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Goal Internalization and Persistence as a Function of Autonomous and Directive Forms of Goal Support

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Abstract

Two prospective studies examined the relations of autonomy support and directive support to goal internalization and goal persistence over a year. Study 1 examined the role of support and internalization in semester-long goals set by college students and whether the goals were reset in the following semester. Study 2 examined semester-long goals and long-term developmental goals. Study 1 showed that autonomy support was not only significantly associated with greater internalization and goal success in the fall semester, but it was also significantly associated with actually resetting and subsequently succeeding at goals that one had failed to reach. Study 2 showed that autonomy support was significantly associated with progress for short-term goals over the semester, whereas directive support was unrelated to progress. For long-term goals, autonomy support was significantly related to greater internalization of goals and to greater goal satisfaction, whereas directive support was significantly negatively related to these outcomes. These studies point to the beneficial effects of autonomy support on goal internalization and resilient persistence. The effects of directive support (null vs. negative) were moderated by the timeline of the goals.

A fundamental aspect of goal setting and, ultimately, goal achievement involves interpersonal factors such as the support one receives from important others. However, the specific nature of the support one receives appears to be crucial. In particular, research has begun to show that support for autonomy facilitates goal progress, whereas more directive forms of support appear to be less consistently helpful, or even unhelpful (Gorin, Powers, Koestner, Wing, & Raynor, 2014; Koestner, Powers, Carbonneau, Milyavskaya, & Chua, 2012). Some important questions, however, remain unanswered regarding autonomy support. For example, how does autonomy support affect the way goals become represented in the self? Do goals become more integrated into the self in an autonomy-supportive environment, or is it that goals become more fun and interesting when others support our pursuits? Does the effect of autonomy support on internalization, intrinsic motivation, and subsequent goal success vary for goals that are relatively short term (i.e., semester goals) versus relatively long term (i.e., developmental goals for 5 years in the future)? Does autonomy support affect the way in which people cope with failures in goal pursuit? The present research was an effort to examine these questions regarding the role of autonomy support in promoting goal internalization and facilitating goal pursuit.

Self-determination theory (SDT) provides a useful way of understanding interpersonal support and motivation for goal-related behavior (Ryan, Sheldon, Kasser, & Deci, 1996). The theory suggests that motivation for any behavior varies in the degree to which it is experienced as autonomous (i.e., self-determined) or controlled in nature (Deci & Ryan, 2000, 2012). Individuals are considered autonomously motivated to the extent that they experience goals and decisions to be self-generated and self-endorsed, rather than controlled by external or internal pressures. Contextual support for autonomy establishes the environment for the development of self-determined

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choice by allowing intrinsic motivation to thrive and/or by facilitating the integration of previously external motives into the developing self (Deci & Ryan, 2000). The specific behavioral indicants of autonomy support have been reported to include acknowledging an individual's feelings and unique perspective, refraining from excessive control and pressure, and encouraging choices and options (Koestner, Ryan, Bernieri, & Holt, 1984; Reeve, Bolt, & Cai, 1999; Silva et al., 2010).

Research across a variety of goal domains has repeatedly demonstrated that autonomy support and autonomous self-regulation are related to greater persistence in the face of adversity, better learning, superior task performance, more effective coping, better health outcomes, and better goal functioning (Deci & Ryan, 2000; Gorin et al., 2014; Koestner et al., 2012; Powers, Koestner, & Gorin, 2008; Williams, Gagné, Ryan, & Deci, 2002; Williams, Grow, Freedman, Ryan, & Deci, 1996). While much of the early research looked at autonomy support from authority figures like health care providers, recent efforts have focused on support from coworkers (Jungert, Houlfort, & Koestner, in press) or from significant others (Gorin et al., 2014; Koestner et al., 2012; Powers et al., 2008; Williams et al., 2006). These findings highlight the importance of partner support and suggest that autonomy support from peers or significant others may be even more important than support from authority figures.

Studies examining the associations between autonomy support and adaptation have generally distinguished it from controlling forms of guidance rather than from other forms of support (Deci & Ryan, 2012). Recent goal research has begun to identify important differences between autonomy support and more directive forms of support from significant others. In one study, directive support was assessed with items such as "my family and friends repeatedly reminded me of my goal." Participants reported significantly greater weight loss over time when they perceived their family and friends as autonomy supportive of their efforts; however, no such association was found for more directive forms of "support" (Powers et al., 2008). Another study showed that autonomy support from a friend or relationship partner predicted weight loss over an 18-month period in the context of a randomized controlled study (Gorin et al., 2014). In contrast, direct encouragement of healthy eating by friends and partners was significantly negatively related to weight loss, and other measures of directive support were unassociated with outcomes. An example of an item assessing directive support was "my friend encouraged me not to eat high-salt, high-fat foods when tempted to do so." Three recent studies demonstrated that autonomy support was consistently and significantly associated with better goal progress across a variety of goal domains and with improved relationship quality and subjective well-being, whereas directive support was only marginally associated with better goal progress and unrelated to relationship quality or well-being (Koestner et al., 2012). Together, these studies suggest that autonomy support is not only beneficial relative to controlling guidance, but also relative to other types of support.

When considering how autonomy support might facilitate goal functioning, self-determination theory maintains that autonomy support is crucial for the internalization and integration of initially externally motivated goals (Deci & Ryan, 2000). Other forms of more directive support are unlikely to facilitate the internalization of external standards, requests, or motives to the same degree, if at all. Certainly not all goals start out as intrinsically interesting and personally meaningful. In fact, many may be initiated by some external source (e.g., parent, doctor, spouse, society at large). While these start out as somewhat external to the self, they may gradually over time be incorporated into the self. Deci and Ryan (2000, p. 9) maintain that the internalization process is "the means through which individuals assimilate and reconstitute formerly external regulations so the individuals can be self-determined." They propose a continuum of internalization from entirely external regulation, through introjection, to identification, and ultimately to integrated regulation. The greater the degree to which goals and goal motivation are integrated into the self, the greater the degree of self-regulation and presumably the greater the probability of successful goal progress. Deci and Ryan (2000) also suggest that while other forms of support may facilitate some internalization, support for autonomy is necessary for deeper integration to occur, and research has provided support for this assumption (Deci, Eghrari, Patrick, & Leone, 1994; Joussemet, Koestner, Lekes, & Houlfort, 2004; Joussemet, Koestner, Lekes, & Landry, 2005; Williams et al., 1996).

