When Are Mastery Goals More Adaptive? It Depends on Experiences of Autonomy Support and Autonomy

Moti Benita and Guy Roth
Ben-Gurion University of the Negev

Edward L. Deci
University of Rochester

Mastery goals are generally considered the most adaptive achievement goals. In 2 studies, we tested whether, in line with self-determination theory, participants' experiences of autonomy support and autonomy would affect the relations between mastery goals and psychological outcomes. In Study 1 (an experiment), 117 college students, randomly assigned to 3 groups (autonomy-supportive, autonomy-suppressive, neutral), adopted an intrapersonal-competence standard to improve graphic quality of handwriting. Results showed that mastery goals led to more positive emotional experiences when given in an autonomy-supportive context relative to the other two. Study 2 extended the research to natural settings and learners' motives among 7th and 8th graders ($n = 839$) responding to questionnaires about a specific class. Results revealed stronger relations of mastery goals with interest and enjoyment and with behavioral engagement when students perceived their level of choice (experience of autonomy) as high rather than low. We therefore propose that research on achievement goals should consider both the contexts and the motives accompanying the goals.

Keywords: mastery goals, autonomy, autonomy support, choice

The reasons underlying achievement goals have recently become a focus of attention in the achievement goal literature (e.g., Elliot, 2006; Elliot, Murayama, & Pekrun, 2011; Elliot & Thrash, 2001). Since Elliot and Thrash (2001) introduced the concept of goal complexes, there have been several attempts to integrate various theoretical frameworks with achievement goal theory in order to provide insight into the specific conditions that optimize better emotionality and engagement during achievement situations (e.g., Dompnier, Darnon, & Bureta, 2009; Vansteenkiste, Lens, Elliot, Soenens, & Mouratidis, 2012; Vansteenkiste, Mouratidis, & Lens, 2010; Vansteenkiste, Smeets, et al., 2010). In the present article, we followed Vansteenkiste and his colleagues by taking a self-determination theory (SDT; Ryan & Deci, 2000) perspective to explore the conditions under which adoption of an achievement goal would be adaptive. Unlike Vansteenkiste et al., we focused the present research on mastery goals rather than performance goals. Specifically, we explored the notion that mastery goals, which achievement goal theorists regard as the most adaptive type of goals for learning (e.g., Ames & Archer, 1988; Anderman, 1999; Kaplan, Middleton, Urdan, & Midgley, 2002; Urdan, 1997), are even more adaptive when they are adopted in an autonomy-supportive context, where the individual feels autonomous with regard to the achievement situation.

Achievement Goal Theory: Differentiation Between Aims and Reasons

Over the last three decades, achievement goal theorists (Ames, 1992; Dweck, 1986; Elliot, 1999) have contrasted two types of goals that may be adopted in achievement settings, namely, performance goals and mastery goals. Ames (1992) described performance goals as an ambition to demonstrate competence to others and perform better than others, where one's self-worth is contingent upon one's performance. With mastery goals, individuals try to improve their level of competence, develop new skills, or achieve a sense of mastery based on self-referenced (intrapersonal) standards.

Over the years, research anchored in achievement goal theories has shown that mastery goals are associated with more positive emotional experiences than are performance goals (e.g., Ames & Archer, 1988; Anderman, 1999; Kaplan et al., 2002; Urdan, 1997). In addition, both experimental and field studies across different ages have linked mastery goals to such positive consequences as preference for challenging tasks; persistence in the face of difficulty; attribution of success to effort and interest; and positive attitude and positive affect in relation to self, context, and task (for a review, see Kaplan & Maehr, 2002). Furthermore, a connection has been drawn between mastery goals and intrinsic motivation, and some authors even considered mastery goals to be a hallmark of intrinsic motivation (Heyman & Dweck, 1992).

Despite consensus on mastery goals' adaptive role and superiority over performance goals, especially with respect to affective outcomes, disagreement exists among researchers about the very definition of the term *achievement goal*. Different definitions of the term refer to a combination of two conceptual components: (a) the "aim" of the behavior, namely, *what* consequences one tries to obtain by setting goals and (b) the "motive" or reason for behavior,

namely, *why* one does what one does. Ames (1992) described achievement goals broadly as incorporated beliefs, attributions, and emotions, which together determine the individual's orientation toward task accomplishment. This broad definition attempted to combine various research trends under one theoretical umbrella, without a clear conceptual distinction between aims and reasons. Similarly, Dweck (1996) avoided specific reference to the relations between aims and reasons by referring to achievement goals as the purpose for which one pursues a behavior, namely, *what* individuals try to do.

To address this ambiguity, Elliot and his colleagues (Elliot, 1999; Elliot & Murayama, 2008; Elliot & Thrash, 2001) proposed a narrower definition of achievement goals that relates solely to aims and explicitly excludes motives. Accordingly, with regard to mastery goals, their definition encompasses two standards of competence for the outcome people attempt to attain with mastery goals: (a) an absolute standard, which emphasizes mastering a task, and (b) an intrapersonal standard, which emphasizes improving one's competence relative to one's own past competence. Unlike previous conceptualizations of mastery goals (e.g., Heyman & Dweck, 1992; Midgley et al., 2000), this new aim-based definition does not permit reasons such as being interested in or enjoying the task, which are core elements in the definition of intrinsic motivation (Ryan & Deci, 2000).

In line with this definitional shift, methodological assessments also changed. Thus, former scales that encompassed motives (e.g., interest; see Midgley et al., 2000) as well as goals or aims gave way to the goals of intrapersonal or absolute standards of improvement (Elliot & Murayama, 2008). These definitions and measures were said to offer scientific advantages due to their parsimony and specificity (Elliot & Thrash, 2001). Most important, this model enabled a separation of motives from aims as predictors of behavior and also permitted various combinations of motives and aims. This recent formulation of achievement goal theory allowed new research directions to evolve.

Elliot and Thrash (2001) defined the *goal complex* as a specific combination of reason and aim and suggested that in actual achievement settings the same goal may lead to different processes and outcomes, depending on its accompanying reasons. The main reasons studied by Elliot and his colleagues were the need for achievement and concerns related to self-esteem, such as fear of failure (Elliot, 2005; Elliot, Maier, & Lichtenfeld, 2008). In line with this logic, Urdan and Mestas (2006) interviewed 53 high school seniors to explore different reasons for pursuing performance goals, which yielded two main categories: appearance and competition.

