



Sacrifice—but at what price? A longitudinal study of young adults' sacrifice of basic psychological needs in pursuit of career goals

Anne C. Holding¹ · André St-Jacques¹ · Jérémie Verner-Filion² · Frank Kachanoff³ · Richard Koestner¹

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Abstract

Examining two, 3-wave prospective longitudinal samples of university students pursuing a career goal, we propose that young adults make personal sacrifices during goal pursuit. Specifically, we introduce the concept of basic psychological need sacrifice and suggest it is distinguishable from the sacrifice of maintenance and leisure activities. We found that sacrificing basic psychological needs had enduring affective and self-regulatory costs through the effect of increased need frustration over the academic year. Moreover, we found that the sacrifice of psychological needs stemmed from controlling motivational processes, such as extrinsic life aspirations, controlled career goal motivation (assessed at the start of the academic year) and controlled motivation for sacrificing (assessed midyear along with the three types of sacrifices). Psychological distress and need frustration were assessed at baseline and end-of-academic-year, while career goal progress was assessed at the end of the academic year. Implications of these findings for basic psychological needs theory are discussed.

Keywords Self-determination theory · Need sacrifice · Basic psychological needs theory · Need frustration · Career goals · Distress

Great achievement is usually born of great sacrifice. Napoleon Hill.

Your success is determined by what you are willing to sacrifice for it. Anonymous.

As exemplified in the two quotes above, North-American culture seemingly highlights the importance of making sacrifices to reach important goals. This is especially relevant for young adults, who find themselves in the developmental life stage that is ideal for embarking on a career path and laying the foundation for future professional life (Heckhausen et al. 2019). As such, young adults may make personal sacrifices to reach their career goals, especially if they are

desirous of a particular career goal outcome (Zimmerman 1990). For example, university students may reduce sleep (Gilbert and Weaver 2010), socializing (VanKim and Nelson 2013), or self-care activities (Hermon and Davis 2004) for additional study time. We propose that in addition to sacrificing maintenance and leisure activities, students may also come to sacrifice the basic psychological needs that are required for optimal growth and well-being (Ryan and Deci 2017; Vansteenkiste and Ryan 2013). For instance, students may neglect their basic need for freedom and choice as they force themselves to study for their program—a sacrifice of autonomy. Students may block themselves from learning new things that do not directly contribute to their career—a sacrifice of competence. Finally, students may lock themselves away with their books, isolating themselves from human connection—a sacrifice of relatedness. We propose that need sacrifice in goal pursuit comes at a cost, initiating wider disruptions in affective and self-regulatory functioning. To this end, the present research examines: (1) Whether there is evidence for different types of sacrifice among young adults pursuing a career goal; (2) The extent to which the sacrifice of basic psychological needs is associated with need frustration, psychological distress, and goal progress over time; and (3) Whether motivational factors predispose

✉ Anne C. Holding
anne.holding@mail.mcgill.ca

¹ Department of Psychology, McGill University, 2001 McGill College Avenue, Montreal, QC H3A 1G1, Canada

² Université du Québec en Outaouais, Gatineau, Canada

³ Northwestern University, Evanston, USA

young adults to sacrifice their psychological needs when pursuing career-related goals.

Career goals

An important way in which young adults give direction and meaning to their lives is by pursuing career goals (Erikson 1959). Indeed, it has been argued that to successfully achieve an identity, young adults must explore different vocational paths, deal with ensuing crises, and make an autonomous commitment to a chosen career (Marcia 1966). Successful pursuit of career goals is usually associated with increased well-being, while failure to achieve such goals is linked with psychological distress (Lent and Brown 2008). However, Self-Determination Theory (SDT; Ryan and Deci 2017) researchers have argued that “not all goals are created equal” and that the pursuit (or even, the attainment) of certain goals can backfire and interfere with growth and development (Ryan et al. 1996).