So theory predicts that greater perceived autonomy support for a goal ought to be associated with a greater degree of internalization of that goal. The most common way to assess this internalization has been to assess the relation between autonomy support and subsequent change in self-regulation for a goal. Often research has employed an index of "self-concordance" that is composed of four or five types of reasons for setting a goal: respectively, external ("because somebody else wants you to or because you'll get something from somebody if you do"), introjected ("because you would feel ashamed, guilty, or anxious if you didn't—you feel that you ought to strive for this"), identified ("because you really believe that it is an important goal to have—you endorse it freely and value it wholeheartedly"), integrated ("because it represents who you are and reflects what you value most in life"), and intrinsic ("because of the fun and enjoyment which the goal will provide you—the primary reason is simply your interest in the experience itself"; Sheldon & Houser-Marko, 2001). The index of self-concordance is formed by subtracting the introjected and external regulation ratings from those for intrinsic and identified (or integrated) reasons (Koestner et al., 2006; Koestner, Lekes, Powers, & Chicoine, 2002; Sheldon & Kasser, 1998). The index has been shown to be highly predictive of goal-related and adjustment outcomes in a wealth of research (Sheldon, 2011; Sheldon & Houser-Marko, 2001;

Sheldon & Kasser, 1998). This index does not, however, allow for the direct assessment of the degree of internalization because it includes intrinsic motivation, which is thought to reflect a separate motivational process. Behaviors that are intrinsically motivated are based in the inherent interest and enjoyment of doing them and thus do not require internalization, which only refers to guidelines and regulations that initially came from outside the self. A more accurate index of internalization can be constructed by subtracting external regulation and introjection from identified and integrated forms of regulation. We suggest that it is important to examine the relation of autonomy support of goals to the degree to which they are internalized in the self. More precisely, it would be useful to examine the relation of autonomy support to changes in internalization, to compare that with changes in intrinsic motivation, and then ultimately to compare the relation of these changes in self-regulation to goal outcomes. It would also be useful to explore how autonomy support may be related to the maintenance of a goal that has not been fully realized. This resetting of unattained goals may be considered goal persistence, which SDT predicts will increase in an autonomy-supportive environment

It is also important to examine intrinsic motivation in relation to personal goals. Some goals are likely selected because they are intrinsically motivating and thus will be interesting and enjoyable to pursue (e.g., "go to the movies once a week"). Such intrinsic goals may reflect implicit motives or genetic-temperamental predispositions (McClelland, 1985). Other goals that are not initially intrinsically motivating (e.g., "work out at the gym three times a week") may become more interesting and enjoyable as the individual learns more about them or becomes more skilled (Koestner & Losier, 2002). There is a great deal of experimental research showing that interpersonal climates characterized by autonomy support are associated with higher levels of intrinsic motivation (Deci & Ryan, 2000). Yet, it is important to note that self-determination theory views internalization and intrinsic motivation as separate motivational processes. Therefore, it would be useful to explore whether autonomy support of personal goals will not only foster internalization of the goals but also enhance intrinsic motivation toward the goals. Although both processes are thought to be central to development and adaptation, it is possible that internalization and intrinsic motivation are differentially implicated in the selection and development of goals.

Present Investigation

The goal of the present research was to examine the relations of autonomy support and directive support to goal internalization, goal intrinsic motivation, and goal persistence over time. Measures of goal success and goal satisfaction were also included. The first study used a 6-month prospective design to examine internalization processes associated with young adults' short-term goals for two consecutive academic semesters. Autonomy support was defined in terms of empathic perspective taking ("my friend understands how I see my goals"), whereas directive support was defined in terms of the provision of positive guidance ("my friend reminds me what I need to be doing"). The second study used a 1-year prospective design to examine interpersonal support and internalization processes associated with young adults' short-term and long-term goals.

STUDY 1

Study 1 was designed to explore the effects of goal-related autonomy support and directive support on internalization, success, and goal satisfaction in relation to semester-long goals. Specifically, we planned to examine three semester-long goals set by college students over each of two distinct goal-setting periods: the fall semester and the winter semester. The level of autonomy support and directive support that participants were receiving for their pursuit of all goals was assessed at 1 month. Specifically, participants were asked to indicate three people who were supporting their goal pursuits, and then rate each person on the two forms of support. The two-semester design allowed us to examine whether individuals reset goals in the second semester that they had abandoned or failed at in the first semester. It was also possible to examine whether participants succeeded at their repeat attempts. Because of evidence that people typically fail several times at a goal before succeeding (Prochaska, DiClemente, & Norcross, 1992), it is important to test whether autonomy support might allow people to be more resilient in their goal pursuit. To the best of our knowledge, this is the first study to examine motivational factors implicated in the resetting of goals across two distinct goal-setting periods.

We expected that autonomy support would be significantly positively related to goal internalization and intrinsic motivation. That is, we expected to observe a shift from external and introjected goal regulation to identified and integrated forms of regulation when participants received autonomy support. Similarly, we expected parallel shifts to higher levels of intrinsic motivation when participants received autonomy support. We expected directive support to be unrelated to both goal internalization and intrinsic motivation. We also expected autonomy support to be significantly positively related to resilient goal pursuit, as reflected in (a) goal success, (b) goal satisfaction, (c) actually resetting unsuccessful goals the following semester, and (d) succeeding at reset goals. Directive support was expected to be unrelated to these outcomes.

Method

Participants and Procedure. Participants were 121 undergraduate students recruited through online classified advertisements for McGill and Concordia universities to participate in a study about goal setting. There were 95 women and 26 men,

with a mean age of 20.28. The study consisted of an initial lab visit as well as four online follow-ups. During the 1-hour lab session, participants completed a questionnaire about their goals as well as various measures of personality. Brief follow-up questionnaires assessing goal processes and well-being were then sent out monthly until the end of the semester. At each follow-up, participants were sent an email that included a link to the survey as well as a reminder of the goals that they had listed in the initial questionnaire. At the beginning of the new semester, participants were asked to list their new goals, and then they were followed up 12 weeks later. Participants were compensated $60 for their participation. The original sample included 240 participants, but we restrict our analyses to the 121 participants who completed all of the follow-ups.

Measures

Goal Descriptions. Participants were asked to list three personal goals that they intended to pursue over the course of the semester. The instructions for nominating personal goals were as follows:

> People often have personal goals. In this section, please write down three personal hopes, plans, and goals you have for the coming semester. Personal goals are projects and concerns that people think about, plan for, carry out, and sometimes (though not always) complete or succeed at. They may be more or less difficult to implement; require only a few or a complex sequence of steps; represent different areas of a person's life; and be more or less time consuming, attractive, or urgent.

Examples of semester goals include "get 'A's in all my classes," "get all assignments done at least 2 days before the deadline," "get at least seven hours of sleep every night," "become more involved in school," "learn squash," and "become president of my resident council."

