2)$ . Indeed, each regulation was weighted according to its position in the self-determination continuum: +2 for intrinsic motivation, +1 for identified regulation, -1 for external regulation, and -2 for amotivation.

<sup>5</sup>A difference was observed on age ( $F_{3,69} = 2.69, p = .05$ ). LSD Fisher post hoc test revealed that students of the High-autonomy - High-control condition were significantly younger than students of the High autonomy - Low control condition and younger than students of the Low-autonomy - Low-control condition.



were instructed not to tell other students what would happen. The experimenter (always the same) was introduced by the regular teacher at the beginning of a regular lesson in organizational psychology. To motivate students to participate and because students couldn't gain money or credits, the experimenter said to each class separately: "I need volunteers to conduct this study." Then he said, "Of course, you are free to participate or not. In this regard, if someone does not wish to participate, he/she can raise a hand now and wait outside while the experiment is conducted." All students agreed to participate in the study, which was presented as a study about how students solve logic tasks.<sup>6</sup> Students were given 20 min. to solve four relatively difficult logic tasks. The first task consisted in storing tokens of different lengths on a table in which other tokens were already stored. The second task consisted in placing points on a table by avoiding having two points on the same row of the table. The third and fourth tasks consisted of completing math problems.

In this study, autonomy-supportive style was operationalized as (a) non-controlling and informational language and (b) autonomy in the organization of the experimental task (Reeve, 2009). "Controlling style" was operationalized as (a) explicitly controlling statements (Assor, *et al.*, 2005), (b) explicit surveillance behaviors (Lepper & Greene, 1975), and (c) evaluation (Harackiewicz, *et al.*, 1984). A controlling style, contrarily to an autonomy-supportive style, should produce an external locus of causality among participants (deCharms, 1968; Ryan & Connell, 1989; Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005) because of the frustration of their need for autonomy. Hence, their tendency to willingly take part in the experiment should be lower.

*High autonomy – Low control condition* (Condition 1;  $n=31$ ).—Participants were told: "You can get organized as you wish. There is no order in the resolution of the tasks (High autonomy-support; non-controlling language and autonomy support in the organization). Try to do the best you can, on your own, even if no control will be made during the realization; I will only be here to ensure the experiment runs smoothly but I will not be watching you" (Low control; no controlling statements, no explicit surveillance, and no evaluation).

*High autonomy – High control condition* (Condition 2;  $n=16$ ).—Participants were told: "You can get organized as you wish. There is no order in the resolution of the tasks (High autonomy-support; non-controlling language and autonomy support in the organization). Note that these tasks will have to be solved under my supervision. I will come by to watch

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<sup>6</sup>During the presentation of the social psychology class, it was announced to the students that experiments would take place in order to illustrate the course and that they were free to participate or not.

and supervise your work to see how you proceed. An observation will be made following this first series of tasks" (High control; controlling statement, explicit surveillance behavior, and evaluation).

*Low autonomy – Low control condition* (Condition 3;  $n=30$ ).—Participants were told: "Solve the tasks in the order they are presented to you. Read carefully the instructions for each of them. It is better for you not to rush to solve the tasks, and instead to read the instructions several times, and to use the draft next to you. Finally, before writing down the final solution, think of the alternatives and detach yourself from your first impression. Take a break between every task (Low autonomy; use of controlling language and low autonomy in the organization). Try to do the best you can, on your own, even if no control will be made during the realization; I will only be there to ensure the good running of the experiment but I will not be watching you" (Low control; no controlling statements, no explicit surveillance, and no evaluation).<sup>7</sup>

*Low autonomy – High control condition* (Condition 4;  $n=23$ ).—Participants were told: "Solve the tasks in the order they are presented to you. Read attentively the instructions for each of them. It is better for you not to rush to solve the tasks, but instead to read the instructions several times, and to use the draft next to you. Finally, before writing down the final solution, think of the alternatives and detach yourself from your first impression. Take a break between every task (Low autonomy; use of controlling language and low autonomy in the organization). Note that these tasks will have to be solved under my supervision. I will come to watch and supervise your work to see how you proceed. An observation will be made following this first series of tasks" (High control; controlling statement, explicit surveillance behavior, and evaluation).