An example of how the successful pursuit of certain career goals can undermine affective and self-regulatory outcomes was outlined in a series of studies by Sheldon and Krieger (2004, 2007, 2014) on the life trajectories of law students. This research demonstrated that over three years, law students decreased in their subjective well-being (Sheldon and Krieger 2004, 2007), felt increasingly more controlled in their motivation for studying law (Sheldon and Krieger 2004, 2007) and experienced declines in psychological need satisfaction (Sheldon and Krieger 2007). Moreover, Sheldon and Krieger (2007) provided evidence that there were motivational repercussions from need frustration during law school that were later evident in the form of lower grade point averages, worse bar exam results, and less self-determined motivation for the first job after graduation. These repercussions extended to lawyers’ careers, with Sheldon and Krieger (2014) finding that well-earning lawyers in money-oriented job contexts tended to experience lower well-being and more drinking behaviour than less earning lawyers in service-oriented job contexts. The authors interpreted the changes in motivation and well-being in terms of the emphasis that law school and money-oriented job contexts place on evaluation, competition, and the pursuit of extrinsic goals. A similar pattern of longitudinal results was obtained for business students and it was also explained in terms of controlling contextual factors (Jiang et al. 2016).

The studies above suggest that a contextual emphasis on evaluation, competition and extrinsic rewards can impair the affective and self-regulatory functioning of young adults. Moreover, there are a number of studies that speak to the cost of need frustration in the educational contexts. Teachers’ controlling behavior, for example, has been linked with poor motivational functioning and need frustration in

students (Haerens et al. 2015), as well as increased student anger and bullying behavior (Hein et al. 2015). Individual differences, such as self-critical perfectionism, may also play a role in diminishing need satisfaction and enhancing need frustration, which in turn, relate to academic maladjustment (Vandekerckhove et al. 2019). This prompted us to investigate whether young adults bring about need frustration in goal pursuit by making personal sacrifices for their career goal.

Sacrifices in career goal pursuit

Previous studies in the area of work-life balance have examined the question of why career goals often go hand-in-hand with harmful sacrifices. Researchers have used the term “trade-offs” to capture the sacrifices that adults make because of their careers. Sacrifice in pursuit of one’s career can take many forms. For example, Mennino and Brayfield (2002) found that individuals in demanding careers chose to sacrifice time at home to fulfill work requirements, reflecting a clash between family and employment responsibilities. Other studies suggest that adults sacrifice sleep, leisure activities, and relaxation to pursue demands at work (e.g., Barnett and Rivers 1996). The research reviewed on work-life trade-offs point to a variety of activities that individuals sacrifice in the pursuit of work goals—sleep, exercise, house-work, caring for others, leisure, and relaxation. The sacrificed activities can be grouped according to a distinction drawn from time-use studies between maintenance activities and leisure activities (Csikszentmihalyi 1997; Csikszentmihalyi and Lefevre 1989). Maintenance activities aim to sustain stable, healthy functioning and include housework, eating and grooming. Leisure refers to freely-chosen activities that often have a social nature (e.g., social events, sports, and hobbies). Although adults typically divide their waking time roughly equally between work and leisure or maintenance activities (Csikszentmihalyi 1997), young adults who have ambitious career goals may devote more time to academics at the expense of their maintenance and leisure activities.

Psychological need sacrifice

We propose that in addition to sacrificing maintenance and leisure activities, individuals may sacrifice their psychological needs in the pursuit of their career goals. The relationship between basic psychological needs and goal-linked sacrifices can be understood within the context of Basic Psychological Needs Theory (BPNT), a mini-theory developed within SDT (Ryan and Deci 2017). BPNT posits three basic psychological needs, (i.e., autonomy, competence and relatedness), which, when satisfied, promote

development and well-being. Autonomy represents the need to volitionally endorse one's actions. Relatedness refers to the need to feel connected to others. Competence refers to the need to experience mastery. Many studies have shown a significant association between satisfaction of these needs and indicators of personal growth and thriving (Ryan and Deci 2017).

Importantly, research has distinguished between need deprivation, resulting from a lack of need satisfaction, and need frustration, resulting from active blocking or thwarting of needs (Bartholomew et al. 2011). There is emerging evidence that the negative effects of need frustration are more far-ranging than those of need deprivation (Vansteenkiste and Ryan 2013). For example, social contexts which thwart one's basic psychological needs, such as having a controlling parent, coach, or teacher, have been associated with diminished psychological functioning (Mabbe et al. 2018; van der Kaap-Deeder et al. 2017). Need frustration has been related to maladaptive outcomes in domains such as exercise (Gunnell et al. 2013), work (Bartholomew et al. 2014) and school (Hein et al. 2015).

