

ÉLODIE C. AUDET, SHELBY L. LEVINE, ANNE C. HOLDING, AND RICHARD KOESTNER *McGill University*

THEODORE A. POWERS *University of Massachusetts*

A Remarkable Alliance: Sibling Autonomy Support and Goal Progress in Emerging Adulthood

Objective: *The present study used a self-determination theory framework to investigate whether sibling autonomy support enhanced goal progress, need satisfaction, and well-being during emerging adulthood.*

Background: *Prior research has demonstrated that autonomy support from parents was significantly more beneficial for emerging adults than similar support from peers. However, little is known about sibling autonomy support on goal progress, need satisfaction, and subjective well-being.*

Methods: *A five-wave prospective longitudinal study was conducted across four consecutive school years (2015, 2016, 2017, and 2018) and included a total of 1,544 university students (82% female; mean age 20.44) who answered surveys. Separate hierarchical multiple regression analyses for parent, peer, and sibling support were conducted.*

Results: *Although goal support from siblings was much less common than support from parents and peers (13% vs. 70% and 82%, respectively), the effects of sibling support paralleled those obtained for parental support, demonstrating higher goal progress, need satisfaction, and subjective well-being over the year. The*

beneficial effect of sibling autonomy support on well-being was mediated by enhanced goal progress and need satisfaction.

Conclusion: *The results indicate that turning to siblings for support when pursuing goals can be highly advantageous as long as it is empathic rather than directive.*

Implication: *Practitioners should address sibling dynamics when working with emerging adults, as autonomy-supportive siblings were associated with greater goal progress and need satisfaction, which together enhanced well-being over time.*

Emerging adulthood is an unpredictable time where individuals strive to establish an identity and make important life decisions (Arnett, 2000). As they take on new roles and responsibilities in unfamiliar contexts, siblings usually move away from one another and experience less contact (Scharf et al., 2005; Steinbach & Hank, 2018). Regardless, sibling relationships often improve during this period, by sharing more intimacy (Jensen et al., 2018) and by being less conflictual (Scharf et al., 2005). The present study used a self-determination theory (STD) framework to investigate whether siblings play a special role in supporting goal pursuit during emerging adulthood. Previous research has shown that autonomy-supportive goal support is generally more helpful than directive support (Koestner et al., 2012), but we expect to show

Department of Psychology, 2001 Avenue McGill College, Montréal, QC, H3A 1G1 (elodie.audet@mail.mcgill.ca).

Key Words: autonomy support, goal progress, psychological need satisfaction, self-determination theory, siblings.

this is especially true when the source of the support is a sibling.

BACKGROUND

Siblings are the ones we spend most of our time with growing up, and they are often the ones we turn to for support (Caspi, 2011; McHale et al., 2012). Positive sibling relationships are associated with the development of emotional regulation, problem solving, perspective taking, and self-disclosure (McHale et al., 2012). Siblings can provide a buffering effect for coping with difficult life circumstances by being a source of security, comfort, support, and confidence (Kramer, 2010), which increases self-esteem and life satisfaction and reduces feelings of depression and loneliness (Milevsky, 2005). Even though the quality of the sibling relationship is likely to be influenced by the relationship with parents (Furman & Buhrmester, 1985), the protective effects of sibling connection do not seem to be dependent on the quality of the mother–child relationship (Gass et al., 2007). Indeed, when there is a lack of competent parental support (e.g., when families go through a divorce), siblings' support can compensate in a direct and extensive way (Jacobs & Sillars, 2012; Voorpostel & Blieszner, 2008).

Interestingly, the literature also indicates that sibling support may guard against internalizing problems when one lacks friend support (Milevsky, 2005) and that siblings' support resembles friend support in many ways (Voorpostel & van der Lippe, 2007). Consequently, it seems that supportive siblings can provide different forms of support based on relational norms and situational needs (Jacobs & Sillars, 2012). However, it is important to mention that this support cannot effectively substitute for competent parental support (Jacobs & Sillars, 2012).

Despite becoming more equal in emerging adulthood (Whiteman et al., 2017), siblings continue to influence one another during this developmental period (Cassinat et al., 2019). During this time, individuals with higher levels of family sources of support, such as parents or siblings, report on average higher levels of self-esteem and lower levels of depressive symptoms across the year (Guan & Fuligni, 2016). Siblings may be an important source of help during this transitional stage, and it is important

to learn more about the support they can provide. Emerging adulthood is thought to be a distinct developmental period between 18 and 25 years of age, during which individuals become more independent and explore various life possibilities (Arnett, 2000). Emerging adults must establish an identity, experiment with intimacy, form stable intimate relationships, make career decisions, and achieve independence from parents (Salmela-Aro, 2010). During emerging adulthood, success in pursuing goals related to education, career, and relationships have been shown to be linked to well-being and positive development in longitudinal studies (Messersmith & Schulenberg, 2010). The present study seeks to explore the role siblings may play in supporting growth-oriented goal pursuits in emerging adults.

SELF-DETERMINATION THEORY AND BASIC PSYCHOLOGICAL NEEDS

SDT (Deci & Ryan, 2000) is a psychological framework to understand human behavior and personality development. The theory strives to differentiate many types of motivations, ranging from controlled to autonomous. SDT also explores the social-contextual factors that can either enhance or diminish an individual's thriving (Deci & Ryan, 2000). SDT proposes three basic psychological needs: autonomy, competence, and relatedness. Satisfaction of these basic needs is considered fundamental to the experience of general well-being, and the frustration of these needs leads to interpersonal and personal dysfunction, as well as a general decline in well-being. These universal needs are essential across cultural contexts and developmental periods (Ryan & Deci, 2017).