Thus, this shift in the definition of goals opened the door to studies investigating specific combinations of goals (aims) and reasons. Following this route, Vansteenkiste, Mouratidis, et al. (2010) and Vansteenkiste, Smeets, et al. (2010) conducted a systematic series of studies based on SDT (Ryan & Deci, 2000), focusing on "controlled" versus "autonomous" reasons for pursuing performance–approach goals in relation to a variety of learning outcomes such as self-regulated learning and engagement. In all cases, the reasons to pursue the goal predicted variance in learning outcomes, above and beyond the goals per se. In most cases, the initial significant relation between the goals and outcomes (learning experiences) dropped below significance when the reasons were entered into the equation, suggesting that people's reason

(controlled or autonomous) for pursuing a performance-approach goal is more strongly related to their learning experiences than the goal itself. Similarly, Dompnier et al. (2009) showed that the reasons underlying mastery goals can moderate their effect on academic achievements among college students. Specifically, the relations between mastery goals and academic achievements declined when social desirability was higher (which may be interpreted as a controlled reason), whereas the relations increased in strength when perceived social utility was higher (which may be interpreted as an autonomous reason).

Following these studies, the present research examined the specific relations between aims and reasons in predicting different emotional outcomes for mastery goals. Both Vansteenkiste et al.'s and Dompnier et al.'s studies used an integrated measure that assessed the aim and the reasons underlying them. However, this combined measure limited researchers' ability to determine the unique contribution of each construct (aim vs. reasons) and to test interaction effects. Hence, the present research consists of two studies. In Study 1, we measured the aim (to master) separately from the context in which the mastery goals were adopted (autonomy-supportive vs. autonomy-suppressive), and in Study 2, alongside the mastery goals, we separately measured the motives. Most important, we propose that the advantage of mastery goals in achievement settings is no longer obvious because the benefits of the goal may be strongly related to the type of motivation accompanying it. For example, motives can stem from either personal choice or external control. These two types of motives may predict different emotional and perhaps also performance outcomes for people working toward any goal (Deci & Ryan, 2000). Hence, people who are trying to do better than they did before (i.e., the aim of improving) may do so with concurrent rigidity and out of a sense of external or internal compulsion (Assor, Roth, & Deci, 2004), or they may do so with a sense of choice and interest (Roth, Assor, Niemiec, Ryan, & Deci, 2009). Thus, in the two studies presented in the current article, we tested whether autonomy-supportive socializing contexts and autonomous motives, as outlined by SDT, would moderate the relations between mastery goals and positive emotional outcomes.

SDT Distinguishes Autonomous and Controlled Regulation

The various reasons (or motives) individuals have for their behaviors, beliefs, values, and goal pursuits, and the relations of these reasons to psychological health, lie at the heart of SDT (Deci & Ryan, 2008; Ryan & Deci, 2000). The theory addresses the question of "why" people pursue certain goals, in addition to "what" goals they pursue (Deci & Ryan, 2000; Ryan & Connell, 1989). Therefore, in the current research we applied SDT to help untangle how motives, rooted in different sources, may affect achievement goal outcomes.

Specifically, SDT differentiates between two primary qualities of motivation, related to different types of behavioral regulation: regulating oneself autonomously, with a sense of choice and volition, versus being controlled (i.e., regulated), with a sense of internal or external compulsion. Thus, in autonomous regulation, people perceive themselves as "origins" of their own behavior, whereas in controlled regulation, they perceive themselves as "pawns" subjected to the play of heteronomous forces (De

Charms, 1968). Considerable research has indicated that autonomous regulation tends to be associated with positive consequences, such as greater positive emotions, creativity, flexibility of thought, effective problem solving, and psychological health. In contrast, controlled regulation tends to be associated with negative psychological consequences such as poorer performance on heuristic tasks, more maladaptive behaviors, and lower psychological well-being (Deci & Ryan, 2008; Roth, 2008; Roth, Assor, Kanat-Maymon, & Kaplan, 2006; Roth et al., 2009).

A key aspect of autonomously regulated behavior is the experience of choice. In the context of the origin–pawn dichotomy, the concept of choice was emphasized as the main condition needed to induce an experiential shift from pawn to origin. Some researchers view choice as a cognitive decision-making process (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Iyengar & Lepper, 1999, 2000; Schwartz, 2000). However, SDT proponents consider choice to be a motivational concept, namely, an "experience of choicefulness" (Ryan & Deci, 2006, p. 1576) or a perceived "feeling of choice" (p. 1577) rather than actual "choice making"; nonetheless, research has shown that making choices often contributes to the experience of choice (e.g., Zuckerman, Porac, Lathin, Smith, & Deci, 1978). The concept of a *perceived sense of choice* expresses an inner feeling of concurring with, endorsing, and owning one's actions. In contrast, a *perceived sense of compulsion*, which may stem from internal or external sources, conveys feeling pressured to behave in a certain way. Ryan and Deci (2006) have argued that it is the experience of choice about doing what one is doing, rather than making the conscious decision to do it, that conveys the sense of autonomy and volition.

According to SDT, sense of choice is an important indicator of autonomous motivation and, as such, predicts adaptive psychological functioning. Indeed, SDT theorizes that it is important for social agents to understand that a sense of choice is a desirable goal in itself for adolescents and young adults. Hence, sense of choice can be regarded both as an explanatory variable, namely, a motive that predicts positive psychological outcomes and also as an outcome variable promoted by an autonomy-supportive socializing context. Hence, the present research tested the hypotheses that mastery goals that involve a sense of choice, as well as mastery goals that are adopted in an autonomy-supportive context (one that promotes choices for action), would predict better psychological outcomes.

The Role of Environments in Supporting Autonomy

Much of the research in the SDT tradition has examined factors in the social environment that either facilitates or diminishes autonomous regulation. *Autonomy support* is defined as the degree to which socializing agents take the target individual's perspective; act in ways that encourage choice and self-initiation; provide meaningful rationales and relevance; and refrain from using language or displaying behaviors that are likely to be experienced as pressure toward particular behaviors (Grolnick, Deci, & Ryan, 1997). Supporting autonomy in these ways has been found to result in autonomous regulation, effective performance, and psychological well-being (see Deci & Ryan, 2000, 2008, for reviews). In contrast, substantial research has shown that events such as use of rewards, deadlines, threats, surveillance, and pressuring language tend to be experienced as controlling and thus to undermine

autonomous regulation, resulting in poorer performance and greater ill being (Ryan & Deci, 2000).

The present article focuses on autonomy-supportive versus autonomy-suppressive (i.e., controlling) environmental contexts and also on autonomous motives (sense of choice) versus controlled motives, as possible factors that may affect the relations between mastery goals and positive psychological outcomes in achievement-related tasks. As mentioned, Vansteenkiste and his colleagues (Vansteenkiste, Mouratidis, et al., 2010; Vansteenkiste, Smeets, et al., 2010) found that autonomous reasons for adopting performance-approach goals led to more favorable outcomes than controlled reasons in both sports and the educational realm. However, those studies focused solely on autonomous and controlled reasons (or motives) for adopting performance-approach goals, without addressing mastery goals. Dompnier et al. (2009) did investigate mastery goals, identifying a moderating role for the reasons underlying such goals, but their study did not utilize an SDT framework to distinguish autonomous versus controlled motivations. Moreover, none of these studies related to the socializing context.