The prospect of enhanced career success may render the perceived sacrifice in psychological needs worthwhile, and may be defensible from a life-span perspective which outlines the age-graded opportunities for optimal pursuit of certain goals (Heckhausen et al. 2010, 2019). As such, an individual may sacrifice their need for relatedness by giving up on building and maintaining friendships, or shutting themselves off to potential romantic connections, with the aim of devoting more time to their career goal. Alternatively, an individual may sacrifice their need for autonomy by giving up choice and spontaneity in daily life, disconnecting from their internal compass of personal interests and values, with a single-minded focus on the demands of career goal pursuit. Lastly, an individual may sacrifice their need for competence by forgoing opportunities to excel in domains unrelated to their career path, such as sports or social events. However, contrary to the career-striving individual's intentions, these sacrifices may lead to a frustration in basic psychological needs over time, which may ultimately undermine the individual's efforts to make progress on their career goal along with impairing his or her well-being. Given the pathogenic nature of need frustration (Vansteenkiste and Ryan 2013), we propose that psychological need sacrifice also relates to greater psychological distress and reduced career goal progress: a relation mediated by increased psychological need frustration. Because need frustration rather than need deprivation has more detrimental consequences (Vansteenkiste and Ryan 2013) we did not expect need deprivation to explain the potentially harmful consequences of need sacrifice.

Antecedents of psychological need sacrifice

In addition to examining the affective and self-regulatory consequences of different forms of goal-related sacrifices, we also aimed to study the motivational antecedents of need sacrifices. In particular, we sought to explore the extent to which sacrificing needs reflected a volitional process. In the tradition of SDT, we broached the issue of volition by distinguishing between autonomous and controlled motivation. Autonomy is reflected in pursuing activities because they are interesting or personally meaningful (e.g., intrinsic, integrated, and identified motivation); control is reflected in pursuing activities because one feels pressured either by internal or external forces (e.g., introjected motivation and external regulation).

There is now considerable evidence that pursuing extrinsic aspirations often results in lower well-being and higher levels of psychological distress because such pursuits distract from satisfying basic psychological needs (Hope et al. 2019, 2016, 2014; Kasser and Ryan 1993, 1996), and that this is true even when people successfully attain their extrinsic goals (Niemic et al. 2009). Likewise, findings obtained by Vansteenkiste et al. (2007) showed associations between extrinsic value orientation and need frustration. It may be the case that extrinsic values influence people's career-related decisions, such as their motivation for embarking upon a particular career path, which may enhance the sense of pressure to make sacrifices for a career goal.

Similarly, there is considerable evidence that pursuing personal goals for controlled reasons is associated with increased goal-related difficulties, less vitality, and poorer mental health outcomes (e.g., Holding et al. 2017; Sheldon and Elliot 1999). In our study, we predicted that controlled motivation for career goal pursuit would arise from valuing extrinsic life aspirations, and would be positively associated with feeling pressure to sacrifice psychological needs, since controlled goals are often inconsistent with basic psychological needs.

In turn, we also explored young adults' specific motivation for making sacrifices during career goal pursuit. We reasoned that autonomous reasons for making sacrifices would be incompatible with renouncing basic psychological needs, as integrated or identified motives for sacrificing would imply that the individual had accurately identified essential needs, core values and interests, and would be hesitant or unwilling to sacrifice them. Instead, we suspected that individuals perceiving pressure to make sacrifices for their goal would more readily ignore or disregard basic psychological needs through need sacrifice. In other words, we expected psychological need sacrifice to reflect the pursuers' limited understanding or poor