Autonomy refers to the experience of ownership, volition, and self-endorsement of one's actions. Competence involves feeling effective in one's social environment by experiencing the ability to develop skills, understanding, and mastery. The need for relatedness may vary across diverse forms of social interactions, but the core involves feeling appreciated and important by having others respond with care and sensitivity (Reis, 1994). All social environments have features that support or thwart these basic psychological needs. One central finding that has emerged from SDT is that autonomy-supportive social environments are significantly, positively associated with need satisfaction and heightened

well-being (Ryan & Deci, 2017). For example, a study by van den Bergh et al. (2014) demonstrated that teachers' autonomy support toward students' learning was positively related to need satisfaction in a school context.

Autonomy support refers to having one's perspective and feelings acknowledged, being provided choices and options, and not experiencing interpersonal control or pressure (Reeve et al., 1999). Autonomy support is a central aspect of encouragement and connection in any relationship and can be defined in terms of empathic perspective taking, so that the other feels understood (Koestner et al., 2012). Autonomy support from teachers, parents, romantic partners, and friends has shown to be linked with relationship quality and well-being outcomes (Ryan & Deci, 2017). SDT emphasizes the importance of support that fosters an individual's sense of volition (Deci & Ryan, 2000) and has repeatedly been associated with better goal progress, which enhances well-being (Deci & Ryan, 2000; Gorin et al., 2014; Koestner et al., 2012; Koestner et al., 2015; Powers et al., 2008).

Autonomy support is distinct from directive support, which is defined as active encouragement and positive guidance, and is felt as being instrumental. For example, a randomized controlled study of overweight adults demonstrated that autonomy support from relationship partners predicted weight loss over 18 months (Gorin et al., 2014). This was distinguished from directive support, which was significantly negatively related to weight loss (Gorin et al., 2014). In another study, university students reported significantly greater weight loss when they perceived their friends and family as autonomy supportive of their goal, whereas no such relation was found for directive support (Powers et al., 2008).

A recent review concluded that autonomy support is associated with greater goal progress and well-being, whereas directive support might damage goal progress and is unrelated to well-being (Koestner et al., 2015). Supportive relationships, such as ones with siblings, may be beneficial during periods of change experienced in emerging adulthood (Conger & Little, 2010). Because siblings continue to influence each other during this stage (Cassinat et al., 2019) and their relationships usually improve during this time (Jensen et al., 2018; Scharf et al., 2005), it is important to understand

which role siblings may play and whether they can provide autonomy support.

Only two studies have examined support among siblings from an SDT perspective. Both studies involved young children and measured autonomy support among siblings as part of a larger focus on the effects of autonomy support within families (including parents). The studies did not specifically consider support for personal goals. Both studies assessed psychological need satisfaction.

The first study was conducted by van der Kaap-Deeder et al. (2015) and examined family-level interactions between siblings and parents. The results showed that siblings whose psychological needs were satisfied by parents engaged in more autonomy-supportive interactions with one another. The second study simultaneously analyzed the relationships that children have with mothers and siblings by examining the relation of perceived daily autonomy support to children's basic needs and well-being (van der Kaap-Deeder et al., 2017). Over 5 successive days, sibling pairs provided daily ratings. Results showed that changes in daily well-being were associated with each source of perceived autonomy support and that the relations were mediated by psychological need satisfaction and frustration. Hence, it was shown that sibling autonomy support was distinct from parental support (van der Kaap-Deeder et al., 2017). This suggests that there is indeed something different experienced in autonomy-supportive sibling relationships, maybe because these relationships are seen as a horizontal relationship instead of a vertical one (Dunn, 2015).

PRESENT STUDY

The present study used an SDT framework to investigate the extent to which young adults benefit from sibling support of their personal goals. In the current research, sibling support was examined in relation to goal progress over time, psychological need satisfaction, and the experience of subjective well-being. Because previous studies have shown that autonomy goal support is generally more helpful than directive support, we expected to find that autonomy support was helpful also when the source of the support is a sibling. We planned to compare the effects of sibling support with support from parents and peers. The groundwork of

the current research was based on two data sets from a recent study that reported parent support as significantly more beneficial for young adults than peer support (Koestner et al., 2020). The present study extends that work using two additional data sets that provided opportunity to examine support received from siblings. An expanded collection of data sets was important because sibling support of goals was thought to be far more rare than parental or peer support.¹

We were interested in examining whether the effects of sibling support would more closely resemble that of parents or peers. To explore these questions, we made use of four waves of a five-wave prospective study that assessed goal support, goal progress, need satisfaction, and subjective well-being across an 8-month school year. We hypothesized that a small but meaningful portion of university students would report relying on their siblings for goal support. In line with previous research, we expected that the effect of such support would depend on whether its form was predominantly autonomy-supportive or directive. We planned to compare the effects of sibling goal support with parent and peer support to determine whether sibling support would significantly predict fluctuations in goal progress, psychological need satisfaction, and well-being.