Goal Internalization and Goal Intrinsic Motivation. Single items were used to assess intrinsic, integrated, identified, introjected, and extrinsic regulation for each goal. Participants were asked to indicate the extent to which they were following the goal for the following reasons: intrinsic "because of the fun and enjoyment which the goal will provide you—the primary reason is simply your interest in the experience itself"; integrated "because it represents who you are and reflects what you value most in life"; identified "because you really believe that it is an important goal to have—you endorse it freely and value it wholeheartedly"; introjected "because you would have felt ashamed, guilty, or anxious if you didn't—you felt that you ought to work on this"; and externally regulated "because somebody else wanted you to, or because you were going to get something from somebody for it." Ratings were made on a 1–7 scale ranging from *disagree strongly* to *agree strongly*. An index of internalization was calculated by reversing the items for external regulation and introjection, and then calculating a mean across these items and the items for identification and integration. Scores were averaged across the three goals. Internalization and intrinsic motivation were assessed at baseline, at the end of the first semester, and at the beginning of the second semester. The scales had adequate reliabilities, αs > .75.

Autonomous and Directive Support. At baseline, participants were asked to think of three individuals who would support them as they pursued their goals. At the 1-month follow-up, participants were reminded of whom they had nominated as likely support providers, and they were asked to rate each person on items that described directive support or autonomy support of goals. These two scales were measured with five items each, taken from those previously used by Koestner et al. (2012). Participants rated support using a 7-point Likert scale ranging from 1 (*not at all true*) to 7 (*very true*). Examples of items include "I feel that _____ understands how I see things with respect to my goals" (autonomy support) and "_____ helps me problem solve about my goals" (directive support). The autonomy support items were designed to assess all three of the main indicants of the construct: acknowledging feelings, refraining from excessive control, and encouraging choices and self-initiation (Koestner et al., 1984). The internal reliability of the autonomy support scale was adequate, $\alpha = .80$. The reliability for the directive support scale was .84. The two scales were significantly positively related to each other, $r = .57$.

Goal Success. At the end-of-the-semester follow-up, participants were asked, "Where do you currently stand on this goal?" The following response options were provided: (a) "I achieved this goal"; (b) "I made some progress but did not fully achieve this goal"; (c) "I abandoned this goal"; and (d) "I failed at this goal." An index of success was calculated as follows: ((2 × the number of successful goals) + (the number of continuing goals)) − ((2 × the number of failed goals) + (the number of abandoned goals)). That is, successful and failed goals were doubly weighted relative to continuing or abandoned ones.

Goal Satisfaction at 3 Months. At the end-of-semester follow-up, participants were asked, "To what extent do you feel each of the following emotions regarding your current standing on this goal?" Three positive emotions (i.e., happy, proud, and satisfied) and five negative emotions (i.e., indifferent, stressed, guilty, disappointed, and dissatisfied) were provided. The negative items were reverse-scored and then combined with the positive items to give an index of satisfaction with goal progress. A mean was calculated across the three goals. The internal reliability for this measure was adequate, $\alpha = .82$.

Reset Semester Goals. For each participant, we identified goals that he or she had failed at or abandoned during the fall

semester. We then examined each participant's new list of three goals for the winter semester to see whether a failed or an abandoned goal was reset. That is, we determined how many of the failed or abandoned goals from the fall were reset in the winter semester. We also examined the level of internalization and intrinsic motivation of these reset goals.

Success at Reset Semester Goals. Success at the reset goals was assessed at the end of the winter semester using the same scale that was used for the fall semester's goals.

Results

Preliminary Analyses. Table 1 provides the means and standard deviations for goal-related internalization and intrinsic motivation at baseline and 3 months, along with the same information for autonomous and directive forms of goal support. It can be seen that levels of both goal-related internalization and intrinsic motivation were moderately high, but that internalization was significantly higher than intrinsic motivation, $t(120) = 3.99$, $p < .001$ at baseline; $t(120) = 2.09$, $p < .05$ at 3 months. It can also be seen that participants reported receiving significantly higher levels of autonomy support than directive support, $t(157) = 17.54$, $p < .001$.

After 3 months, 64% of participants reported having succeeded at achieving at least one of their three goals. In addition, 50% reported failing at least one goal, and 27% reported abandoning at least one. Across the entire sample, fewer goals were successfully achieved (total = 78) than were failed or abandoned (total = 92). However, the most common outcome was to still be working on one's goals.

Main Analyses. To test our central hypothesis that autonomy support, but not directive support, would be related to internalization, persistence, and goal progress, we conducted hierarchical multiple regression analyses in which the two forms of support were entered together. The analyses of internalization and intrinsic motivation included baseline measures of these variables, which were entered prior to the support measures. Preliminary regression analyses had revealed no main effects or interactions involving gender, so this variable was not considered in the main analyses. Table 2 presents the results of the regression analyses.

Table 1 Study 1: Means and Standard Deviations for Main Variables

	M	*SD*
Internalization baseline	5.08	0.73
Internalization at end of fall semester	4.84	0.77
Internalization for reset goals in winter semester	4.87	1.08
Intrinsic motivation baseline	4.63	1.31
Intrinsic motivation at end of fall semester	4.61	1.29
Intrinsic motivation for reset goals in winter semester	4.59	1.87
Autonomy support at 1 month	5.71	0.74
Directive support at 1 month	5.11	1.04

Autonomy support measured at 1 month was significantly positively associated with seven of the eight outcome measures. Thus, at the end of the fall semester, autonomy support was significantly related to greater internalization and intrinsic motivation, as well as greater goal success and goal satisfaction. Autonomy support was also significantly associated with actually resetting goals in the winter semester that participants had failed at or abandoned in the earlier semester. At the start of the second semester, autonomy support was significantly positively associated with the level of internalization of these reset goals, but it was unrelated to the level of intrinsic motivation. Finally, autonomy support was significantly related to succeeding at these reset goals, as assessed at the end of the second semester. Directive support was unrelated to all outcomes.

Using the Process macro for SPSS (Hayes, 2012), we conducted mediation analyses to examine the indirect effects of autonomy support through internalization and intrinsic motivation on perceived goal success and satisfaction with goal progress. These analyses controlled for directive support. Because there were no indirect effects of autonomy support through either internalization or intrinsic motivation on goal success, we focus on the mediational findings for goal satisfaction. Autonomy support was a significant predictor of both internalization ($b = .40$, $SE = .11$, $p < .001$) and intrinsic motivation ($b = .58$, $SE = .19$, $p < .01$). Only internalization, but not intrinsic motivation, predicted goal satisfaction ($b = .52$, $SE = .11$, $p < .001$ for internalization; $b = .09$, $SE = .06$, $p = .15$ for intrinsic motivation). The total effect of autonomy

Table 2 Study 1: Standardized Regression Coefficients (Betas) of Support Measures With Outcomes