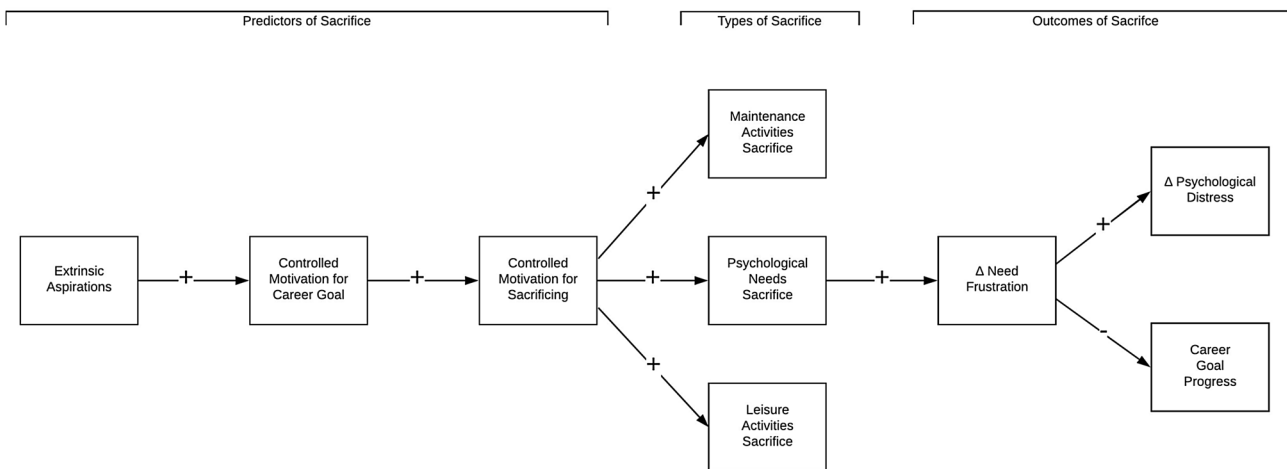


Fig. 1 Theoretical figure highlighting the associations between antecedents of need sacrifice, types of sacrifice, and outcomes of sacrificing during goal pursuit. The predictors of sacrificing were assessed at T1 (start of academic year), the types of sacrifice and motivation

for sacrificing were assessed at T2 (middle of academic year), and the outcomes of sacrificing were measured at baseline (in the case of need frustration and psychological distress) and at T3 (end of academic year)

self-assessment of his or her fundamental needs for growth and thriving, much like Sheldon (2014, p. 355) characterized individuals pursuing controlled goals as being “out of touch with themselves”. Importantly, based on recent work by Hope et al. (2019) who showed how extrinsic aspirations predict increases in controlled motivation during goal pursuit, we expected that extrinsic aspirations would lead to greater controlled regulation in career goal pursuit and, in turn, greater controlled motives for sacrificing.

The present study

To test our hypotheses, we conducted two 3-wave prospective longitudinal studies with university students across the academic year. We wanted to study need sacrifice in individuals pursuing a career goal, which included both undergraduates and graduate students. We have outlined our hypotheses in a theoretical model (Fig. 1). With respect to our first question of whether there would be evidence for different types of personal sacrifices among young adults pursuing a career goal, we expected there to be evidence of all three types of sacrifice (psychological need sacrifice, maintenance activity sacrifice, and leisure activity sacrifice). We suspected that need sacrifice would be distinguishable from maintenance activity sacrifice (e.g., sleep, exercise, healthy eating) and leisure sacrifice (e.g., time with friends, community involvement, hobbies).

Our second question focused on understanding how need sacrifice related to outcomes. We hypothesized that need sacrifice would be positively associated with need frustration over the academic year. We planned to test the specificity of this linkage by comparing the effects of need sacrifice to the

sacrifice of maintenance and leisure activities. Moreover, we hypothesized that sacrificing basic psychological needs to reach a career goal would increase psychological distress and decrease career goal progress, and that these effects would be mediated by need frustration.

Thirdly, we hypothesized that certain motivational factors would predispose individuals to experience psychological need sacrifice. Specifically, we expected the sacrifice of psychological needs to stem from controlled processes at multiple levels of generality. Starting with the broad perspective of life aspirations, we expected that an emphasis on extrinsic aspirations would lead to greater controlled motives for the career goal, and that greater controlled career-goal motives would enhance controlled motives for sacrificing. Finally, we expected controlled motives for sacrificing needs to result in greater psychological need sacrifice. We sought to answer these questions by testing our theoretical model (see Fig. 1) with an integrative structural equation model in both samples.

Methods

Participants and procedure

Two identical year-long studies on goals were conducted at a large public Canadian university. Participants were recruited through advertisement posters placed across campus. The questionnaires were administered through the online survey software Qualtrics. Six surveys were administered throughout the academic year; however, data regarding career goals were only assessed at the beginning (T1; September), middle (T2; December) and end (T3; May) of the academic year. Participants were reminded of their career

goal at each follow-up via an ideographic information plug-in function on the online survey platform Qualtrics. In other words, when answering questions about their career goal, each participant would see the career goal they had entered into the survey at the beginning of the study. The study was conducted in compliance with the University Research and Ethics Board, and participants received financial compensation (\$50 CAD) in both studies.