STD highlights the association of goal progress, need satisfaction, and well-being (Ryan & Deci, 2017), and researchers have often shown that the effects of goal progress on well-being outcomes are mediated by need satisfaction (Sheldon & Kasser, 1998). Autonomy support has repeatedly been associated with better goal progress, which further fuels well-being (Deci & Ryan, 2000; Gorin et al., 2014; Koestner et al., 2012; Koestner et al., 2015; Powers et al., 2008). We hypothesized that goal progress and need satisfaction mediated the relation between sibling autonomy support and subjective well-being over the year. We predicted that

sibling autonomy support would predict goal progress and need satisfaction, which would lead to an increase in subjective well-being. Mediation analyses were performed to test whether goal progress and need satisfaction mediated the relation between sibling autonomy support and subjective well-being.

METHOD

Participants and Procedure

A five-wave prospective longitudinal study was conducted across four consecutive school years (2015, 2016, 2017, and 2018) and included a total of 1,544 McGill University students (82% female; mean age 20.44 years, $SD = 3.19$). The ethnic/cultural background of our sample was predominantly White (79%) students, but included 19% Asians, 2% Hispanic, and 1% Black students. The sample had predominantly highly educated parents: 34% had completed postgraduate studies, 36% had completed university, and 30% had a high school education. Participants were recruited through online advertisements and posters placed on the university campus. Participants were compensated CAD\$50.

All measures were taken through the online survey software Qualtrics. Questionnaires were administered to participants at five different times over the academic year. Surveys required approximately 15 and 45 minutes to complete and were between 18 and 85 questions long. The first survey (T1) was conducted at the beginning of the school year and asked participants to indicate three goals they were pursuing. The present study focuses on data collected at baseline, at the middle of the fall semester, the middle of the winter semester, and at the end of the school year in May. Participants had a week to complete each survey and were sent two reminders. Completion rates were greater than 80% at each time point.

MEASURES

Goals Descriptions

At the beginning of the school year (T1), university students were asked to list three goals they would be pursuing for the upcoming year. Examples of goals listed by participants included “I want to improve my understanding of renaissance art” and “to learn how to cook vegan meals for myself.”

¹A comparison of the parenting results for the recent data sets (2018 and 2019) revealed that the effects of the parenting support on goal progress, need satisfaction, and subjective well-being were nearly identical with those obtained for the 2016 and 2017 data sets. Thus, parental autonomy support was associated with significantly higher levels of goal progress (2016 & 2017, $b = .16$; 2018 & 2019, $b = .27$), need satisfaction (2016 & 2017, $b = .13$; 2018 & 2019, $b = .25$), and subjective well-being (2016 & 2017, $b = .14$; 2018 & 2019, $b = .21$).

Goal Supporter

In the middle of the fall semester, participants were reminded of their goals and asked to name two people who supported their goal pursuits. Some examples were given, such as a family member (e.g., dad, sister) or a close friend. We compared the siblings (listed as brother or sister) with parents (listed as mom or dad) and combined friends and romantic partners to form a single category called “peer.”

Autonomy and Directive Goal Support

Goal support was assessed at T2 and T4. We calculated means across the two time points. Autonomy and directive goal support scales were measured with five items each (Koestner et al., 2012). An example of autonomy support was “I feel that this person understands how I see things with my goals,” whereas a directive support item was “This person has been reminding me about what I need to be doing to reach my goals.” Each set of items had options scaling from 1 (*strongly disagree*) to 7 (*strongly agree*). The reliability of each scale was $\alpha > .80$.

Goal Progress

All follow-ups assessed goal progress using three items for each goal, such as “I have made a lot of progress toward this goal” and “I feel like I have achieved this goal.” Participants were asked to rate on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) the extent they felt they had attained each goal. We calculated goal progress as the mean across all goals and items, $\alpha = .87$.

Need Satisfaction

The Balanced Measure of Psychological Needs scale (BMPN; Sheldon & Hilpert, 2012) was used to assess psychological need satisfaction and frustration at baseline and T3. Participants were asked to rate their agreement with a series of statements on a 7-point scale ranging from 1 (*not at all true*) to 7 (*very true*). Need satisfaction and frustration were each assessed with nine items, three statements for each need. For example, the item “I was free to do things my own way” was used to assess autonomy need satisfaction, whereas the item “I experienced some kind of failure or was unable to do well

at something” was used to assess competence need frustration. We reverse-scored the need frustration items and calculated means for autonomy, relatedness, and competence. We then calculated a mean across all three needs to have a general measure of need satisfaction in participants’ lives. The 18-item scale was highly reliable, $\alpha = .91$.

Subjective Well-Being

Subjective well-being (SWB) was measured in terms of life satisfaction and positive to negative affect that people reported. The Satisfaction With Life Scale (SWLS; Diener et al., 1985) is a five-item scale that assesses “global life satisfaction—an evaluative judgment of one’s life as a whole” (Diener et al., 1985, p. 91). Participants rated items such as “the conditions of my life are excellent” on a 7-point scale of agreement that ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). Participants completed a nine-item scale of affect (Emmons, 1992) that included four positive (e.g., joyful) and five negative (e.g., frustrated) items. To ensure that responses reflected participants’ recent (rather than general) affect, participants were instructed to think about how they had felt over the previous two weeks when responding to all items. All items were rated on a scale from 1 (*not at all*) to 7 (*extremely*). All three scales were reliable, all $\alpha > .80$ at each assessment. To compute subjective well-being, negative affect was reversed and all three components of SWB were standardized before calculating the mean.