	Autonomy Support			Directive Support		
	B	*t*	*p* <	*B*	*t*	*p* <
Internalization at end of fall semester[a]	.21	2.39	.05	−.14	−1.49	*ns*
Intrinsic motivation at end of fall semester[b]	.18	2.08	.05	−.13	−1.49	*ns*
Goal success at end of fall semester	.36	3.37	.001	−.02	−0.22	*ns*
Goal satisfaction at end of fall semester	.32	2.93	.01	−.08	−0.71	*ns*
Number of failed/ abandoned goals reset in winter semester	.25	1.96	.05	−.01	−0.09	*ns*
Internalization for reset goals in winter semestera	.28	2.14	.05	−.17	−1.27	*ns*
Intrinsic motivation for reset goals in winter semester[b]	.06	0.42	*ns*	.11	1.27	*ns*
Success at reset goals at end of winter semester	.29	2.42	.05	−.01	−0.10	*ns*

Note. [a]Analysis controlled for baseline internalization. [b]Analysis controlled for baseline intrinsic motivation.

support on goal satisfaction ($b = .39$, $SE = .13$, $p < .01$) was reduced to $b = .13$ ($SE = .12$, $p = .30$) in the mediation analysis, suggesting full mediation. The total indirect effect was .26 ($SE = .07$, 95% CI [.14, .42]). Only the indirect effect of internalization ($b = .21$, $SE = .07$, 95% CI [.10, .36]) and not of intrinsic motivation ($b = .05$, $SE = .04$, 95% CI [−.02, .17]) was significantly different from 0, showing that only internalization at the end of the semester was a mediator of the relationship between autonomy support at 1 month and end-of-the-semester goal satisfaction.

Brief Discussion

The results of Study 1 showed that with relatively short-term, semester-long goals, autonomy support was related to greater internalization, greater goal success, and greater goal satisfaction. The study also showed that goal-related autonomy support was significantly positively related to actually resetting goals that one had earlier failed at or abandoned, and subsequently succeeding at the reset goals, indicating resilient persistence. Autonomy support also was significantly associated with participants' intrinsic motivation for their goals, but this form of self-regulation was unrelated to later goal satisfaction. Directive support was unrelated to goal internalization, goal success, or goal satisfaction. Directive support was also unrelated to all goal outcomes.

STUDY 2

Study 2 examined the role of interpersonal support in college students' pursuit of both short-term and long-term personal goals. The shorter-term goals were assessed in terms of goals for an academic semester. The longer-term goals were assessed in terms of developmental goals for the next 3–5 years. Self-regulation toward both short-term and long-term goals was assessed at baseline. Progress for the three semester-long goals was assessed at 2-month and 3-month follow-ups. Self-regulation in relation to three developmental goals was assessed at baseline, 4 months, and 12 months. The level of autonomy support and directive support that participants were receiving for their pursuit of all goals was assessed at 1 month. Specifically, participants were asked to indicate three people who were supporting their goal pursuits, and then rate each person on the two forms of support. For the long-term goals, persistence was assessed at 4 months, whereas goal success and goal satisfaction were assessed at 12 months. We expected that autonomy support from friends and family would be associated with significantly greater internalization, intrinsic motivation, persistence, success, and satisfaction, whereas directive support would be unrelated to these outcomes.

Study 2 allowed us to examine whether goal-related internalization or intrinsic motivation plays a different role in the pursuit of long-term developmental goals, rather than short-term goals. It also allowed us to explore whether autonomy and directive support play any different role in the context of developmental goals. Interestingly, in four previous studies that examined relatively short-term goals of 1 month (Powers et al., 2008) and 3 months (Koestner et al., 2012), directive support was either unrelated or marginally positively related to goal progress. However, in the one study to examine goal progress for over a year (Gorin et al., 2014), a measure of directive support was actually significantly negatively related to successful weight loss. This pattern of results in previous studies hints at the possibility that the impact of directive support may tend to be negative for long-term goals but neutral or mildly positive for short-term goals.

Methods

Participants and Procedure. Participants were 193 undergraduate students recruited through online classified advertisements for McGill and Concordia universities, as well as from a paid participant pool at McGill University, to participate in a study about goal setting. The study consisted of an initial lab visit as well as three online follow-ups. During the 1-hour lab session, participants completed a questionnaire about their goals as well as various measures of personality. Brief follow-up questionnaires assessing goal processes and well-being were then sent out monthly for 3 months. At each follow-up, participants were sent an email that included a link to the survey as well as a reminder of the goals that they had listed in the initial questionnaire. Participants were compensated with $20 after the initial baseline survey and with another $20 after they had completed all follow-ups, for a total of $40 per participant. One hundred seventy-six participants (120 female, 36 male, 20 did not report gender) ages 18–35 ($M = 20.16$, $SD = 2.44$) completed at least one of the three follow-ups.

All participants were asked if they would be willing to complete a survey 1 year in the future. Of the 176 participants who completed a follow-up, 71% agreed to be contacted. Of these, 104 participants completed a brief 1-year follow-up that assessed goal motivation, goal success, and affect about goal pursuits. The present study focuses on data collected at baseline, 4 months, and 12 months because goal internalization and intrinsic motivation were assessed at these times.

Measures

Semester-Long Goal Descriptions. Participants were asked to list three semester-long goals using the same instructions as in Study 1. Examples of goals listed by participants include "get a 3.6 GPA," "find employment," "improve my health," and "learn French."

Developmental Goal Descriptions. Participants were asked to list three personal, long-term goals that they intended to pursue over the next 3–5 years. The instructions for nominating personal goals were as follows:

> People often have long-term goals. In this section, please write down your three most important personal hopes, plans, and goals for the next 3–5 years. Personal goals are projects and concerns that people think about, plan for, carry out, and sometimes (though not always) complete or succeed at. They may be more or less difficult to implement; require only a few or a complex sequence of steps; represent different areas of a person's life; and be more or less time consuming, attractive, or urgent.

Examples of developmental goals listed by participants include "improve my attention span and ability to focus," "have a career in music," "go to graduate school," "be happy with my career choice," "support myself completely with no financial help from family," "travel as much as possible," "live in another country," and "find a long-term girlfriend."

Goal Internalization and Goal Intrinsic Motivation. Participants were asked to indicate the extent to which they were following the three semester goals and the three developmental goals for intrinsic, integrated, identified, introjected, and externally regulated reasons. The assessment was identical to that in Study 1 except that scores were separately averaged for the three semester goals and for the three developmental goals. Internalization and intrinsic motivation for the semester goal was only assessed at baseline (because of an error in the 3-month follow-up protocol). Internalization and intrinsic motivation for the developmental goals were assessed at baseline, at 4 months, and at 12 months. The internal reliability for the internalization scales were acceptable, αs > .75 at each time point. Internalization was significantly correlated with intrinsic motivation at each time point, with *r*s ranging from .42 to .57.