The Present Research

The present research combined two complementary studies. The first study comprised an experiment that manipulated the environmental context of a task for college students to test the different effects of an autonomy-supportive versus an autonomy-suppressive context on adopting mastery goals. As noted previously, a large body of research has demonstrated the strong relations between autonomy-supportive contexts and the experience of autonomy, volition, and sense of choice (Ryan & Deci, 2000). The current experiment was designed to permit inferences about the causal relationships between the context in which mastery goals are adopted (autonomy-supportive or -suppressive) and the psychological outcome measures. However, as seen earlier, much emphasis in the literature has been given not only to the socialization context but also to the question of motives, namely, whether one's reasons for performing a task are autonomous or controlled. Therefore, the second study was designed to complement Study 1 by focusing on motives for learning and by testing the role that sense of choice may play in moderating the relation of mastery goals with interest or enjoyment and with behavioral engagement. In addition, the first study used a fairly artificial task with limited ecological validity; hence, in Study 2, we used a real-life setting to collect correlational data on achievement goals, motives, and affective/behavioral outcomes in school students.

Study 1

Three groups of college students completed two similar handwriting tasks consecutively. Before engaging in the second task, participants were asked to improve their execution in relation to their outcomes in the first task (i.e., an intrapersonal standard for competence and thus a mastery goal). Different instructions were given in the autonomy-supportive, autonomy-suppressive, and neutral groups. The experimental procedure aimed to promote participants' adoption of mastery goals in the three different contexts and to explore the effects of the context on participants' emotional consequences. We expected that participants in the

autonomy-supportive condition would feel higher levels of sense of choice, would display higher levels of interest or enjoyment, and would feel less pressure and tension than those in the other two groups.

Method

Participants. Participants were 117 Israeli undergraduate students who volunteered to take part in the study for credit in their introductory psychology course. They were randomly assigned to the three conditions (40, 39, and 38 participants in the autonomy-supportive, autonomy-suppressive, and neutral groups, respectively). Participants' mean age was 23.83 years, and 91% were women. Hebrew was the mother tongue for 81%, but all students could speak, read, and write Hebrew fluently.

Experimental procedure. Each participant performed the experiment individually in a quiet room at the university during class time. Participants in all three groups were told that the experiment would examine relations between perceptual processes and coordination. They were next informed that they would be asked to write three sentences twice, first with their dominant hand and then again with their nondominant hand. Subsequent to performing this task, participants were asked to repeat the six-sentence writing task but this time to improve their performance relative to the first time, which provided them with an intrapersonal standard for competence. Improvement was defined as increased similarity of the nondominant hand's graphical quality to that of the dominant hand. Different improvement instructions were given verbally by the experimenter according to the three experimental conditions, as follows:

Autonomy-supportive context. The instructions for this context included several practices documented as autonomy-supportive—acknowledging difficulties, providing a rationale, and using noncontrolling language (Deci, Eghrari, Patrick, & Leone, 1994; Grolnick et al., 1997; Roth et al., 2009):

> The aim here is for you to master this task. We know it might not be very easy, but if you are able to show improvement, it will help clarify whether the task can serve as a flexible measure for the cognitive process we are interested in. So, see if you can do better than you did the last time.

Autonomy-suppressive context. The instructions for this context included controlling language, using verbs such as "should" and "have to," which research (Deci et al., 1994; Grolnick et al., 1997; Roth et al., 2009) has shown to predict controlled regulation and more negative feelings in relation to the task at hand:

> What you should be doing here is trying to master this task. Your participation in the experiment will be valuable to us only to the extent that you can show clear improvement. Thus, to be helpful, you have to do better than you did the last time.

Neutral context. Instructions here were as follows: "Try to do better than you did the last time."

The experiment was approved by the departmental institutional review board, and confidentiality was assured. The single session with each participant lasted approximately 15 min. Following the two-task experiment, participants completed five measures, three assessing the dependent variables and two serving as manipulation checks, as will be described later. Then the participants were debriefed and thanked.

Measures.

Experimental climate scale (ECS). This scale was used as a manipulation check to assess the degree to which participants perceived the experimenter as supportive versus suppressive of autonomy. The current eight-item scale contained the six items from the short version of Williams and Deci's (1996) Learning Climate Questionnaire, but those items were modified for the experimental context (changing *teacher* to *experimenter* and *class* to *task*). In addition to those six items measuring autonomy support (e.g., "I felt understood by the experimenter"), we added two items measuring perceptions of autonomy suppression by the experimenter (e.g., "I felt like the experimenter was giving me orders and expecting me to follow them"). Participants rated items on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Based on factor analysis, the autonomy-suppressive items were reversed and combined with the autonomy-supportive items; thus, higher scores indicated higher perceived experimenter autonomy support. The Cronbach's alpha was .83.

Achievement goals questionnaire–revised (AGQ–R). A Hebrew version of the nine-item AGQ–R (Elliot & Murayama, 2008) consisted of three-item subscales assessing the participants' mastery, performance-approach, and performance-avoidance goals to the specific experimental task. The scale's fourth subscale measuring mastery avoidance was not included because it was less relevant as a manipulation check in the present study. Participants rated the items on a Likert-type scale ranging from 1 (*strongly disagree* to 6 (*strongly agree*). The Cronbach's alphas were .80, .92, and .94 for mastery, performance-approach, and performance-avoidance goals, respectively. This scale was used to ensure that the participants were led to adopt a mastery goal orientation. Thus, within each experimental group, we expected that the mean for mastery goals would be significantly higher than the means for the other two goal types; however, we expected no between-group differences.

Perceived task competence. The six-item scale from the Intrinsic Motivation Inventory (IMI; Deci et al., 1994; Ryan, 1982) measured perceived competence in the specific task (e.g., "I think I am pretty good at this activity "). This scale was used to ensure that the experimental manipulation did not influence the level of competence among the groups. Participants responded on a Likert-type scale ranging from 1 (*not at all true*) to 7 (*very true*). The Cronbach's alpha was .70.

Sense of choice. This seven-item measure was also taken from the IMI (Ryan, 1982). It assessed perceived sense of choice as a motivational concept (e.g., "I did this activity because I wanted to"). Participants responded on the same Likert scale ranging from 1 (*not at all true* to 7 (*very true*). The Cronbach's alpha was .65.

Interest or enjoyment. Eight items taken from the IMI (Ryan, 1982) were used to assess participants' interest and enjoyment during the experiment (e.g., "I enjoyed doing this activity very much"). Participants responded on a Likert scale ranging from 1 (*not at all true*) to 7 (*very true*). The Cronbach's alpha was .92.

Pressure or tension. Also taken from the IMI, this five-item measure (e.g., "I felt very tense while doing this activity") was rated on the same Likert scale ranging from 1 (*not at all true* to 7 (*very true*). The Cronbach's alpha was .87.