For the need satisfaction, life satisfaction, and affect scales, participants received the following instructions: “For each item indicate to what extent you have felt this way over the past 2 weeks using the 7-point scale below.” Most previous studies have used 1 or 2 weeks as the temporal frame for these measures.

RESULTS

Preliminary Results

Preliminary analyses compared the four cohorts that were included in the present investigation on all the main variables: goal support, goal progress, need satisfaction, and subjective well-being. Only one significant effect emerged from the 11 one-way analyses of variance (ANOVAs): A cohort effect for mean

Table 1. Means, Standard Deviations and Correlations Among Goal Support Measures

Variables	<i>M</i>	<i>SD</i>	2	3	4	5	6
Autonomy Support							
1. Parent	5.59	1.03	.62***	.32	.64	.65	.21
2. Sibling	5.70	1.06	—	.46	.58	.76	.48
3. Peer	5.96	0.81		—	.27	.40	.64
Directive support							
4. Parent	5.55	1.01			—	.66	.31
5. Sibling	5.39	0.97				—	.65
6. Peer	5.34	1.10					—

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

need satisfaction at the end of the study, the 2018–2019 sample reported higher need satisfaction ($M = 4.59$, $SD = .75$) than the other three cohorts ($M = 4.41$, $SD = .80$), $F(3,301) = 2.85$, $p = .04$. Because of the number of comparisons made, we concluded that this could be a chance finding.

Participants were asked to nominate two persons supporting their goals: 82% of participants indicated that at least one peer was supporting their goals; 70% indicated that a parent was supporting their goals; 13% indicated that their sibling was supporting their goals; and 3% indicated that some other relative or a supervisor supported them during goal pursuit. Gender was not included in our main analyses because preliminary analyses found no main effects or interactions on the three dependent variables that were the focus of this investigation.

Table 1 provides the means and standard deviations for the support measures. It can be seen that peers were rated as the most autonomy supportive followed by siblings and then parents. Perceived autonomy support was higher than directive support for siblings and peers, but for parents the level of autonomy support and

directive support were equal. Table 1 also shows the correlations among support measures. Sibling and parent autonomy support were highly correlated, $r = .62$, $p < .001$. Peer autonomy support was moderately correlated with both siblings' autonomy support ($r = .45$) and parent autonomy support ($r = .32$).

Table 2 provides the means and standard deviations for the outcome measures. Goal progress increased over the school year but need satisfaction and subjective well-being did not change. Need satisfaction was very highly correlated with SWB assessed at the same time. Goal progress was significantly related to need satisfaction and SWB.

MAIN RESULTS

Outcomes by Type and Source of Support

Separate hierarchical multiple regression analyses for parent, peer, and sibling support were conducted on the three outcome variables: goal progress, need satisfaction, and subjective well-being. All regressions included the baseline measure of the outcome as a first step followed by the autonomy and directive support scores

Table 2. Means, Standard Deviations and Correlations Among Outcome Measures

	<i>M</i>	<i>SD</i>	2	3	4	5	6
Baseline							
1. Goal progress	4.27	1.10	.30**	.26**	.37**	.21**	.22**
2. Need satisfaction	4.52	0.80	—	.66**	.18**	.44**	.39**
3. Subjective well-being	0.00	0.97		—	.21**	.36**	.47**
End of the Year							
4. Goal progress	4.76	1.30			—	.35**	.35**
5. Need satisfaction	4.47	0.91				—	.74**
6. Subjective well-being	0.00	0.94					—

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

for the particular type of supporter. There was no baseline level of goal progress.

The standardized regression coefficients for the variables are provided in Table 3, along with the *t*-values and the *F*-tests of the change in *R*². It can be seen that perceived autonomy support from siblings or parents was significantly related to higher levels of goal progress, need satisfaction, and SWB over the school year. Autonomy support from peers was significantly related to greater need satisfaction over the year but unrelated to goal progress and SWB. One unexpected finding emerged: Directive support from siblings was significantly negatively related to need satisfaction. Thus, sibling support had opposite effects on need satisfaction depending on whether it was autonomous or directive.

The positive relation of sibling autonomy support to goal progress was significantly greater than the relation for peer support (*Z* = 2.48, *p* < .001) but did not reach significance for parent support (*Z* = 1.79, *p* = .07). The positive relation of sibling autonomy support to need satisfaction was significantly greater than for the relation for peer autonomy support (*Z* = 3.43, *p* < .01) and for parent support (*Z* = 2.47, *p* = .01). The positive relation of sibling autonomy support to subjective well-being was significantly greater than for peer autonomy support (*Z* = 2.35, *p* = .02) but did not differ from parent autonomy support (*Z* = 0.53, n.s.).

Direct Comparison of Parent and Sibling Support

Of the participants, 80 listed both a parent and a sibling as one of their two goal supporters. We used the data from these participants to directly test the relative effects of parent and sibling goal support. Specifically, we regressed the three dependent variables on parent and sibling autonomy support and directive support.

The regression of goal progress yielded a marginally significant multiple *R* of .31, *F* (4, 75) = 2.04. Sibling autonomy support was significantly related to goal progress (*b* = .36, *t* = 2.23, *p* = .03) but parent autonomy support was unrelated (*b* = .22, *t* = 1.15, *p* = .20). Directive support from both sources was unrelated to progress (for parents *b* = -.27; for siblings *b* = -.15).