While students were solving the tasks and according to the conditions they were in, the experimenter adapted his behaviors to fit the condition. In the controlling conditions, he walked down the rows of the small classroom watching over students' shoulders, took notes, and showed clearly his control over them. In the autonomy-supportive conditions, the ex-

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<sup>7</sup>The fact is that low autonomy-support does not mean the use of controlling instructions. As Bartholomew, et al. (2010) stated, "The absence of autonomy support might, for instance, simply be indicative of a more neutral rather than directly controlling style." The authors operationalized the "Low autonomy-support / Low-control" condition in order to show that coherent levels of autonomy-supportive and controlling behaviors (i.e., both scores being high or low) could lead to moderate levels of self-determined motivation. As suggested by Silk and colleagues (2003, p. 115), and as parents may do, teachers displaying little autonomy support and little control as well as those displaying high autonomy support and high control might act this way for strategic reasons. Finally, the literature (Balaguer, et al., 2012; Ng, et al., 2013) has shown that if an autonomy-supportive style, when adopted, clearly leads to self-determined motivation insofar as it satisfies basic psychological needs (autonomy, competence, and relatedness), the absence of these autonomy-supportive behaviors do not necessarily thwart psychological needs as controlling ones could do."

perimeter simply encouraged students' autonomy in their organization without any particular behavior. Participants were told that they would have 20 min. to solve the tasks.<sup>8</sup> In order to have a situational measure of motivation during the task, participants were asked to stop the task after 6 min. and to fill out a questionnaire. Then students were gratefully thanked and debriefed in order to discourage them from communicating about the experiment to other students who would participate later in the day. One week after all the experiments, the experimenter fully debriefed the students about the preliminary results of the study.

### RESULTS

Means, standard deviations, and correlations between all the variables are shown in Table 1. No extreme or atypical values were found. A one-way analysis of variance (ANOVA) was run to test for the effect of the experimental manipulation on the students' perceptions of autonomy-supportive and controlling behaviors of the experimenter. Results indicated that the manipulation of autonomy had a significant effect on students' perceptions of autonomy-supportive style of the experimenter ( $F_{1,98} = 43.1, p < .001, \eta^2 = 0.30$ ); the manipulation of control had a significant effect on students' perceptions of the controlling style of the experimenter ( $F_{1,98} = 21.51, p < .001, \eta^2 = 0.18$ ).

To assess the effect on situational motivation,<sup>9</sup> a 2 (High autonomy vs Low autonomy)  $\times$  2 (High control vs Low control) ANOVA was run on the dependent variable Relative Autonomy Index. Means and standard deviations for all measures according to each of the four conditions are in Table 2. Hypothesized results showed a significant interaction between autonomy-supportive and controlling styles on the Situational Relative Autonomy Index ( $F_{1,96} = 8.99, p < .004, \eta^2 = 0.09$ ).<sup>10</sup> Contrarily to expectations, results showed that students' situational motivation in the Low autonomy–High control condition ( $M = 3.02, SD = 1.39$ ) was not significantly different from students' motivation in the High autonomy–Low control condition ( $M = 2.78, SD = 1.20$ ). However, these two experimental conditions were significantly different from the Low-autonomy–Low control condition ( $M = -1.38, SD = 1.22$ ) and the High autonomy–High control condition ( $M = -1.10, SD = 1.67$ ), which did not differ from each other.

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<sup>8</sup>The time required to solve the 4 tasks was pre-tested with a population of 35 students, 3 men, 32 women ( $M_{age} = 20.8 \text{ yr.}, SD = 3.0$ ) at 12 min.

<sup>9</sup>Only the significant interaction between autonomy-supportive and controlling style on the Relative Autonomy Index (RAI) are graphically presented; the RAI reflects the global level of situational self-determined motivation.

<sup>10</sup>An ANCOVA was also run with contextual motivation at time one (4 weeks before) as a covariate. The interaction was still significant ( $F_{1,96} = 9.82, p < .003$ ).

TABLE 1  
MEANS, STANDARD DEVIATIONS, AND CORRELATIONS BETWEEN THE DIFFERENT VARIABLES

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Perceptions of autonomy support	5.60	1.39						
2. Perceptions of psychological control	4.88	1.59	-.04					
3. Situational intrinsic motivation	4.33	1.57	.02	-.02				
4. Situational identified regulation	3.55	1.57	.07	-.09	.66†			
5. Situational external regulation	4.94	1.30	.14	-.04	-.27†	-.25†		
6. Situational amotivation	3.15	1.32	-.07	.14	-.65†	-.52†	.20*	
7. Situational Relative Autonomy Index	0.96	6.91	.03	-.08	.90†	.78†	-.45†	-.83†

\* $p < .05$ . † $p < .01$ . ‡ $p < .001$ .