Results

Manipulation checks. First, to ensure that mastery goals rather than performance goals were adopted in the three conditions, we compared the means (see Table 1) of the three achievement goals (mastery, performance-approach, and performance-avoidance) within each experimental condition. This analysis of variance (ANOVA), with the experimental groups as a between-subjects factor and the goals as a within-subject factor, yielded a significant main effect for goals, $F(2, 228) = 105.39$, $p < .01$. As expected, no significant interaction emerged. Planned contrasts revealed significant differences between mastery and performance-approach goals and between mastery and performance-avoidance goals, $F(1, 114) = 92.75$, $p < .00$, and $F(1, 114) = 139.75$, $p < .00$, respectively. Taken together, the results indicated that participants in each experimental condition were inclined to endorse the mastery goal more than the performance goals. Additionally, we examined the assumption that students adopted mastery goals to a similar extent in each condition. A one-way ANOVA was conducted, using the means of the mastery goals scale as the dependent variable. As expected, a nonsignificant effect for group emerged, $F(2, 114) = 1.35$, $p = .26$.

Second, to examine differences in perceptions of autonomy support versus autonomy suppression among the three conditions, we conducted a one-way ANOVA, using the means of the manipulation check measure (ECS) as the dependent variable. The means (and standard deviations) for the autonomy-supportive, autonomy-suppressive, and neutral conditions were 5.94 ($SD = 0.68$), 4.18 ($SD = 0.95$), and 4.94 ($SD = 1.10$), respectively. As expected, a significant effect for group emerged, $F(2, 114) = 36.48$, $p < .01$. Planned contrasts revealed significant between-group differences for the comparisons between the autonomy-supportive and the autonomy-suppressive groups, $t(114) = 8.51$, $p < .01$; between the autonomy-supportive and the neutral group, $t(114) = 4.78$, $p < .01$; and between the autonomy-suppressive group and the neutral group, $t(114) = -3.65$, $p < .01$.

Third, because sense of competence is positively correlated with task enjoyment (Deci & Ryan, 2000), it may be confounded with

autonomy support. Thus, variations on interest or enjoyment may be attributed to different levels of competence. Therefore, we examined differences in level of competence among the three groups in order to confirm that the manipulation did not produce variation in sense of competence. The means and standard deviations for the autonomy-supportive, autonomy-suppressive, and neutral conditions were 3.48 ($SD = 1.04$), 3.36 ($SD = 1.1$), and 3.36 ($SD = 0.96$), respectively. As expected, a nonsignificant effect emerged, $F(2, 114) = .19$, $p = .82$.

Primary analyses. We conducted three one-way ANOVAs (one for each dependent measure) in order to test the hypothesis that participants who adopted mastery goals in an autonomy-supportive context would score higher on sense of choice and interest or enjoyment and lower on pressure or tension during the experiment, compared with the other two groups. Correlations among the dependent variables ranged from –.10 to .28, which did not justify computation of a multivariate analysis of variance.

Figure 1 presents the means and standard deviations of the three dependent variables across groups. As expected, significant differences between the groups emerged for each dependent variable: $F(2, 114) = 8.04$, $p < .01$, for sense of choice; $F(2, 114) = 4.52$, $p < .05$, for interest or enjoyment; and $F(2, 114) = 6.66$, $p < .01$, for pressure or tension. Planned comparisons supported the research hypotheses. Thus, in comparison to the autonomy-suppressive group, the autonomy-supportive group experienced more choice, $t(114) = 3.94$, $p < .01$; reported more interest or enjoyment, $t(114) = 2.89$, $p < .01$; and felt less pressured and tense during the experiment, $t(114) = 2.26$, $p < .05$. Similarly, planned comparisons between the autonomy-supportive and neutral groups revealed that the former experienced more choice $t(114) = 2.57$, $p < .01$; reported more interest and enjoyment $t(114) = 2.13$, $p < .05$;, and felt less pressure and tension, $t(114) = 3.61$, $p < .01$]. Means of the autonomy-suppressive and neutral groups did not significantly differ.

Although mastery goals were adopted in the three conditions with no meaningful differences, a more rigorous test of our hypotheses may involve holding the mastery goals variable constant. Thus, we tested whether the independent variable predicted the outcome variables even after the self-reported mastery goals were controlled. First, we computed correlations among mastery goals and the three outcomes measures. One significant correlation was found for mastery goals and interest or enjoyment, $r = .37$, $p < .00$. No significant correlation emerged between mastery goals and either sense of choice or pressure/tension. Next, we conducted an ANOVA with interest and enjoyment as the dependent variable while controlling for self-reported mastery goals. A main effect for mastery goals emerged, $F(1, 114) = 15.48$, $p < .00$. No changes were found with regard to the previously observed relations, $F(2, 114) = 3.33$, $p < .05$. Planned comparisons replicated the previously observed findings.

Finally, we found a correlation of .44 between performance-approach goals and mastery goals; therefore, we conducted the same analyses while controlling for performance-approach goals (although Table 1 revealed no differences among the experimental groups on performance-approach goals, and thus the results cannot be attributed to performance goals). First, we computed the correlations of the self-reported performance-approach goals with the outcome variables. A small but significant positive correlation emerged with interest and enjoyment, $r = .21$, $p < .02$, together

Table 1

Study 1 Manipulation Check: Achievement Goals Questionnaire–Revised Means and Standard Deviations Among the Three Experimental Conditions

| Type of goal/Experimental group	M	SD	n
Mastery			
Autonomy support	5.0667	0.95243	40
Autonomy suppression	4.7179	0.93827	39
Neutral	4.8860	0.94050	38
Total	4.8917	0.94669	117
Performance-approach			
Autonomy support	3.8500	1.54136	40
Autonomy suppression	3.5726	1.40165	39
Neutral	3.7632	1.41402	38
Total	3.7293	1.44698	117
Performance-avoidance			
Autonomy support	3.4917	1.69293	40
Autonomy suppression	3.2564	1.34308	39
Neutral	3.2982	1.44320	38
Total	3.3504	1.49318	117
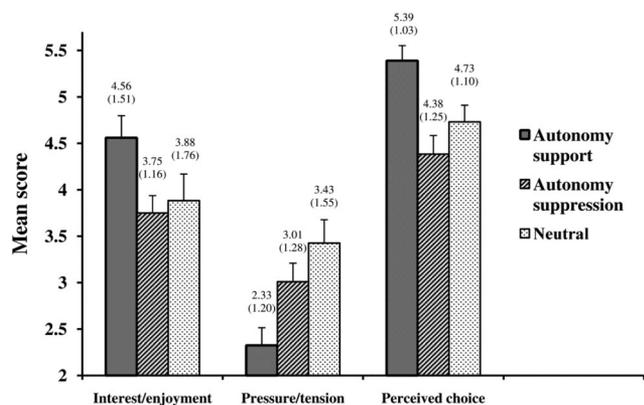
Figure 1. Study 1: Means and standard deviations for college students' interest or enjoyment, sense of choice, and pressure or tension as a function of experimental condition. The exact means and standard deviations (in parentheses) are presented above the error bars.

with a small but significant negative correlation with sense of choice, $r = -.19$, $p < .04$. No significant correlation emerged with pressure/tension. Therefore, we computed two ANOVAs, with interest and enjoyment and sense of choice as dependent variables. The results of the new analyses showed that performance-approach goals did not affect the previously observed relations. Thus, while controlling for performance-approach goals, we found that significant differences between the groups emerged for each dependent variable: $F(2, 114) = 9.16$, $p < .00$ for sense of choice, and $F(2, 114) = 4.18$, $p < .02$ for interest and enjoyment. Planned comparisons replicated the previously observed relations.