The regression of need satisfaction yielded a significant multiple *R* of .41, *F* (5, 75) = 3.11, *p* = .01. Sibling autonomy support was

Table 3. Hierarchical Regressions of the Effects of Autonomy and Directive Support From Different Supporters on Goal Progress, Changes in Need Satisfaction, and Changes in Subjective Well-Being

Baseline DV	Goal Progress			Change in Subjective Well-Being			Change in Need Satisfaction			<i>R</i> ² Δ
	<i>b</i>	<i>t</i>	<i>F</i> test Δ	<i>b</i>	<i>t</i>	<i>F</i> test Δ	<i>b</i>	<i>t</i>	<i>F</i> test Δ	
Parental support	.23***	5.60	/ (2,952) = 24.69	.49***	17.48	(1,945) = 305.49	.44***	15.16	(1,947) = 229.66	.20***
Autonomy support	-.12	-.40		.20***	5.28	(2,943) = 25.32	.20***	5.21	(2,945) = 19.65	.03***
Directive support	.36**	3.27	(2,166) = 6.97	.01	.22		-.03	-.67		
Sibling support	-.13	-1.15		.24***	2.48	(2,165) = 3.42	.37***	3.57	(2,165) = 6.36	.06
Autonomy support	.18***	4.23	(2,1044) = 10.69	-.12	-1.21		-.25*	-2.49		
Directive support	-.06	-1.46		.06	1.72	(2,1033) = 1.88	.13**	3.44	(2,1033) = 5.93	.01**
				-.02	-.50		-.08*	-2.13		

Note. Regressions were run separately for different support sources but are presented in the same table to facilitate comparison. ****p* < .001. ***p* < .01. **p* < .05.

significantly related to need satisfaction at the end of the year ($b = .44, t = 2.92, p < .01$) but parent autonomy support was unrelated ($b = .03, t = 0.15, n.s.$). Directive support from both sources was unrelated to progress (for parents, $b = -.15$; for siblings, $b = -.19$).

The regression of SWB yielded a significant multiple R of .54, $F(5, 75) = 6.25$. Sibling autonomy support was significantly related to SWB at the end of the year ($b = .30, t = 2.09, p = .04$) but parent autonomy support was unrelated ($b = .07, t = 0.36, n.s.$). Directive support from both sources was unrelated to progress (for parents, $b = .07$; for siblings $b = -.23$).²

MEDIATIONAL ANALYSES

STD highlights the association of goal progress, need satisfaction, and well-being (Ryan & Deci, 2017). Researchers have shown that goal progress and need satisfaction often go hand in hand and can mediate the effects of external events on well-being outcomes (Ryan & Deci, 2017). Mediation analyses were performed to test whether goal progress and need satisfaction mediated the relation between sibling autonomy support and subjective well-being. Specifically, we tested a sequential mediation model in which both goal progress and need satisfaction explained how sibling autonomy support of personal goals was associated with higher levels of well-being over the school year. We used the method outlined by Hayes (2012) to test this mediation model by estimating 95% confidence intervals (CI) of the direct effect using bootstrap resampling ($k = 10,000$) procedures. The betas in the following mediation analyses reflect the standardized coefficients.

Results from the mediation analyses showed that sibling autonomy support was a significant predictor of change in goal progress ($b = .38, SE = .12, p < .001, CI 95\% [.14, .61]$). In addition, goal progress was a significant

predictor of change in need satisfaction ($b = .31, SE = .07, p = .001, CI 95\% [.16, .45]$). Finally, changes in need satisfaction were significantly related to SWB at the end of the school year ($b = .51, SE = .08, p = .001, CI 95\% [.40, .66]$). Importantly, the test of sequential mediation of the pathway from Sibling autonomy support \rightarrow Goal progress \rightarrow Need satisfaction \rightarrow SWB was significant ($b = .14, SE = .07, 95\% CI = [.03, .18]$), indicating that the effects of sibling autonomy support on subjective well-being were fully mediated by goal progress and need satisfaction.

DISCUSSION

The present study used an SDT framework to investigate the extent to which emerging adults benefit from sibling support in attaining personal goals. Four main findings emerged. First, receiving support from siblings was much less common than receiving support from peers or parents. Nonetheless, 13% of the university students in this study indicated that one of the two people who were supporting them during goal pursuit was, in fact, a sibling. The lower percentage of sibling supporters may simply be a function of participants having fewer siblings than friends, or because of the fact that emerging adults commonly rely on parents as they pursue important and demanding goals (Koestner et al., 2020). During this developmental stage, contact between siblings may decline as social networks gradually shift away from the family (Tanner, 2006), pointing to the developmental contexts of relationships. Siblings experience less contact due to geographic separation, such as when they move for school or work (Scharf et al., 2005; Steinbach & Hank, 2018), which may result in peer support becoming more available.

Second, sibling goal support that was autonomy oriented was associated with diverse, beneficial outcomes, such as enhancing goal progress, need satisfaction, and well-being. In contrast, directive goal support from siblings was unrelated to outcomes. This pattern of positive effects for autonomy support extends previous studies that have looked at support from friends, romantic partners, and parents (Koestner et al., 2012, 2015; Powers et al., 2008), and also provides further evidence that the quality of support matters.