#### DISCUSSION

The goal of Study 1 was to explore the separate and combined effects of autonomy-supportive and controlling styles on situational self-determined motivation by using an experimental design. The measures of autonomy-supportive and controlling style were negatively and non-significantly correlated ( $r = -.04$ , ns) suggesting that these interpersonal styles could be distinct concepts and not two ends of the same continuum. This finding is consistent with prior research reporting low negative links between autonomy-supportive and controlling styles (Pelletier, *et al.*, 2001; Silk, *et al.*, 2003; Tessier, *et al.*, 2008; Blanchard, Amiot, Perreault, Vallerand,

TABLE 2  
MEANS AND STANDARD DEVIATIONS FOR ALL MEASURES BY AUTONOMY AND CONTROL

Variable	High Autonomy				Low Autonomy			
	High Control		Low Control		High Control		Low Control	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Situational intrinsic motivation	3.73	0.39	4.68	0.28	4.57	0.32	4.10	0.28
Situational identified regulation	2.90	0.38	4.01	0.27	3.93	0.31	3.12	0.27
Situational external motivation	4.79	0.31	5.13	0.22	4.32	0.26	5.29	0.23
Situational amotivation	3.34	0.32	2.73	0.22	2.86	0.26	3.70	0.23
Situational Relative Autonomy Index	-1.10	1.67	2.78	1.20	3.02	1.39	-1.38	1.22

& Provencher, 2009; Bartholomew, *et al.*, 2010; Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011).

Consistent with the hypotheses, the results indicated that the High autonomy–Low control condition led to self-determined situational motivation (Hypothesis 1 validated). The lowest situational self-determined motivation was observed in the Low autonomy–Low control condition and in the High autonomy–High control conditions (Hypotheses 2 and 4 validated). However, surprisingly, the Low autonomy–High control condition led to the highest situational self-determined motivation (Hypothesis 3 not validated). This is all the more surprising given that this condition was not supposed to lead to self-determined motivation as much as would the High autonomy–Low control condition, the literature being quite clear and coherent about the effects of control on self-determined motivation (Deci & Ryan, 2000; Ryan & Deci, 2000, 2002). One explanation might be that participants' perceptions differed from the behaviors displayed by the experimenter. However, the manipulation check showed that participants in the Low autonomy–High control condition perceived the experimenter as more controlling than those in the High autonomy–Low control condition. The explanation based on a distortion of perceptions is then improbable. Another explanation might come from the specific situation that might have distorted participants' interpretation of the situation. As already mentioned, French participants are free to accept or not to participate in experiments, and are very rarely rewarded directly (i.e., money) or indirectly (i.e., credits). So, a strong commitment procedure requiring public acceptance and an explicit declaration of freedom was used to recruit as many participants as possible. An explanation for the still-high motivation observed in a controlling situation might be due to an attempt to reduce the dissonance between participants' declaration of freedom and the control of the situation in which they engage themselves (Festinger, 1957; Beauvois & Joule, 1999). This interpretation is challenging and innovative. No studies, to the best of the authors' knowledge, have reported such incoherent results. The implications for further experiments in this domain of interpersonal styles might be quite important. Therefore, it was decided to test this interpretation in a subsequent study.

## STUDY 2

In order to test for this interpretation, Study 2 specifically focused on this condition (i.e., Low autonomy–High control). To ensure it, a replication of this condition was designed and two other conditions favoring a reduction of the dissonance were added, one without a commitment procedure and another reducing the threat implied by the dissonance by the way of a self-affirmation intervention. If participants recruited with a commitment procedure reported more self-determined motivation than

participants assigned to the same situation without a commitment procedure, the high level of self-determined motivation reported by participants in the Low autonomy–High control condition could be due to the commitment procedure.