Goal Support From Three People. At baseline, participants were asked to think of three individuals who would support them as they pursued their goals. At the 1-month follow-up, participants were reminded of whom they had nominated as likely support providers, and they were asked to rate each person on seven items that described directive support and six items that described autonomy support of goals. As in Study 1, these items were used by Koestner et al. (2012). Participants rated support using a 7-point Likert scale ranging from 1 (*not at all true*) to 7 (*very true*). Summary scores were calculated as the mean across items and across support providers. Internal reliabilities were adequate, αs > .75. The two support measures were significantly positively related to one another, $r = .60$, $p < .001$.

Progress on Semester Goals. Goal progress was assessed at the final follow-up using three items for each goal: "I have made a lot of progress toward this goal," "I feel like I am on track with my goal plan," and "I feel like I have achieved this goal." All ratings were made on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Persistence on Developmental Goals at 4 Months. Participants were asked to respond yes or no to the question, "Are you still pursuing this goal?" The sum of yes responses across the three goals was used as an index of goal persistence at 4 months.

Success on Developmental Goals. At the 1-year follow-up, participants were asked, "Where do you currently stand on this goal?" The following response options were provided: (a) "I achieved this goal"; (b) "I made some progress but did not fully achieve this goal"; (c) "I abandoned this goal"; and (d) "I failed at this goal." An index of goal success was calculated in the same manner as in Study 1.

Satisfaction With Progress for Developmental Goals. At the 1-year follow-up, participants were asked, "To what extent do you feel each of the following emotions regarding your current standing on this goal?" The same items were used as in Study 1, and a mean was calculated across the three goals. The internal reliability for this measure was adequate, $\alpha = .83$.

Results

Preliminary Analyses. Table 3 provides the means and standard deviations for goal-related intrinsic motivation and internalization at baseline, 4 months, and 12 months, along with the same information for autonomous and directive forms of goal support. It can be seen that levels of both goal-related internalization and intrinsic motivation were moderately high and similar. Levels of internalization and intrinsic motivation for developmental goals were significantly higher than the corresponding levels obtained for semester goals, *t*s(192) = 5.09 and 8.62, respectively. It can also be seen that participants reported receiving significantly higher levels of

Table 3 Study 2: Means and Standard Deviations for Main Variables

	M	*SD*
Internalization baseline for semester goals	5.01	0.77
Internalization baseline for developmental goals	5.29	0.78
Internalization 4-month follow-up ddevelopmental goals	5.42	0.86
Internalization 12-month follow-up developmental goals	5.30	0.88
Intrinsic motivation baseline for semester goals	4.68	1.25
Intrinsic motivation baseline for developmental goals	5.51	1.16
Intrinsic motivation 4-month follow-up developmental goals	5.60	1.09
Intrinsic motivation 12-month follow-up Developmental goals	5.21	1.13
Autonomy support at 1 month	6.09	0.76
Directive support at 1 month	5.03	0.94

autonomy support than directive support, $t(157) = 17.54$, $p < .001$.

At 4 months, the vast majority of participants reported that they were still pursuing the developmental goals they had listed at baseline. In fact, only a total of 18 goals was reported to have been dropped. At 1 year, the vast majority of developmental goals were rated as still in progress. Only 36 participants reported succeeding on at least one of their three goals, whereas 41 reported failing at or abandoning one of their goals.

Main Analyses. To test our central hypothesis that autonomy support, but not directive support, would be related to internalization, intrinsic motivation, persistence, and goal progress, we conducted hierarchical multiple regression analysis in which the two forms of support were entered together. In the analyses of internalization and intrinsic motivation, we entered baseline measures before the support measures. Preliminary regression analyses had revealed no main effects or interactions involving gender, so this variable was not considered in the main analyses. Table 4 presents the results of the regression analyses for all outcomes.

The regression for progress of the short-term goals revealed significant effects for support at both follow-ups. Specifically, autonomy support was significantly positively related to greater progress on semester goals, whereas directive support was unrelated.

For long-term developmental goals, a number of significant effects were obtained for both autonomy support and directive support. It can be seen in Table 4 that autonomy support measured at 1 month was significantly positively associated with internalization of long-term goals at both 4 months and 12 months, persistence at long-term goals at 4 months, and long-term goal satisfaction at 12 months. Because the internalization analyses controlled for baseline internalization, these results indicate that autonomy support was associated with greater increases in internalization of long-term goals over time. Autonomy support was also significantly positively associated with intrinsic motivation at 4 months, but it was unrelated to intrinsic motivation at 12 months. Contrary to prediction, autonomy support was unrelated to perceived goal success at 12 months.

We had expected directive support to be unrelated to long-term developmental goal outcomes; however, three significant effects were obtained. Directive support at 1 month was associated with significantly lower levels of internalization of long-term goals at both 4 months and 12 months. Because the internalization analyses controlled for baseline internalization, these results indicate that directive support was associated with greater decreases in internalization over time. Directive support was also significantly associated with less satisfaction with long-term goals at 12 months.

Table 4 Study 2: Standardized Regression Coefficients (Betas) of Support Measures With Outcomes

	Autonomy Support			Directive Support		
	B	*t*	*p* <	*B*	*t*	*p* <
Semester-long goals						
Progress at 2 months	.23	2.20	.05	.02	0.23	*ns*
Progress at 3 months	.22	2.06	.05	.04	0.39	*ns*
Developmental goals						
Internalization 4-month follow-up[a]	.37	4.43	.001	−.29	−3.46	.001
Internalization 12-month follow-up[a]	.29	2.67	.01	−.30	−2.79	.01
Intrinsic motivation 4-month follow-up[b]	.26	2.74	.01	−.11	−1.13	*ns*
Intrinsic motivation 12-month follow-up[b]	.06	0.49	*ns*	.02	0.20	*ns*
Goal persistence 4 months	.21	1.94	.05	−.03	0.34	*ns*
Goal success 12 months	.19	1.47	*ns*	−.08	−0.64	*ns*
Goal satisfaction 12 months	.34	2.67	.01	−.31	−2.47	.05

Note. [a]Analysis controlled for baseline internalization. [b]Analysis controlled for baseline intrinsic motivation.

Mediational Analyses of Goal Satisfaction. The fact that both forms of support were significantly but oppositely associated with internalization of long-term goals at 4 months and with satisfaction with long-term goals at 12 months suggests a possible mediational relationship. Autonomy support appears to promote goal internalization, whereas directive support inhibits internalization, and these internalization processes, in turn, impact participants' feelings about their developmental goals after 12 months. To test this possibility, we conducted mediation analyses.