²Similar regressions comparing the effects of sibling support versus peer support were conducted for all three outcomes. Results showed that in each case sibling support was more positively related to the outcome than peer support, but only for goal progress was the sibling effect significant. Here are the standardized regression effects: Goal progress, sibling AS $b = .23, p < .05$, peer AS $b = .05, ns$; need satisfaction, sibling AS $b = .21, p = .21$, peer AS $b = .13, ns$; SWB, sibling AS $b = .25, p = .10$, peer AS $b = .11, ns$.

Third, autonomy support from siblings appeared to be more beneficial than similar support from peers, and it may even be more beneficial than autonomy support from parents. Thus, the relation of sibling autonomy support to need satisfaction over time was significantly stronger for siblings than for parents. The relation for goal progress was marginally stronger for sibling autonomy support than for parent autonomy support. A test of the relative strength of sibling versus parent goal support among the subset of participants who had one supporter of each type pointed toward an advantage for sibling support. Thus, for all three outcomes, sibling autonomy support was significantly related to better outcomes, whereas the effects of parent autonomy support failed to reach significance. Taken together, these results speak to the importance of autonomy support in sibling relationships, even during emerging adulthood.

Finally, mediation analyses supported the notion that autonomy support for goals can result in higher levels of well-being by enhancing goal progress and by increasing need satisfaction. Indeed, evidence of serial mediation emerged indicating that sibling autonomy support resulted in greater goal progress, which, in turn, lead to greater need satisfaction, which then resulted in well-being changes.

Overall, these findings point to the relevance of examining autonomy support and psychological need satisfaction within the family. Numerous studies have shown that autonomy-supportive parenting is essential for children's psychosocial functioning (Grolnick et al., 1991; Joussemet et al., 2008; Soenens & Vansteenkiste, 2010). So far, there is relatively less research on the role of an autonomy-supportive sibling. As mentioned earlier, the present study was an extension of research conducted by Koestner et al. (2020) that focused exclusively on the comparison of parents' and peers' goal support. The previous results showed that autonomy support from parents was more strongly associated with subjective well-being, autonomy need satisfaction, and goal progress. The current research suggests that sibling autonomy support functions in similar ways because it was also more strongly correlated with subjective well-being, needs satisfaction, and goal progress than similar support from peers. Thus, our findings contribute to the literature by examining autonomy-supportive sibling interactions in young adults.

FUTURE DIRECTIONS

Future studies could inquire into sibling behavioral commitment and different types of attachment styles. Sibling commitment has been found to take many different forms, such as tangible support, emotional support, informational support, esteem support, network support, everyday talk, and shared activities (Myers & Bryant, 2008). It will be important to determine which of these types of support relate most strongly to what we describe as autonomy support of goals. Future studies could also explore support within different types of sibling relationships (e.g., separates vs. pals vs. allies; Jacobs & Sillars, 2012) and the extent to which autonomy support is expressed in one or more of them. Furthermore, as siblings age, the support may take different forms. It would be interesting to examine how siblings in different development stages express their support and to examine whether the present findings can generalize across cultural groups and different ethnicities. Last, we encourage future research to look at the situational and relational nature of the family environment. There is emerging evidence that family support is uniquely reliable and important across the life span (Antonucci et al., 2011). Indeed, a recent 25-year longitudinal study demonstrated that high perceived availability of family support in late adolescence (age 18) tended to be maintained across ages 25 and 43, and also was highly protective against psychological distress (Fang et al., 2020).

Limitations

The current research has limitations. First, the number of siblings listed as supporters was much smaller than the number of parent and peer supporters, thus reducing the statistical power of our sibling analysis. Second, only university students were examined. Future research is needed to determine whether sibling goal support functions in the same way for young adults who forgo university. Third, it is possible that the correlations in the present study were due to confounding variables because even prospective longitudinal designs do not allow for causal conclusions. For example, factors such as family structure, divorce, separation of the parents, or age differences between siblings could have influenced the results. Fourth, the data collected were based on self-reports. However, some previous studies have demonstrated that autonomy

goal support did result in objective goal progress (Gorin et al., 2014; Koestner et al., 2012). Fifth, birth order has not been collected and may play a significant role in sibling's ability to provide support. During childhood older siblings usually have the dominant position in the relationship; however, across adolescence, those power relationships become increasingly equal (Campione-Barr & Lindell, 2017). Sibling relationships have been found to become even more egalitarian in emerging adulthood (Whiteman et al., 2017). Finally, the present study did not examine the specific types of goals (e.g., personal or academic) that participants were pursuing. It is possible that different types of goals elicit support from different sources (e.g., parents, friends or teachers).

Conclusion and Implications

The present study integrated a SDT framework for understanding how siblings support personal goals and promote need satisfaction in emerging adulthood (SDT; Deci & Ryan, 2000). We found that autonomy support from siblings was particularly beneficial for young adults, as it was associated with greater goal progress and need satisfaction, which together appeared to fuel higher levels of well-being over time. These benefits were unique to autonomy support, which generally focuses on empathy and perspective taking. The present study suggests that turning to siblings for support when pursuing goals can be highly advantageous as long as one trusts them to be empathic rather than directive.

Our results imply that it is helpful to receive goal support from an autonomy-supportive sibling because it fosters successful goal attainment and enhances psychological need satisfaction over time. These findings are in line with a study performed by Yeh and Lempers (2004), which showed that supportive sibling relationships are an essential resource during the transition into young adulthood. Because the quality of general family support seems to be fairly stable across one's life (Fang et al., 2020), it seems likely that siblings will continue to contribute a vital role beyond young adulthood and perhaps for an even longer time than parents or peers.