As mentioned, another way to address this question is to keep the commitment procedure to recruit students, but to try to alleviate participants' need to diminish the cognitive dissonance that may result from the inconsistency between their choice to participate freely in the experiment and the controlling behavior of the experimenter. To do so, a self-affirmation procedure was chosen (Steele, 1988; Sherman & Cohen, 2006). Past work has demonstrated that self-affirmation interventions reduce the threat to self-integrity triggered by cognitive dissonance and thus reduce participants' need to change their behaviors or attitudes to restore their self-integrity (for a review, see Sherman & Cohen, 2006). Self-affirmation theory is an alternative explanation for cognitive dissonance phenomena (Steele & Liu, 1983; Steele, 1988). It posits that affirming valued sources of self-worth such as important personal qualities, values, or relationships can reduce threats to the self. Because cognitive dissonance may generate a threat to the self, self-affirmation can alleviate this threat and render the change of attitude unnecessary (Sherman, 2013). Consistent with this idea, Steele (1988) demonstrated that participants who were self-affirmed had fewer attitude changes in situations experimentally created to generate cognitive dissonance compared to participants of a control condition who did not have a chance to self-affirm.

To summarize, if the higher reported situational self-determined motivation found in Study 1 was due to students' attempts to restore cognitive consonance:

*Hypothesis 1.* Lower situational self-determined motivation should be observed in a Low autonomy–High control situation without a commitment procedure.

*Hypothesis 2.* Lower situational motivation should be observed in Low autonomy–High control situation in which a commitment procedure is combined with a chance to self-affirm, compared to a situation with a commitment procedure and no chance to self-affirm.

## METHOD

### *Participants*

Participants were 80 French first-year sport students (44 men, 36 women). The mean age was 19.2 yr. ( $SD = 1.0$ ). They were not familiar with the experimenter, who was the same as in Study 1. Contextual motivation



toward studies was assessed two weeks before during a physiology lecture. No differences on the RAI, age, or sex were found between the three groups.<sup>11</sup> The experiment took place during a regular lesson of physiology and the experimenter acted exactly in the same way as he did in Study 1. The study had been announced by the regular teacher two weeks earlier. Here again, students were informed of the deontological rules underlying research in human sciences. Then three experimental conditions were assigned (No commitment, Commitment plus self-affirmation, Commitment without self-affirmation) in which students were from three different classes ( $ns = 27, 28,$  and  $25$ ). In each of these three conditions, participants received the same Low autonomy–High control instructions than those provided to group 3 of Study 1.

### *Measures*

*Manipulation check.*—The same materials as in Study 1 were used again to assess students' perceptions of the experimenters' behavior (as being autonomy-supportive or controlling; 7-point scale).

*Situational motivation.*—Self-determined motivation was assessed with the same scale that was used in Study 1. Internal consistency for each subscale was satisfactory: intrinsic motivation ( $\alpha = .92$ ), identified regulation ( $\alpha = .83$ ), external regulation ( $\alpha = .76$ ), and amotivation ( $\alpha = .77$ ). As in Study 1, a Situational Relative Autonomy Index (SRAI), which refers to the global self-determination level, was calculated (Grolnick & Ryan, 1987).

### *Procedure*

In the No commitment condition, the experimenter was introduced by the regular teacher as doing an experiment on the way students solve logic tasks. The teacher specified also that, as for any other experiment, students had the choice not to participate by leaving the room.<sup>12</sup> After this introduction, the teacher left the classroom. The experimenter introduced himself and directly asked students to do the experimental tasks (which were the same as in Study 1), but without a declaration of freedom. Following the completion of the logical task, after 6 min., the experimenter asked participants to fill out the motivation questionnaire.

In the Commitment plus self-affirmation condition, students were recruited with a commitment procedure (the same as in Study 1) but had a chance to self-affirm before completing the experimental task. To self-affirm, participants were asked to rank a list of 11 values from the most im-

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<sup>11</sup>As in Study 1, in this university students were distributed in classes according to their family names.

<sup>12</sup>As in psychology, first year students often participate in experiments. They are made conscious of their options. Moreover, as psychology students, they were all aware of ethical and deontological issues of research.

portant to the least important in their life. Then they were invited to write during 12 min. an essay on the value they ranked in first position. In this essay, students were asked to explain to what extent this value was important to them. The self-affirmation procedure was based on the materials used in previous experiments (e.g., Cohen, Garcia, Apfel, & Master, 2006; Finez & Sherman, 2012; see Sherman & Cohen, 2006, for a methodological review). After that, the experimenter gave them the experimental task but stopped them after 6 min. to ask them to fill out the motivation questionnaire.