Summary of results. The results of the first study supported the hypothesis that adopting mastery goals in an autonomy-supportive context promotes a greater sense of choice, more interest/enjoyment, and less pressure and tension, in comparison to adoption of the same goal in an autonomy-suppressive or neutral context, even after controlling for mastery goals and for performance-approach goals.

Study 2

The first study explored perceptions of autonomy-supportive versus autonomy-suppressive contexts in an experimental setting. The second study extended the first study by exploring the experience of autonomy in children's natural school setting as a possible moderator of mastery goals' relations with interest/enjoyment and with behavioral engagement. Specifically, the relations of mastery goals with interest/enjoyment and with behavioral engagement were expected to be stronger when students' sense of choice in a particular classroom was high, rather than low.

Method

Participants and procedures. Participants were 839 Israeli Jewish students in Grades 7–8 (53% girls, 47% boys; mean age = 13.2 years) from 31 classes in three schools serving middle-class families. Students completed the questionnaires (administered by trained research assistants) in class during one session lasting about 30 min. The teacher was not present in the classroom. To

ensure that students consistently referred to the same environmental context across all of the questionnaire items, the research assistants instructed students to refer to one specific class (their homeroom teacher's class) while completing the entire questionnaire packet.

Measures.

Sense of choice. This five-item measure, taken from Assor et al. (2004), measured sense of choice in the academic domain. Items assessed the extent to which participants enacted behaviors in a specific class with a feeling of choice (e.g., "I feel a real sense of choice about my inclination to work hard in this class"). Participants responded on a Likert-type scale ranging from 1 (*not at all true* to 6 (*very true*). The Cronbach's alpha was .86.

Mastery goals subscale of the AGQ–R. This instrument was a Hebrew version of the three-item mastery-goal subscale described in Study 1 (Elliot & Murayama, 2008). Items (e.g., "My aim is to completely master the material presented in this class") were rated on a Likert-type scale, ranging from 1 (*not at all true* to 6 (*very true*). The Cronbach's alpha was .72.

Performance-approach goals subscale of the AGQ–R. This measure was a Hebrew version of the three-item subscale from Elliot and Murayama (2008) and was used for statistical control purposes. Items (e.g., "My aim is to perform well relative to other students") were rated on a Likert-type scale ranging from 1 (*not at all true* to 6 (*very true*). The Cronbach's alpha was .78.

Academic interest or enjoyment. This six-item scale developed by Roth et al. (2006) assessed students' perceived interest and enjoyment in the specific class (e.g., "I enjoy this class"). Items were rated on a Likert-type scale ranging from 1 (*not at all true*) to 6 (*very true*). The Cronbach's alpha was .90.

Behavioral engagement. This three-item scale developed for the current study measured special investment in class work to assess students' adaptive functioning in relation to class engagement. The items were "I do more than what I am required when I study the subjects taught by teacher"; "There are subjects I have begun to deal with in my free time, because of the teacher's lessons"; and "When I study the subjects taught by the teacher, I also read and pay attention to things that are not included in the exam." The Cronbach's alpha was .82.

Results

Table 2 presents the descriptive statistics for the study variables. As seen, positive and significant correlations emerged among the variables. Of special interest are the positive correlations for mastery goals and for sense of choice, with the two dependent variables: interest or enjoyment and behavioral engagement.

Based on the data structure, wherein students were nested in 31 classes, we calculated the interclass correlations (ICC), which allowed estimation of the within-class homogeneity of aggregated group-level constructs. Values of 5% or greater can be regarded as support for adequate group-level properties of a variable, warranting aggregation (e.g., Gavin & Hofmann, 2002). Results indicated that the current ICC was less than 3% for the two dependent variables; thus, multilevel analyses (hierarchical linear modeling, or HLM; Raudenbush & Bryk, 2002) were not required, and the primary analysis was conducted by multiple regressions.

To test the moderation hypotheses, we computed an interaction term following Aiken, West, and Reno's (1991) guidelines. Inter-

Table 2
Descriptive Statistics for Study 2 Variables

Variable	M	SD	Pearson r				
			1	2	3	4	5
1. Mastery-approach goals	4.37	1.14	—				
2. Performance-approach goals	4.08	1.26	.48**	—			
3. Sense of choice	4.19	1.18	.59**	.34**	—		
4. Interest/enjoyment	3.69	1.16	.51**	.35**	.55**	—	
5. Behavioral engagement	3.39	1.15	.48**	.31**	.50**	.59**	—

** $p < .01$

est or enjoyment and behavioral engagement were then regressed, separately, onto mastery goals, sense of choice, and the interaction term of choice and mastery. Overall, the regression was significant, $F(3, 721) = 138.22$, $p < .00$, for interest or enjoyment, and $F(3, 752) = 111.05$, $p < .00$, for behavioral engagement. Furthermore, the three unique effects on the two outcomes were all significant: (a) on interest or enjoyment: $\beta = .34$, $t(721) = 9.00$, $p < .00$, for mastery goals; $\beta = .36$, $t(721) = 9.71$, $p < .00$, for sense of choice; and $\beta = .10$, $t(721) = 3.23$, $p < .00$, for the interaction; and (b) on behavioral engagement: $\beta = .31$, $t(721) = 8.16$, $p < .00$, for mastery goals; $\beta = .34$, $t(752) = 9.01$, $p < .00$, for sense of choice; and $\beta = .11$, $t(752) = 3.36$, $p < .00$, for the interaction.

The interactions were plotted following Aiken et al.'s (1991) guidelines. Thus, as illustrated in Figures 2 and 3, we plotted the simple slopes of the relations between mastery goals and the two outcome variables for the two different levels of choice: high choice as one standard deviation above the sense of choice mean and low choice as one standard deviation below the mean. The figures reveal that the relations between mastery goals and the two outcomes were stronger when the students perceived higher choice rather than lower choice in relation to the specific class. In addition, we tested whether each simple slope significantly differed from zero. In both regressions, the slopes were significant for both levels of choice: (a) for high choice: $\beta = .42$, $t(721) = 8.47$, $p < .00$, for interest or enjoyment, and $\beta = .37$, $t(725) = 7.06$, $p < .00$,

for behavioral engagement; and (b) for low choice: $\beta = .24$, $t(721) = 6.21$, $p < .01$, for interest or enjoyment, and $\beta = .21$, $t(725) = 4.68$, $p < .01$, for behavioral engagement.