FUNDING

This study was supported by the Social Sciences and Humanities Research Council of Canada (1008-2020-0146).

REFERENCES

- Antonucci, T. C., Birditt, K. S., Sherman, C. W., & Trinh, S. (2011). Stability and change in the Inter-generational family: A convoy approach. *Aging and Society, 31*, 1084–1106. <https://doi.org/10.1017/S0144686X1000098X>
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*, 469. <https://doi.org/10.1037//0003-066X.55.5.469>
- Campione-Barr, N., & Lindell, A. K. (2017). Relative power in sibling relationships across adolescence: relative power in sibling relationships across adolescence. *New Directions for Child and Adolescent Development, 2017*(156), 49–66. <https://doi.org/10.1002/cad.20201>
- Caspi, J. (2011). Future directions for sibling research, practice, and theory. In J. Caspi (Ed.), *Sibling development: Implications for mental health practitioners* (pp. 377–390). Springer.
- Cassinat, J. R., Whiteman, S. D., & Jensen, A. C. (2019). Associations between perceptions about siblings' development and emerging adults' adulthood attainment. *Personal Relationships, 26*(4), 694–712. <https://doi.org/10.1111/per.12300>
- 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.
- Diener, E., Emmons, R., Larsen, R., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*(1), 71–5.
- Dunn, J. (2015). Siblings. In J. E. Grusec & P. D. Hastings (Eds.), *Handbook of socialization: Theory and research* (2nd ed., pp. 182–201). Guilford Press.
- Emmons, R. (1992). Abstract vs concrete goals: Personal striving level, physical illness and psychological well-being. *Journal of Personality and Social Psychology, 62*, 292–300.
- Fang, S., Johnson, M. D., Galambos, N. L., & Krahn, H. J. (2020). Convoys of perceived support from adolescence to midlife. *Journal of Social and Personal Relationships, 37*(5), 1416–1429. <https://doi.org/10.1177/0265407519899704>
- Fitzsimons, G. M., & Finkel, E. J. (2011). Outsourcing self-regulation. *Psychological Science, 22*(3), 369–375. <https://doi.org/10.1177/0956797610397955>
- Furman, W., & Buhrmester, D. (1985). Children's perceptions of the qualities of sibling relationships. *Child Development, 56*(2), 448–61. <https://doi.org/10.1111/j.1467-8624.1985.tb00119.x>
- Gass, K., Jenkins, J., & Dunn, J. (2007). Are sibling relationships protective? A longitudinal study. *Journal of Child Psychology and Psychiatry, 48*(2), 167–175. <https://doi.org/10.1111/j.1469-7610.2006.01699.x>
- Gorin, A. A., Powers, T. A., Koestner, R., Wing, R. R., & Raynor, H. A. (2014). Autonomy