In the Commitment without self-affirmation condition, students were recruited with a commitment procedure (the same as used in Study 1). This time, participants were asked to rank a list of 11 values from the most important to the least important in their life. Then students were invited to write during 12 min. an essay on the value they had ranked in the eleventh position. This is a standard no-affirmation control condition that has been used in previous studies, in which participants write and reflect on a value not relevant to them. As a result, a difference observed between this control condition and a self-affirmation condition could be attributed to the self-affirmation intervention (writing about an important value or domain). In the present study, this condition served as a control condition for both the self-affirmation condition and the without-commitment condition because it amounts to doing nothing.

Again, after each experiment students were gratefully thanked and debriefed to discourage communication about the experiment with other students who would participate later. One week after all the interventions, the experimenter fully debriefed the students about the preliminary results of the study.

## RESULTS

Means, standard deviations, and correlations between all the variables are displayed in Table 3. Again, no extreme or atypical values were found. Results indicated that the manipulation of the experimenter's controlling behavior was effective. The ANOVA included experimental conditions as the independent variables and autonomy-supportive vs controlling perceptions as the repeated dependent variable, and indicated a higher perception of controlling behavior ( $M=5.62$ ,  $SD=1.67$ ) than of autonomy-supportive behavior ( $M=4.79$ ,  $SD=1.90$ ) in every experimental condition ( $F_{2,76}=8.86$ ,  $p<.01$ ,  $\eta^2=0.10$ ). No significant interaction was observed ( $F_{2,76}=0.75$ ,  $ns$ ), indicating equivalent deviations between autonomy-supportive and controlling scores in each of the experimental conditions. As in Study 1, perceptions of autonomy-supportive and controlling style were not significantly correlated ( $r=.12$ ,  $ns$ ).

TABLE 3  
MEANS, STANDARD DEVIATIONS, AND CORRELATIONS BETWEEN THE DIFFERENT VARIABLES

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Perceptions of autonomy support	4.86	1.93						
2. Perceptions of psychological control	5.68	1.63	.13					
3. Situational intrinsic motivation	3.18	1.67	.02	-.14				
4. Situational identified regulation	2.89	1.50	.00	-.12	.78‡			
5. Situational external regulation	3.98	1.54	-.01	.16	-.04	-.06		
6. Situational amotivation	3.87	1.60	-.18	.12	-.60‡	-.50‡	.20	
7. Situational Relative Autonomy Index	-2.47	7.39	.09	-.18	.88‡	.78‡	-.33†	-.85‡

\* $p < .05$ . † $p < .01$ . ‡ $p < .001$ .

A one-way ANOVA was run on the dependent variable, the Situational Relative Autonomy Index. The ANOVA was followed by two contrasts. The first focused on the effect of the commitment procedure (No Commitment vs Commitment without self-affirmation). The second focused on the effect of self-affirmation (Commitment plus self-affirmation vs Commitment without self-affirmation). Motivation means and standard deviations according to commitment (vs no commitment) and self-affirmation (vs no self-affirmation) are displayed in Table 4.

The one-way ANOVAs indicated significant effects of experimental conditions on the Situational Relative Autonomy Index ( $F_{2,76} = 13.56$ ,

TABLE 4  
MEANS AND STANDARD DEVIATIONS FOR ALL MEASURES ACCORDING TO EXPERIMENTAL CONDITION

Variable	No Commitment		Commitment			
			No Self-affirmation		Self-affirmation	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Situational intrinsic motivation	2.36	1.06	4.18	1.57	2.85	1.58
Situational identified regulation	1.87	0.75	3.84	1.52	2.96	1.27
Situational external motivation	4.66	1.51	3.76	0.92	3.49	1.67
Situational amotivation	4.41	1.41	3.21	1.46	4.12	1.60
Situational Relative Autonomy Index	-6.90	4.21	2.03	6.92	-3.07	6.93

$p < .001$ ,  $\eta^2 = 0.26$ ).<sup>13</sup> Thus, the planned comparisons were performed. Results on SRAI supported this study's hypotheses. Participants in the No commitment condition ( $M = -6.90$ ,  $SD = 4.21$ ) indicated less self-determined motivation than those in the Commitment-without self-affirmation condition ( $M = 2.03$ ,  $SD = 6.92$ ,  $t = 4.65$ ,  $p < .001$ ,  $d = 3.78$ ). The second contrast indicated that participants in the Commitment plus self-affirmation condition reported marginally lower self-determined motivation scores ( $M = -3.07$ ,  $SD = 6.93$ ,  $t = 1.66$ ,  $p = .10$ ,  $d = 2.63$ ) than those in the Commitment without self-affirmation condition ( $M = 2.03$ ,  $SD = 6.92$ ).