It is important to note that no changes emerged when we conducted the same analyses while controlling for performance-approach goals. The unique effects of mastery goals, sense of choice, and the interaction on the two dependent variables remained significant: (a) on interest or enjoyment: $\beta = .30$, $t(721) = 7.25$, $p < .00$, for mastery goals; $\beta = .36$, $t(721) = 9.59$, $p < .00$, for sense of choice; and $\beta = .11$, $t(721) = 3.41$, $p < .00$ for the interaction; (b) on behavioral engagement: $\beta = .28$, $t(721) = 6.55$, $p < .00$, for mastery; $\beta = .34$, $t(752) = 8.83$, $p < .00$, for choice; and $\beta = .12$, $t(752) = 3.62$, $p < .00$, for the interaction. Similar to Study 1 findings, performance-approach goals positively predicted interest or enjoyment and behavioral engagement but to a smaller extent than the other predictors: $\beta = .09$, $t(721) = 2.76$, $p < .00$, for enjoyment or interest, and $\beta = .07$, $t(721) = 1.98$, $p < .05$, for engagement.

Discussion

In the last three decades, research anchored in achievement goal theory has identified mastery goals as the most adaptive goals in achievement contexts in terms of emotional experience and quality of enactment (Kaplan & Maehr, 1999). However, the recent emphasis of achievement goal theorists on absolute or intrapersonal
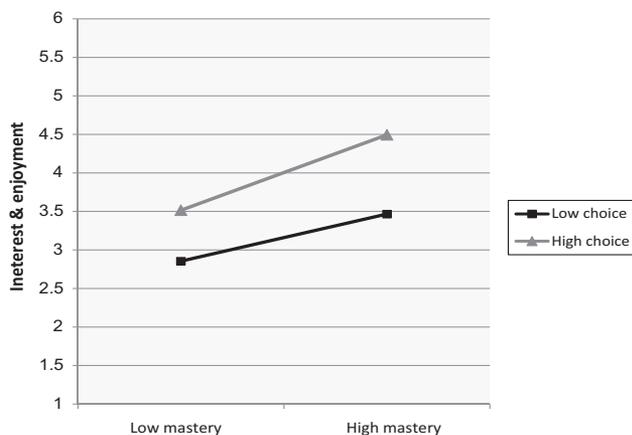
Figure 2. Study 2: The relations between mastery goals and interest or enjoyment in the academic domain for junior-high students who perceived different levels of choice.
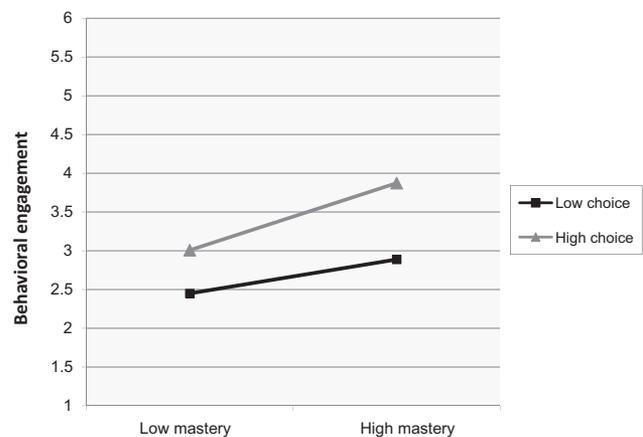
Figure 3. Study 2: The relations between mastery goals and behavioral engagement in the academic domain for junior-high students who perceived different levels of choice.

standards for competence as the core definition and measurement of mastery goals raises questions about these prior conclusions. Our findings from Study 1 revealed that it is possible to adopt a mastery goal in both controlling and autonomy-supportive contexts, and the outcomes of a goal are strongly related to the context in which that goal is adopted. Thus, higher levels of interest or enjoyment and lower levels of tension were found in an autonomy-supportive context than in either an autonomy-suppressive or a neutral context. In addition, the findings from Study 2 showed that students' sense of choice (i.e., their autonomous motive) regarding the academic domain moderated their mastery goals' relations to academic interest or enjoyment and behavioral engagement in class. More specifically, high levels of mastery goals more strongly predicted interest or enjoyment and behavioral engagement when the students' sense of choice level was high, rather than low.

Following Deci and Ryan (2000), these findings from Study 2 add support to the proposition that focusing on *why* people pursue certain goals, in addition to *what* goals they pursue, seems to be essential when predicting intrinsic satisfaction, as well as psychological well-being and other adaptive consequences of human behavior. The important role played by the motives accompanying one's goals has also been emphasized by Elliot and Thrash (2001), who suggested that in actual achievement settings, the same goal may lead to different processes and outcomes, depending on its accompanying reasons, although these researchers did not consider autonomous versus controlled reasons. Still, as Elliot and Thrash noted, this relatively new approach allows for exploration of various combinations of motives and aims, such as those explored herein.

Together, the two current studies revealed that mastery goals serve as a stronger predictor of positive psychological outcomes when those goals are enacted in an autonomy-supportive context and with the experience of choice. These results may suggest that teachers who have strong, rigid, or fixed ideas regarding the superiority of mastery goals, and who try to promote these goals in a controlling way, may indeed promote an intrapersonal standard for evaluation, but this standard will be more weakly linked to positive psychological outcomes. Thus, controlling practices enacted by teachers to ensure that pupils adopt mastery goals (with no comparison with other students, which would promote performance rather than mastery goals) may indeed promote mastery goals; however, this is likely to occur with less beneficial outcomes than those predicted when this specific goal is adopted in an autonomy-supportive context.

The present results may have important implications for teachers' training programs concerning teachers' socializing practices. Both achievement goal theory and SDT emphasize the importance of promoting specific socialization contexts that foster adaptive psychological and academic outcomes. However, achievement goal theory accentuates the endorsement of a mastery goal climate in class (e.g., Ames, 1992; Kaplan et al., 2002), whereas SDT highlights the added importance of an autonomy-supportive climate (e.g., Deci & Ryan, 2008). The present outcomes suggest that teachers should consider the possibility that students may feel compelled to improve their past performance (i.e., intrapersonal standard) in a way that may impair their intrinsic motivation. This implies that even when promoting mastery goals, teachers should

pay attention to the general motivational climate in which those goals are endorsed.

Thus, considerable research anchored in SDT has indicated that autonomy-supportive socialization practices promote autonomous regulation, which, among other things, is characterized by a sense of personal choice. In Study 1, autonomy support was found to predict perceived sense of choice; however, in Study 2, the autonomy-supportive context and autonomous regulation (i.e., sense of choice) were examined separately as predictors of intrinsic motivation (i.e., interest or enjoyment). In the future, researchers could simultaneously explore the relations among autonomy-supportive socialization practices, learners' motives (autonomous or controlled regulation), and their goals. In addition, the present research focused solely on the emotional experience and behavioral engagement of the individual as outcomes. It is important to explore other outcomes such as learning, achievements, competence, and additional indices of well-being.