Using the Process macro for SPSS (Hayes, 2012), we conducted two sets of mediation analyses. In the first one, both internalization and intrinsic motivation of long-term goals at 4 months were included as mediators between autonomy support at 1 month and goal satisfaction at 12 months, controlling for directive support. Results first showed that autonomy support was a significant predictor of both internalization ($b = .58$, $SE = .15$, $p < .001$) and intrinsic motivation ($b = .48$, $SE = .17$, $p < .01$). Only internalization, but not intrinsic motivation, predicted satisfaction ($b = .35$, $SE = .11$, $p = .01$ for internalization; $b = .08$, $SE = .09$, $p = .39$ for intrinsic motivation). There was also a significant total effect of autonomy support on goal satisfaction ($b = .43$, $SE = .15$, $p = .01$). This direct effect was reduced to $b = .18$ ($SE = .16$, $p = .25$) in the mediation analysis, suggesting full mediation. The total indirect effect was .24 ($SE = .08$, 95% CI [.10, .44]). Only the indirect effect of internalization ($b = .20$, $SE = .09$, 95% CI [.05, .41]), and not of intrinsic motivation ($b = .04$, $SE = .06$, 95% CI [−.05, .19]), was significantly different from 0, showing that only internalization at 4 months was a mediator of the relationship between autonomy support at 1 month and goal satisfaction at the 12-month follow-up.

We next repeated the same analysis using directive support as the predictor variable and controlling for autonomy support. This time, directive support negatively predicted internalization ($b = -.49$, $SE = .11$, $p < .001$). There was also a significant total effect of directive support on goal satisfaction ($b = -.28$, $SE = .11$, $p = .013$). This direct effect was reduced to $b = -.08$ ($SE = .12$, $p = .48$) in the mediation analysis, suggesting full mediation. The total indirect effect was −.20 ($SE = .06$, 95% CI [−.35, −.09]). The indirect effect of internalization ($b = -.17$, $SE = .07$, 95% CI [−.32, −.05]) was significantly different from 0, showing that internalization at 4 months was a mediator of the relationship between directive support at 1 month and goal satisfaction at the 12-month follow-up.

Brief Discussion

The results for semester goals matched those of Study 1 and other recent studies (Koestner et al., 2012). Autonomy support was significantly related to goal progress over time for semester-long goals, whereas no relation was obtained for directive support. A different pattern of results emerged for the developmental goals, however, suggesting that autonomy support and directive support have distinctly different effects on the developmental goals of young adults. Autonomy support was reliably associated with enhanced internalization of the developmental goals over time, greater goal persistence at 4 months, and greater goal satisfaction after 12 months. By contrast, directive support was associated with diminished internalization over time for developmental goals and less goal satisfaction after 12 months. Furthermore, shifts in internalization appeared to mediate the opposite effects of the two kinds of support on later satisfaction with developmental goals.

Intrinsic motivation was not reliably affected by the type of support that participants received. Although a significant positive relation emerged for autonomy support with intrinsic motivation at 4 months, this effect was not maintained at 12 months. Directive support was unrelated to intrinsic motivation at both times. These results suggest that goal support from significant others may have a greater impact on internalization rather than intrinsic motivation processes, at least over the measured time span. That is, the type of support seems to act so as to influence young adults to shift from controlled toward identified and integrated forms of self-regulation that revolve around personal meaning. The type of support did not seem to affect whether people find the goals more interesting and enjoyable to pursue.

No results were obtained for the measure of goal success at 12 months. We speculate that because of our focus on developmental goals that were intended to span 3–5 years, it was perhaps premature to assess actual success versus failure after only 12 months. The paucity of participants reporting clear success or failure with their goals does indicate a possible floor effect for this measure. That is, the vast majority of goals were still in the process of being pursued at12 months.

GENERAL DISCUSSION

The results of this investigation indicated that autonomy support for goals was consistently related to increases in internalization of goal motivation, whereas more directive support was either unrelated or even negatively related. These findings support the theoretical assumptions of SDT, suggesting that although autonomy support provides the environment for the internalization process to flourish, more directive support may interfere with such processes. While autonomy support was associated with greater goal success for relatively short-term (3-month) goals, it was not significantly associated with success for more long-term goals when assessed after 1 year. Autonomy support was, however, associated with goal satisfaction at 1 year, even when progress toward the long-term goal was minimal. Directive support, on the other hand, was unrelated to goal success for both types of goals and significantly related to less satisfaction for long-term goals in Study 2.

In answer to the question of how autonomy support may influence self-regulation and behavior, SDT predicts that such support sustains preexisting intrinsic regulation and/or facilitates the internalization of more external regulation. While autonomy support for goals was consistently related to increases in internalization in the current results, it was only related to shorter-term changes in intrinsic self-regulation. It appears as though, over the long term, autonomy support may facilitate the process of goals becoming more integrated into the self rather than becoming more inherently enjoyable or interesting. Consistent with the theory, intrinsic motivation seems to reflect a separate motivational process. Behaviors that are inherently interesting and enjoyable do not require the internalization of guidelines and regulations that initially come from outside the self.

The current findings demonstrated that the internalization process mediated the association of autonomy support to goal satisfaction but not to perceived goal success. The lack of mediation results for perceived goal progress was unexpected and may have been due to our use of a relatively insensitive measure of success. It is also possible that autonomy support's effects on internalization are revealed more strongly on affective rather than cognitive indicators of goal progress. While previous findings have usually shown that autonomous motivation is related to goal progress, studies have not always demonstrated that changes in such motivation mediate the impact of autonomy support on goal progress (Powers et al., 2008; Williams et al., 2006). Future work needs to more carefully examine the mechanisms by which autonomy support impacts goal-related processes and outcomes. Including additional potential mediators that have been identified by previous research—such as goal effort, goal conflict, readiness to change, perceived competence, and ability to resist distraction or temptations—would be very useful.

The present investigation departed from previous studies related to self-determination theory by separating intrinsic motivation from the other commonly assessed self-regulation

scales, which were combined to yield an index of internalization. It is more typical to combine intrinsic motivation with identified motivation in forming an index (with external and introjected regulation reversed) to assess self-determination, relative autonomy, or self-concordance. The terms *self-determination* and *relative autonomy* are used interchangeably to denote the extent to which the initiation and regulation of behavior is governed by volitional processes. Sheldon and Elliott (1999) employed the same index but used the term *self-concordance* to reflect the fact that such goals represent deeper, implicit, or more stable aspects of personality. We believe the separation of internalization and intrinsic motivation was justified because of our focus on what happens to goals over time as a result of varying kinds of interpersonal support.

Theoretically, we believe that autonomy support affords individuals the opportunity to become more aware of how certain goal pursuits fit with other important aspects of one's personality, such as implicit motives, dispositional traits, and central life values. Autonomy support will also allow individuals to assess whether the process of goal pursuit results in basic need satisfaction and whether they should continue their efforts or begin disengaging. In this way, even though the goal itself may remain the same, a person may perceive it as more in line with their values and motives. Recent research has found that such internalization occurs as a result of increasing need satisfaction in the domain in which a goal is pursued (Milyavskaya, Nadolny, & Koestner, 2014), which is likely driven by experiencing autonomy support in the domain.