- support, self-regulation, and weight loss. *Health Psychology, 33*, 332–339. <https://doi.org/10.1037/a0032586>
- Grolnick, W. S., Ryan, R. M., & Deci, E. (1991). Inner resources for school achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology, 83*, 508–517.
- Guan, S.-S. A., & Fuligni, A. J. (2016). Changes in parent, sibling, and peer support during the transition to young adulthood. *Journal of Research on Adolescence, 26*(2), 286–299. <https://doi.org/10.1111/jora.12191>
- Hayes, A. F. (2012). *PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling* [White paper]. <http://www.afhayes.com/public/process2012.pdf>
- Jacobs, K., & Sillars, A. (2012). Sibling support during post-divorce adjustment: An idiographic analysis of support forms, functions, and relationship types. *Journal of Family Communication, 12*(2), 167–187. <https://doi.org/10.1080/15267431.2011.584056>
- Jensen, A. C., Whiteman, S. D., & Fingerman, K. L. (2018). “Can’t live with or without them”: Transitions and young adults’ perceptions of sibling relationships. *Journal of Family Psychology, 32*, 385–395. <https://doi.org/10.1037/fam0000361>
- Joussemet, M., Landry, R., & Koestner, R. (2008). A self-determination theory perspective on parenting. *Canadian Psychology, 49*, 194–200. <https://doi.org/10.1037/a0012754>
- Koestner, R., Powers, T. A., Carbonneau, N., Milyavskaya, M., & Chua, S. N. (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. <https://doi.org/10.1177/0146167212457075>
- Koestner, R., Powers, T., Holding, A., Hope, N., & Milyavskaya, M. (2020). The relation of parental support of emerging adults’ goals to well-being over time: the mediating roles of goal progress and autonomy need satisfaction. *Motivation Science, 6*(4), 374–385. <https://doi.org/10.1037/mot0000169>
- Koestner, R., Powers, T. A., Milyavskaya, M., Carbonneau, N., & Hope, N. (2015). Goal internalization and persistence as a function of autonomous and directive forms of goal support. *Journal of Personality, 83*, 179–190. <https://doi.org/10.1111/jopy.12093>
- Kramer, L. (2010). The essential ingredients of successful sibling relationships: An emerging framework for advancing theory and practice. *Child Development Perspectives, 4*, 80–86. <https://doi.org/10.1111/j.1750-8606.2010.00122.x>
- McHale, S. M., Updegraff, K. A., & Whiteman, S. D. (2012). Sibling relationships and influences in childhood and adolescence. *Journal of Marriage and Family, 74*, 913–930. <https://doi.org/10.1111/j.1741-3737.2012.01011.x>
- Messersmith, E., & Schulerberg, J. (2010). Goal attainment, goal striving, and well-being during the transition to adulthood: A ten-year U.S. national longitudinal study. *New Directions for Child and Adolescent Development, 2010*(130), 27–40. <https://doi.org/10.1002/cd.279>
- Milevsky, A. (2005). Compensatory patterns of sibling support in emerging adulthood: Variations in loneliness, self-esteem, depression, and life satisfaction. *Journal of Social and Personal Relationships, 22*, 743–755. <https://doi.org/10.1177/0265407505056447>
- Myers, S., & Bryant, L. (2008). The use of behavioral indicators of sibling commitment among emerging adults. *Journal of Family Communication, 8*(2), 101–125. <https://doi.org/10.1080/15267430701857364>
- Powers, T. A., Koestner, R., & Gorin, A. A. (2008). Autonomy support from family and friends and weight loss in college women. *Families, Systems, and Health, 26*(4), 404–416. <https://doi.org/10.1037/1091-7527.26.4.404>
- Reeve, J., Bolt, E., & Cai, Y. (1999). Autonomy-supportive teachers: How they teach and motivate students. *Journal of Educational Psychology, 91*(3), 537–548. <https://doi.org/10.1037/0022-0663.91.3.537>
- Reis, H. T. (1994). Domains of experience: Investigating relationship processes from three perspectives. In R. Erber & R. Gilmour (Eds.), *Theoretical frameworks for personal relationships* (pp. 87–110). Erlbaum.
- Ryan, R.M. & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.
- Salmela-Aro, K. (2010). Personal goals and well-being: How do young people navigate their lives? *New directions for child and adolescent development, 2010*(130), 13–26. <https://doi.org/10.1002/cd.278>
- Scharf, M., Shulman, S., & Avigad-Spitz, L. (2005). Sibling relationships in emerging adulthood and in adolescence. *Journal of Adolescent Research, 20*, 64–90. <https://doi.org/10.1177/0743558404271133>
- Sheldon, K. M., & Hilpert, J. C. (2012). The balanced measure of psychological needs (BMPN) scale: An alternative domain general measure of need satisfaction. *Motivation and Emotion, 36*, 439–451. <https://doi.org/10.1007/s11031-012-9279-4>
- 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. <https://doi.org/10.1177/01461672982412006>
- Soenens, B., & Vansteenkiste, M. (2010). A theoretical upgrade of the concept of parental psychological control: Proposing new insights on the basis of self-determination theory. *Developmental Review*, 30, 74–99. <https://doi.org/10.1016/j.dr.2009.11.001>
- Steinbach, A., & Hank, K. (2018). Full-, half-, and step-sibling relations in young and middle adulthood. *Journal of Family Issues*, 39, 2639–2658. <https://doi.org/10.1177/0192513X18757829>
- Tanner, J. L. (2006). Recentering during emerging adulthood: A critical turning point in life span human development. In J. J. Arnett & J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 21–55). American Psychological Association. <https://doi.org/10.1037/11381-002>
- Van den Berghe, L., Soenens, B., Aelterman, N., Cardon, G., Tallir, I. B., & Haerens, L. (2014). Within-person profiles of teachers' motivation to teach: Associations with need satisfaction at work, need-supportive teaching, and burnout. *Psychology of Sport & Exercise*, 15, 407–417. <https://doi.org/10.1016/j.psychsport.2014.04.001>
- Van der Kaap-Deeder, J., Vansteenkiste, M., Soenens, B., Loeys, T., Mabbe, E., & Gargurevich, R. (2015). From autonomy-supportive parenting to autonomy-supportive sibling interactions: The role of psychological need satisfaction. *Personality and Social Psychology Bulletin*, 41, 1590–1604. <https://doi.org/10.1177/0146167215602225>
- Van der Kaap-Deeder, J., Vansteenkiste, M., Soenens, B., & Mabbe, E. (2017). Children's daily well-being: The role of mothers', teachers', and siblings' autonomy support and psychological control. *Developmental Psychology*, 53(2), 237–251. <https://doi.org/10.1037/dev0000218>
- Voorpostel, M., & van der Lippe, T. (2007). Support between siblings and between friends: Two worlds apart? *Journal of Marriage and Family*, 69(5), 1271–1282. <https://doi.org/10.1111/j.1741-3737.2007.00446.x>
- Voorpostel, M., & Blieszner, R. (2008). Intergenerational solidarity and support between adult siblings. *Journal of Marriage and Family*, 70, 157–167. <https://doi.org/10.1111/j.1741-3737.2007.00468.x>
- Whiteman, S. D., Jensen, A. C., & McHale, S. M. (2017). Sibling influences on risky behaviors from adolescence to young adulthood: Vertical socialization or bidirectional effects? In N. Campione-Barr (Ed.), *Power, control, and influence in sibling relationships across development New directions in child and adolescent development* (Vol. 156, pp. 67–85). Wiley. <https://doi.org/10.1002/cad.20197>
- Yeh, H., & Lempers, J. D. (2004). Perceived sibling relationship and adolescent development. *Journal of Youth and Adolescence*, 33, 133–147. <https://doi.org/10.1023/B:JOYO.0000013425.86424.0f>