The present results may be viewed in light of the interesting recent findings by Dompnier and by Vansteekiste and their respective colleagues. Indeed, Dompnier et al. (2009) demonstrated that mastery goals' relations to academic achievements declined when social desirability was higher, whereas these relations increased in strength when perceived social utility was higher. Social desirability was defined as the desire to be perceived by the lecturer as a "nice person," whereas social utility was defined as the desire to succeed in one's studies. From an SDT perspective, social desirability may be viewed as a form of controlled regulation, where the motive is to please another person. On the other hand, social utility may be viewed as a form of autonomous (identified) regulation, where one identifies with the value of an activity. Thus, the broader dichotomy offered by SDT, between autonomous and controlled motivations, could account for the findings by Dompnier et al. and could suggest a general theoretical framework for their interpretation.

Along the same lines, Vansteenkiste and his colleagues demonstrated that autonomous and controlled reasons underlying performance-approach goals predict optimal learning above and beyond the goal per se (Vansteenkiste, Mouratidis, et al., 2010; Vansteenkiste, Smeets, et al., 2010). Moreover, in most cases, the initial association between performance-approach goals and outcomes largely disappeared after autonomous and controlled motives for those performance goals entered the equation. Altogether, the aforementioned studies and the present studies suggest that learners' reasons for pursuing a goal and the context in which learners adopt goals are crucial in relation to class engagement, well-being, and academic achievement.

In the present research, despite the significant interaction, the simple slope analyses revealed that although less autonomous mastery goals correlated more weakly to positive emotionality and to behavioral engagement, compared with the more autonomous goals, those relations were still significant. In line with our prediction, a controlled (rather than autonomous) motive to master a task—for example, a compulsive attempt to do better than one did before or an absolute standard characterized by maladaptive perfectionism (Soenens, Vansteenkiste, Luyten, Duriez, & Goossens, 2005)—may result in null or even negative relations with interest, enjoyment, and satisfaction. It is important to note, however, that in the present study we did not measure controlled mastery goals, but rather the participants' sense of low versus high choice (low vs.

high sense of autonomy) regarding the goals. Low choice does not necessarily represent a high sense of compulsion. Hence, this may explain the significant positive simple effect for low choice.

In line with this reasoning, the autonomy suppression in the first experiment seems to have been mild. This group's mean sense of choice was indeed the lowest among the three groups, as we expected; nonetheless, the mean was not very low (above 4 on a 7-point Likert scale). Thus, although the significant differences found in Study 1 clearly coincided with our predictions, a stronger manipulation may have resulted in larger differences. Future researchers would do well to explore controlled mastery goals directly, as well as controlling contexts, and may find a more contrasted pattern of relations for the controlled and autonomous mastery goals.

Among the strengths of the present research is its combination of experimental and correlational designs. The former allows causal inferences, and the latter provides ecological validity and enhances generalizability. However, both studies should be replicated on a larger scale. It would be useful to replicate the first study by concurrently exploring the effects of the different contexts suggested by SDT and the different goals described by achievement goal theorists. Namely, it would be important also to explore the consequences of adopting both mastery and performance goals in both autonomy-supportive and autonomy-suppressive contexts. Thus, extending the work of Vansteenkiste, Smeets, et al. (2010) to interpersonal contexts, one might hypothesize that the negative psychological consequences of performance goals (where one compares oneself with others or to a normative standard) might be moderated by the context in which the goals are adopted. Specifically, when performance goals are adopted in a controlling context, their negative consequences may be more evident, whereas when adopted in an autonomy-supportive context some negative outcomes may be alleviated and some positive consequences of adopting performance goals may even be enhanced.

A limitation of the present research is the inconsistent measure of mastery goals in the two studies. Whereas the experimental study involves an intrapersonal standard, the correlational study uses the AGQ–R that measures an absolute standard. Past research within achievement goal theory did not differentiate between the two standards in terms of measurement (see, for example, the Patterns of Adaptive Learning Scales, or PALS; Midgley et al., 2000), mainly because they grouped into one factor. In a recent article, Elliot, Murayama, and Pekrun (2011) did make this distinction, and the correlation between the two standards was positive and quite high. Following Elliot et al.'s recent distinction, it will be interesting to continue testing the experience of autonomy support and autonomy separately for the two standards of mastery goals.

Furthermore, the task in Study 1 is a contrived assignment with, supposedly, little meaning to participants. This type of mastery goal may not be similar to mastery goals pursued in natural settings. Thus, the combination of experimental and correlational designs with better ecological validity is crucial.

Another limitation involves the multidimensional manipulation of autonomy support. This manipulation included acknowledging difficulties, providing a rationale, and using noncontrolling language (Deci et al., 1994; Grolnick et al., 1997; Roth et al., 2009). Thus, we cannot know which dimension was responsible for the

positive effects of autonomy support. The specific effects of autonomy-supportive practices on relevant outcomes should be explored in future research.

To summarize, the present studies suggest that exploration of achievement goals' outcomes should consider the context in which goals are adopted and the motives that accompany the underlying goals. These findings are of special importance given the shift in definitions and measures of mastery goals over the last decade. Specifically, earlier research defined and measured mastery goals in a way that combined motives and intrapersonal standards for competence, whereas recent definitions and measures have focused only on the standard for competence, thus allowing for various combinations of reasons and goals.

References

Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple regression: Testing and interpreting interactions.* Thousand Oaks, CA: Sage.

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84,* 261–271. doi:10.1037/0022-0663.84.3.261

Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *Journal of Educational Psychology, 80,* 260–267. doi:10.1037/0022-0663.80.3.260

Anderman, L. H. (1999). Classroom goal orientation, school belonging and social goals as predictors of students' positive and negative affect following the transition to middle school. *Journal of Research & Development in Education, 32,* 89–103.

Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of parents' conditional regard: A self-determination theory analysis. *Journal of Personality, 72,* 47–88. doi:10.1111/j.0022-3506.2004.00256.x

Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology, 74,* 1252–1265. doi:10.1037/0022-3514.74.5.1252

De Charms, R. (1968). *Personal causation: The internal affective determinants of behavior.* New York, NY: Academic Press.

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality, 62,* 119–142. doi:10.1111/j.1467-6494.1994.tb00797.x

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11,* 227–268. doi:10.1207/S15327965PLI1104_01

Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology/Psychologie Canadienne, 49,* 182–185.