We also examined goal persistence. In both studies, participants who received greater autonomy support were more likely to persist with their goals. In Study 1, participants who received greater autonomy support 1 month into the fall semester were more likely to succeed at the goal after 3 months. If a goal was failed at or abandoned, it was the participants who received greater autonomy support who were more likely to reset the same goal in the winter semester, and also to subsequently succeed at this reset goal. In Study 2, students who had received greater autonomy support for their long-term goals were significantly more likely to continue pursuing these goals at the 4-month follow-up. Such persistence is typically highly adaptive because most meaningful, long-term pursuits will include struggles and failure along the way (Bandura, 2001; Dweck, 2006). However, goal persistence can also be maladaptive when important goals are actually unattainable (Wrosch, Miller, Scheier, & De Pontet, 2007). Indeed, there is evidence that the capacity to disengage from unattainable goals is just as important as the capacity to pursue attainable ones (Heckhausen & Schulz, 1995). Unfortunately, the present study did not include measures that could distinguish between goal abandonment and healthy disengagement. We suspect, however, that in relatively few cases did our participants face developmental deadlines or other circumstances that would make goals unattainable in some objective sense.

The tendency to reset a goal that has not been fully realized may reflect that the goal motivation has become more internalized. This conjecture was confirmed by the finding that autonomy support was associated with significantly higher levels of internalization for reset goals in Study 1. Reset goals were also more likely to be achieved when facilitated by autonomy support, consistent with predictions drawn from self-determination theory.

The results for directive support departed from our expectations. Directive support was unrelated to internalization, goal progress, and goal persistence of semester-long goals in both studies, suggesting that directive support does not provide the kind of environment that promotes the internalization of short-term goals. However, in Study 2, directive support was significantly negatively related to internalization of long-term developmental goals and to later goal satisfaction. These results follow previous work (Gorin et al., 2014) in suggesting that directive forms of support may produce more adverse outcomes when goals are more important and far-reaching. Regulation of long-term goals is more difficult to sustain, requiring maximal volitional resources. Kuhl and Fuhrmann's (1998) dual-component model of volition suggests that effective goal pursuit involves maintaining an awareness of aspects of oneself that support the goal while concomitantly developing strategies to maintain the goal in consciousness when competing motivations arise. One can accomplish the former process of self-maintenance by selecting goals that correspond to one's interests and values or by gradually internalizing the goal. We hypothesize that directive support may facilitate a process of goal maintenance by facilitating retrieval of goal intentions in memory, or heightening accessibility of environmental cues for goal completion. However, it may be impossible to sustain such goal maintenance over long time spans, and it is even possible that a focus on goal maintenance may come at the expense of self-maintenance processes.

The current studies were limited in several important ways. First, the measures of goal success were entirely self-report, and more objective measures might suggest different conclusions. It must also be noted that the measure of autonomy support was an assessment of perceived support, not actual behavior. Although the perception of support is crucial to self-determination theory, an objective assessment of the autonomy support individuals actually receive could also provide useful information. An additional methodological flaw could be the assessment time frame for the goals in Study 2. It is likely that the 1-year time frame was insufficient to assess goal progress for goals with an expressed time frame of 3–5 years. Hence, the fact that no relation was found between autonomy support and progress on these goals after 1 year may be attributable to the low probability of successful progress over the assessment period. Although we used a prospective design, the core analyses of the present research were correlational, and, therefore, causal inferences cannot be supported. More complex longitudinal and experimental designs are required. Finally, a more rigorous test of the internalization

process might be to assess the change in goal motivation for goals that explicitly originate externally. Theory would predict that in an autonomy-supportive environment, such goals could become internalized, and, as a result, goal progress would be facilitated. Future research could profit from examining goals that do not start out as personal goals but instead are externally generated, such as the vicarious goals studies conducted by Koestner et al. (2012).

The design of the current study involved reminding participants at each follow-up of what their goals had been. Two problems arise with such a design: (a) In everyday life, people do not receive systematic reminders of their important goals, and (b) goals may not be static—there can be subtle shifts among a set of goals. Indeed, our exploration of reset goals in Study 1 suggested that many individuals maintained the same general goal in the winter term, but they made it more specific. For example, the fall semester goal of "doing well in my classes" became the winter goal of "get an A in my physics class." Sometimes the challenge level of a goal was changed from the fall to the winter semester. It is likely that such subtle changes occur frequently with students' goals even within a semester. Future research should more carefully examine how autonomy support and the internalization process relate to the shaping and molding of the content of one's goals.

The social support literature includes a number of other potential dimensions of support that could be compared with autonomy and directive support in future research. For example, Bolger and Amarel (2007) focused attention on the visibility of social support. They noted that visible social support can entail emotional costs and that supportive acts are most effective when accomplished either (a) outside of recipients' awareness or (b) within their awareness but with sufficient subtlety that they do not interpret it as support. Another example is the developmental work of Scholte, van Lieshout, and van Aken (2001), who developed a scale for young adults assessing five dimensions of perceived relational support: informational, emotional, convergence of goals, acceptance, and one dimension resembling the way we have conceptualized autonomy support. This research also attempted to distinguish the provision of the various types of support from the various providers of the support. They empirically identified several configurations of perceived support and associated these with adolescent adjustment and well-being. It would be interesting to see how our measure of autonomy support aligns with these other dimensions of support and to explore different configurations of both supportive behavior and support providers.

The results of the present investigation go beyond our previous work on autonomous and directive forms of goal support in several ways (Gorin et al., 2014; Koestner et al., 2012). First, we examined both short-term and long-term goals, tracked them over a longer time span, and distinguished between internalization and intrinsic motivation as potential mediating processes. Second, we assessed support from three different people rather than from a single roommate or romantic partner. Third, we examined goal perseverance in terms of resetting failed and abandoned semester-long goals, and we assessed success at such reset goals. Fourth, we found evidence that although directive support tends to be neutral in its effects on relatively short-term goals, such as getting good grades or learning to play a new sport, it seems to have potentially negative effects for important developmental goals, such as figuring out one's career or establishing independence from one's parents.

Together, these findings highlight the importance of distinguishing autonomy support from directive support and suggest that goal-related interventions might usefully be augmented by focusing on the importance of receiving autonomy support from significant others in relation to one's important life goals. We can imagine that with important health-related goals, significant others might be counseled on the difference between autonomy support and directive support and perhaps even receive training to enhance the use of the former. Recent SDT research suggests that teachers and coaches can be trained to increase the extent to which they communicate in an autonomy-supportive manner, and that such increases translate into improved student outcomes (Cheon, Reeve, & Moon, 2012).