#### DISCUSSION

The purpose of Study 2 was to test an original explanation of Study 1's results, which showed that students' situational self-determined motivation toward a task increased when they were recruited with a commitment procedure (Joule & Beauvois, 1998), in spite of the highly controlling interpersonal style of the experimenter. This study's interpretation of this effect was that this self-determined motivation could be a reaction to the cognitive dissonance (Festinger, 1957; Beauvois & Joule, 1999) induced by the declaration of freedom followed by the realization of a task under control. When participants were presented with a situation not expected to produce a state of dissonance (Hypothesis 1), or when they were given the possibility to reduce it through a self-affirmation procedure (Hypothesis 2), self-determined motivation decreased (Hypotheses 1 and 2 validated). These findings open a potential field of study linking self-determined motivation, self-affirmation, and commitment procedures.

The findings support the general interpretative hypothesis underlying this study, which assumes that the high self-determined motivation under a controlling behavior of the experimenter observed in Study 1 may be due to the free consent procedure used to recruit participants.

#### GENERAL DISCUSSION

The main goal of the present research was to assess the separate and conjunct effects of autonomy-supportive and controlling behaviors on self-determined motivation at a situational level of generality. In line with previous research (Pelletier, *et al.*, 2001; Silk, *et al.*, 2003; Tessier, *et al.*, 2008; Blanchard, *et al.*, 2009; Bartholomew, *et al.*, 2010; Bartholomew, Ntoumanis, Ryan, Bosch, *et al.*, 2011), the two studies supported the idea that autonomy-supportive and controlling behaviors should be considered independently, since they have distinct effects on self-determined motivation. If the majority of previous research was based on participants' perceptions

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<sup>13</sup>As in Study 2, an ANCOVA was run with contextual motivation assessed at time 1 (four weeks before) as a covariate. The effect of condition was still significant ( $F_{2,76} = 9.78$ ,  $p < .001$ ).

of the supervisors' behaviors (assessed with self-report scales), the present research was based on actual behaviors. Despite the inconsistent result observed in the highly controlling situation, which can be explained by the commitment procedure, the results replicate previous studies. So, it seems that the distinct effects of styles on self-determined motivation is the same if behaviors are considered instead of perceptions of behaviors. However, this does not rule out an eventual distortion in the interpretation made from the behaviors under specific circumstances such as a commitment procedure. This idea suggests that an interpretative process occurred anyway among participants. Externally controlling behaviors such as those used in both studies might then not be intrinsically controlling. More studies have to be run to explore the interpretative process that might happen between an actual behavior and its perception/interpretation.

#### *Limitations*

These studies add to the literature arguing the independence of autonomy and control. However, it is important to note that in both studies the post-experimental checks of the perception of interpersonal styles were based on single items. This could explain why the negative correlation between autonomy-supportive and controlling style observed in Study 1 was weak. Indeed, those single questions imply that participants form a global impression of the experimenter's behaviors, and it is not known exactly how this impression was formed and which behavior was most salient for participants. More studies with strongest measures of interpersonal styles at the situational level could be very interesting.

Also, the participants were third-year economy students in Study 1 and first-year sport students in Study 2. Although some differences exist (age and major), the effects of autonomy-supportive and/or controlling behaviors on self-determined motivation were robust, whatever the social context considered (e.g., sport, education, parenting, or health). Autonomy-support leads to self-determined motivation, as contrasted with control. Whatever the major studied (economy or sport), or the age of college students (first or third academic year), the effects of the experimenter's behaviors on students' situational self-determined motivation remained the same. The Relative Autonomy Index (RAI) was chosen to assess self-determined motivation. The RAI is a global indicator of the self-determined motivation, which is useful for reducing the numbers of dependent variables and is regularly used by researchers (Soenens, Sierens, Vansteenkiste, Dochy, & Goossens, 2012; Amoura, Berjot, & Gillet, 2013; Kusurkar, Ten Cate, Vos, Westers, & Croiset, 2013). But the RAI does not allow identification of the combination and parts of each form of motivational regulation (Ratelle, Guay, Vallerand, Larose, & Senécal, 2007).