Dompnier, B., Darnon, C., & Butera, F. (2009). Faking the desire to learn a clarification of the link between mastery goals and academic achievement. *Psychological Science, 20,* 939–943. doi:10.1111/j.1467-9280.2009.02384.x

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41,* 1040–1048. doi:10.1037/0003-066X.41.10.1040

Dweck, C. S. (1996). Capturing the dynamic nature of personality. *Journal of Research in Personality, 30,* 348–362. doi:10.1006/jrpe.1996.0024

Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist, 34,* 169–189. doi:10.1207/s15326985ep3403_3

Elliot, A. J. (2005). A conceptual history of the achievement goal construct. In A. Elliot & C. Dweck (Eds.), *Handbook of competence and motivation* (pp. 52–72). New-York, NY: Guilford Press.

Elliot, A. J. (2006). The hierarchical model of approach-avoidance motivation. *Motivation and Emotion, 30,* 111–116. doi:10.1007/s11031-006-9028-7

Elliot, A. J., & Murayama, K. (2008). On the measurement of achievement goals: Critique, illustration, and application. *Journal of Educational Psychology, 100,* 613–628. doi:10.1037/0022-0663.100.3.613

Elliot, A. J., Murayama, K., & Pekrun, R. (2011). A 3 × 2 achievement goal model. *Journal of Educational Psychology, 103,* 632–648. doi:10.1037/a0023952

Elliot, A. J., & Thrash, T. M. (2001). Achievement goals and the hierarchical model of achievement motivation. *Educational Psychology Review, 13,* 139–156. doi:10.1023/A:1009057102306

Elliot, A. J., Maier, M. J., & Lichtenfeld, S. (2008, March). *Why are you doing this? The reasons behind performance approach goals may alter achievements outcomes.* Paper presented at the annual meeting of the American Educational Research Association, New York, NY.

Gavin, M. B., & Hofmann, D. A. (2002). Using hierarchical linear modeling to investigate the moderating influence of leadership climate. *The Leadership Quarterly, 13,* 15–33. doi:10.1016/S1048-9843(01)00102-3

Grolnick, W. S., Deci, E. L., & Ryan, R. M. (1997). Internalization within the family: The self-determination theory perspective. In J. E. Grusec & L. Kuczynski (Eds.), *Parenting and children's internalization of values: A handbook of contemporary theory* (pp. 135–161). New York, NY: Wiley.

Heyman, G. D., & Dweck, C. S. (1992). Achievement goals and intrinsic motivation: Their relation and their role in adaptive motivation. *Motivation and Emotion, 16,* 231–247. doi:10.1007/BF00991653

Iyengar, S. S., & Lepper, M. R. (1999). Rethinking the value of choice: A cultural perspective on intrinsic motivation. *Journal of Personality and Social Psychology, 76,* 349–366. doi:10.1037/0022-3514.76.3.349

Iyengar, S. S., & Lepper, M. R. (2000). When choice is demotivating: Can one desire too much of a good thing? *Journal of Personality and Social Psychology, 79,* 995–1006. doi:10.1037/0022-3514.79.6.995

Kaplan, A., & Maehr, M. L. (1999). Achievement goals and student well-being. *Contemporary Educational Psychology, 24,* 330–358. doi:10.1006/ceps.1999.0993

Kaplan, A., & Maehr, M. L. (2002). Adolescents' achievement goals: Situating motivation in sociocultural contexts. *Academic Motivation of Adolescents, 2,* 125–167.

Kaplan, A., Middleton, M. J., Urdan, T., & Midgley, C. (2002). Achievement goals and goal structures. In C. Midgley (Ed.), *Goals, goal structures, and patterns of adaptive learning* (pp. 21–53). Mahwah, NJ: Erlbaum.

Midgley, C., Maehr, M. L., Hruda, L. Z., Anderman, E., Anderman, L., Freeman, K. E., . . . Urdan, T. (2000). *Manual for the Patterns of Adaptive Learning Scales (PALS).* Ann Arbor: University of Michigan.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods.* London, United Kingdom: Sage.

Roth, G. (2008). Perceived parental conditional regard and autonomy support as predictors of young adults' self versus other oriented prosocial tendencies. *Journal of Personality, 76,* 513–533. doi:10.1111/j.1467-6494.2008.00494.x

Roth, G., Assor, A., Kanat-Maymon, Y., & Kaplan, H. (2006). Assessing the experience of autonomy in new cultures and contexts. *Motivation and Emotion, 30,* 361–372. doi:10.1007/s11031-006-9052-7

Roth, G., Assor, A., Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The emotional and academic consequences of parental conditional regard: Comparing conditional positive regard, conditional negative regard, and autonomy support as parenting practices. *Developmental Psychology, 45,* 1119–1142. doi:10.1037/a0015272

Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology, 43,* 450–461. doi:10.1037/0022-3514.43.3.450

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57,* 749–761. doi:10.1037/0022-3514.57.5.749

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55,* 68–78. doi:10.1037/0003-066X.55.1.68

Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *Journal of Personality, 74,* 1557–1586. doi:10.1111/j.1467-6494.2006.00420.x

Schwartz, B. (2000). Self-determination: The tyranny of freedom. *American Psychologist, 55,* 79–88. doi:10.1037/0003-066X.55.1.79

Soenens, B., Vansteenkiste, M., Luyten, P., Duriez, B., & Goossens, L. (2005). Maladaptive perfectionistic self-representations: The mediational link between psychological control and adjustment. *Personality and Individual Differences, 38,* 487–498. doi:10.1016/j.paid.2004.05.008

Urdan, T. C. (1997). Achievement goal theory: Past results, future directions. *Advances in Motivation and Achievement: A Research Annual, 10,* 99–141.

Urdan, T. C., & Mestas, M. (2006). The goals behind performance goals. *Journal of Educational Psychology, 98,* 354–365. doi:10.1037/0022-0663.98.2.354

Vansteenkiste, M., Lens, W., Elliot, A. J., Soenens, B., & Mouratidis, A. (2012). *Moving the achievement goal approach one step forward: Towards a systematic consideration of the reasons underlying achievement goals.* Manuscript submitted for publication.

Vansteenkiste, M., Mouratidis, A., & Lens, W. (2010). Detaching reasons from aims: Fair play and well-being in soccer as a function of pursuing performance-approach goals for autonomous or controlling reasons. *Journal of Sport & Exercise Psychology, 32,* 217–242.

Vansteenkiste, M., Smeets, S., Soenens, B., Lens, W., Matos, L., & Deci, E. L. (2010). Autonomous and controlled regulation of performance-approach goals: Their relations to perfectionism and educational outcomes. *Motivation and Emotion, 34,* 333–353. doi:10.1007/s11031-010-9188-3

Williams, G. C., & Deci, E. L. (1996). Internalization of biopsychosocial values by medical students: A test of self-determination theory. *Journal of Personality and Social Psychology, 70,* 767–779. doi:10.1037/0022-3514.70.4.767

Zuckerman, M., Porac, J., Lathin, D., Smith, R., & Deci, E. L. (1978). On the importance of self-determination for intrinsically motivated behavior. *Personality and Social Psychology Bulletin, 4,* 443–446. doi:10.1177/014616727800400317