References

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, **52**, 1–26.

Bolger, N., & Amarel, D. (2007). Effects of social support visibility on adjustment to stress: Experimental evidence. *Journal of Personality and Social Psychology*, **92**, 458–475.

Cheon, S. H., Reeve, J., & Moon, I. S. (2012). Experimentally based, longitudinally designed, teacher-focused intervention to help physical education teachers be more autonomy supportive toward their students. *Journal of Sport & Exercise Psychology*, **34**(3), 365–396.

Deci, E. L., Eghrari, Y., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, **62**, 119–142.

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.

Deci, E. L., & Ryan, R. M. (2012). Motivation, personality, and development within embedded social contexts: An overview of self-determination theory. In R. Ryan (Ed.), *Oxford handbook of human motivation* (pp. 85–107). New York: Oxford University Press.

Dweck, C. (2006). *Mindset: The new psychology of success*. New York: Random House LLC.

Gorin, A. A., Powers, T. A., Koestner, R., Wing, R., & Raynor, H. (2014). Autonomy support, self-regulation, and weight loss. *Health Psychology*, **33**, 332–339.

Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]. Accessed April 9, 2014. Retrieved from http://www.afhayes.com/public/process2012.pdf

Heckhausen, J., & Schulz, R. (1995). A life-span theory of control. *Psychological Review*, **102**(2), 284.

Joussemet, M., Koestner, R., Lekes, N., & Houlfort, N. (2004). Introducing uninteresting tasks to children: A comparison of the effects of rewards and autonomy support. *Journal of Personality*, **72**, 141–169.

Joussemet, M., Koestner, R., Lekes, N., & Landry, R. (2005). A longitudinal study of the relationship of maternal support to children's adjustment and achievement in school. *Journal of Personality*, **73**, 1215–1235.

Jungert, T., Houlfort, N., & Koestner, R. (in press). Differentiating source of support in relation to workers' intrinsic motivation and achievement. *Journal of Social Psychology*.

Koestner, R., Horberg, E. J., Gaudreau, P., Powers, T., DiDio, P., Bryan, C., et al. (2006). Bolstering implementation plans for long haul: The benefits of simultaneously boosting self-concordance or self-efficacy. *Personality and Social Psychology Bulletin*, **32**, 1547–1558.

Koestner, R., Lekes, N., Powers, T. A., & Chicoine, E. (2002). Attaining personal goals: Self-concordance plus implementation intentions equals success. *Journal of Personality and Social Psychology*, **83**, 231–244.

Koestner, R., & Losier, G. (2002). Distinguishing among three types of highly motivated individuals. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 101–121). Rochester, NY: University of Rochester Press.

Koestner, R., Powers, T., Carbonneau, N., Milyavskaya, M., & Chua, S. (2012). Distinguishing autonomous and directive forms of goal support: Their effects on goal progress, relationship quality and subjective well-being. *Personality and Social Psychology Bulletin*, **38**, 1609–1620.

Koestner, R., Ryan, R., Bernieri, F., & Holt, K. (1984). The effects of controlling versus informational limit-setting styles on children's intrinsic motivation and creativity. *Journal of Personality*, **52**, 233–247.

Kuhl, J., & Fuhrmann, A. (1998). Decomposing self-regulation and self-control: The Volitional Components Inventory. In J. Heckhausen & C. Dweck (Eds.), *Lifespan perspectives on motivation and control* (pp. 15–49). Hillsdale, NJ: Erlbaum.

McClelland, D. C. (1985). *Human motivation*. Glenview, IL: Scott, Foresman.

Milyavskaya, M., Nadolny, D., & Koestner, R. (2014). Where do self-concordant goals come from? The role of domain-specific psychological need satisfaction. *Personality and Social Psychology Bulletin*. doi:10.1177/0146167214524445

Powers, T., Koestner, R., & Gorin, A. A. (2008). Autonomy support from family and friends and weight loss in college women. *Families, Systems, & Health*, **26**, 404–416.

Prochaska, J. O., DiClemente, C. C., & Norcross, J. (1992). In search of how people change. *American Psychologist*, **47**, 1102–1114.

Reeve, J., Bolt, E., & Cai, Y. (1999). Autonomy supportive teachers: How they teach and motivate students. *Journal of Educational Psychology*, **91**, 537–548.

Ryan, R. M., Sheldon, K. M., Kasser, T., & Deci, E. L. (1996). All goals are not created equal: An organismic perspective on the nature of goals and their regulation. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 7–26). New York: Guilford Press.

Scholte, R. H., van Lieshout, C. F., & van Aken, M. A. (2001). Perceived relational support in adolescence: Dimensions, configuration and adolescent adjustment. *Journal of Research on Adolescence*, **11**, 71–94.

Sheldon, K. M. (2011). Integrating behavioral-motive and experiential-requirement perspectives on psychological needs: A two process model. *Psychological Review*, **118**, 552.

Sheldon, K. M., & Elliott, A. J. (1999). Goal striving, need-satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology*, **76**, 482–497.

Sheldon, K. M., & Houser-Marko, L. (2001). Self-concordance, goal-attainment, and the pursuit of happiness: Can there be an upward spiral? *Journal of Personality and Social Psychology*, **80**, 152–165.

Sheldon, K. M., & Kasser, T. (1998). Pursuing personal goals: Skills enable progress but not all progress is beneficial. *Personality and Social Psychology Bulletin*, **24**, 1319–1331.

Silva, M. N., Markland, D. A., Vieira, P. N., Coutinho, S. R., Carraça, E. V., Palmeira, A. L., et al. (2010). Helping overweight women become more active: Need support and motivational regulations for different forms of physical activity. *Psychology of Sport and Exercise*, **11**, 591–601.

Williams, G. C., Gagné, M., Ryan, R. M., & Deci, E. L. (2002). Facilitating autonomous self-regulation for smoking cessation. *Health Psychology*, **21**, 40–50.

Williams, G. C., Grow, V. M., Freedman, Z. R., Ryan, R. M., & Deci, E. L. (1996). Motivational predictors of weight loss and weight loss maintenance. *Journal of Personality and Social Psychology*, **70**, 115–126.

Williams, G. C., Lynch, M. F., McGregor, H. A., Ryan, R. M., Sharp, D., & Deci, E. L. (2006). Validation of the "Important Other" Climate Questionnaire: Assessing autonomy support for health-related change. *Families, Systems & Health*, **24**, 179–194.

Wrosch, C., Miller, G. E., Scheier, M. F., & De Pontet, S. B. (2007). Giving up on unattainable goals: Benefits for health? *Personality and Social Psychology Bulletin*, **33**(2), 251–265.