### *Further Study*

Behavioral indicators of situational self-determined motivation would be interesting. Future research could replicate this experimental design with a random assignment of participants, instead of a random assignment of groups, in the different experimental conditions. Study 2 still observed the conjunct effect of both interpersonal styles but focused on only one experimental condition of Study 1 (Low autonomy–High control condition). Also, the effects of the commitment procedure and self-affirmation were not investigated for the three other experimental conditions (i.e., High autonomy–Low control; Low autonomy–Low control; High autonomy–High control). However, in Study 1, these three other conditions did not create dissonance either because of the low control (Low autonomy–Low control condition) or because of the concomitant presence of high autonomy-supportive behaviors (High autonomy–High control condition).

The studies did not allow assessment of how the situational motivation observed may evolve over time and its effects on contextual motivation. This could be interesting to test for the existence of a “bottom-up effect” (Vallerand, 1997) showing that the situational self-determined motivation (in a specific situation) induced by the experimental conditions affects contextual self-determined motivation (in the studies in general). Finally, needs satisfaction and needs thwarting were not assessed, which could provide other answers. Indeed, if autonomy-support and control are conceptually distinct, then they might be expected to affect motivation via a distinct process (Balaguer, *et al.*, 2012; Ng, *et al.*, 2013). Autonomy-support has been found to affect self-determined motivation through needs satisfaction (Baard, Deci, & Ryan, 2004; Vallerand, 2007), and psychological control has been found to affect psychological adjustment variables (Bartholomew, Ntoumanis, Ryan, Bosch, *et al.*, 2011; Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011) or self-determined motivation (Amoura, *et al.*, in press; Ng, *et al.*, 2014) negatively through needs thwarting.

### *Implications*

Beyond theoretical aspects, some practical implications can be inferred. Teachers, who often have to watch over students to evaluate their performance and to deter misconduct (Borich, 1988), prefer controlling behaviors rather than autonomy-supportive ones (Boggiano, Barrett, Weiher, McClelland, & Lusk, 1987; Barrett & Boggiano, 1988), and are often more controlling than autonomy-supportive (Newby, 1991). Previous research has shown that external pressures (high-stakes testing policies) may partially explain teachers' controlling behaviors (Deci, Spiegel, Ryan, Koestner, & Kauffman, 1982; Ryan & La Guardia, 1999; Pelletier,



Seguin-Levesque, & Legault, 2002). Teachers are regularly taught that an autonomy-supportive style is a better way to adopt to improve students' self-determined motivation. Current results suggest that explicit control, surveillance, evaluation, and injunctions to behave in a specific way, which could be considered as soft psychological control (compared to internally controlling techniques), can lead to situational self-determined motivation only under certain specific circumstances—here, when people are placed in a cognitive dissonance state induced by a commitment procedure. But the literature broadly shows that when students feel controlled, their self-determined motivation decreases. Through these results and from SDT, it is quite clear that autonomy support promotes self-regulating learning, self-determined motivation, and well-being. Rather than control, teachers may use “structure” (Connell & Wellborn, 1991; Jang, *et al.*, 2010). Structure is necessary to self-determined motivation and should not be confused with a controlling style (Vansteenkiste, *et al.*, 2012). According to Reeve (2006), structure consists in (a) presenting clear goals, rules, and expectations before engaging in an activity; (b) to offer help, guidance and supervision, which implies surveillance; and (c) giving positive feedback. Indeed, contrary to a controlling style, structure does not thwart basic psychological needs for autonomy, competence, and relatedness (Vansteenkiste, *et al.*, 2012). In fact, while structure affects students' behaviors, psychological control affects cognitions through manipulation. When structure is provided in an autonomy-supportive manner, self-determined motivation is fostered. So, if teaching implies giving rules, indications, and surveillance, this is not problematic if monitoring is explicitly clarified as being for students' progress, and not as social control (Plant & Ryan, 1985; Enzle & Anderson, 1993). Controlling behaviors such as intimidation, verbal abuse, guilt, shame, physical punishment, or pressure, really do not support self-determined motivation, even among people recruited with a commitment procedure.

From the researchers' point of view, a controlling style does not lead to self-determined motivation, but they draw attention to the fact that the conditions under which situational self-determined motivation measures are performed requires caution.

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