For Sample 1, a sub-sample of 352 was selected from a larger sample of 508 participants who participated in a year-long study on goals. This sub-sample indicated that (1) they were actively pursuing their career goal at the moment, and (2) the university degree they were currently pursuing related directly to their career goal. Participants were predominantly female (83%) with an average age of 21.6 years ($SD=4.02$; ranging from 17 to 54), and were predominantly Caucasian (57%) and Asian (32%). Approximately one third of the retained sample (27%) was registered in graduate programs. Importantly, neither year in program nor level of education (undergraduate versus graduate) were associated with level of sacrifice (i.e., for maintenance activities, leisure activities, or psychological need sacrifice). The completion rate for the surveys was 88% for midyear and 87% for the end of the year assessment; t-tests were used to compare the participants who completed all three time points with those who did not on the baseline measures. No differences approaching significance ($p's > .10$) were found for all variables of interest.

For Sample 2, we recruited 231 participants pursuing a career goal. Of this sample, 14 participants were not actively pursuing a career goal and were not included in the analyses. Of the retained sample ($N=217$), 90% of participants indicated that the university degree they were currently pursuing related directly to their career goal. This sample was predominantly female (85%) and predominantly Caucasian (77%) and Asian (21%), with an average age of 19.85 ($SD=2.40$ range 17 to 38). In this sample, 5% of students were in graduate programs. The completion rate for the surveys was 94% for midyear and 87% for the end of the year. T-tests were used to compare the participants who completed all three time points with those who did not on all of the baseline measures. No differences approaching significance ($p's > .20$) were found for all variables of interest.

Measures

Time 1—Beginning of first semester

Career goal description

Participants were asked to type out their career goal following the prompt “*What is your career goal? In other words,*

what career are you planning on pursuing or are on the path towards pursuing?”

Life aspirations

A 12-item shortened version of the Aspirations Index was used to measure intrinsic and extrinsic aspirations (Kasser and Ryan 1996). Participants were asked to rate the importance of 12 life aspirations, ranging from 1 “*not at all important*” to 7 “*very important*”. Participants rated six items indicative of intrinsic aspirations such as “to have committed, intimate relationships” and “to grow and learn new things” which were averaged to compute *intrinsic aspirations* (Sample 1: $\alpha = .72$; Sample 2 $\alpha = .62$). Participants also rated six items indicative of extrinsic aspirations such as “to have enough money to buy everything you want” and “to be admired by lots of different people” which were averaged to compute *extrinsic aspirations* (Sample 1: $\alpha = .78$; Sample 2: $\alpha = .79$).

Career goal motivation

Participants were asked to reflect on why they were pursuing the career they had indicated. Single items were used to assess intrinsic, integrated, identified and external regulation for the career goal (Koestner et al. 2015) and participants rated their responses on a seven-point Likert scale from (1) “Strongly Disagree” to (7) “Strongly Agree”. Introjected career motivation was assessed using two items: “Because you would feel ashamed, guilty, or anxious if you didn’t—you feel that you ought to strive for this.” and “My self-worth will be affected by how well I do in pursuing this career”. External regulation was assessed with one item “Because somebody else wants you to, or because you’ll get something from somebody if you do.” Controlled motivation was calculated as the mean of the two introjection and one external regulation items (Sample 1: $\alpha = .47$; Sample 2: $\alpha = .54$). Autonomous motivation was calculated as the mean of 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.”) and identified reasons (“Because you really believe that it is an important goal to have—you endorse it freely and value it wholeheartedly.”) (Sample 1: $\alpha = .79$; Sample 2: $\alpha = .72$).

Need frustration

The need frustration subscale of the Balanced Measure of Psychological Needs scale (BMPN; Sheldon and Hilpert 2012) was used to assess psychological need frustration at

baseline and T3. Participants were asked to rate their agreement with a series of statements on a seven-point scale ranging from “*not at all true*” to “*very true*”. Need Frustration was assessed with nine items, three statements for each need (autonomy, competence, relatedness; Sample 1: $\alpha = .78$; Sample 2: $\alpha = .79$). For example, the item “I experienced some kind of failure or was unable to do well at something” was used to assess competence need frustration.

Psychological distress

The ten-item Centre for Epidemiologic Studies Depression Scale Revised (CESD-R-10; Björgevinnsson et al. 2013) was used to assess depressive symptoms at baseline and T3. The CESD-R-10 is a validated self-report measure of depressive symptoms which focuses on the affectivity component of depressed mood. The scale includes ten items such as “I could not get going” using a four-point Likert scale ranging from “rarely or none of the time (< 1 day)” to “most or all the time (5–7 days)” T1 (Sample 1: $\alpha = .80$; Sample 2: $\alpha = .75$) and T3 (Sample 1: $\alpha = .83$; Sample 2: $\alpha = .84$).

Negative Affect was assessed using a five-items version of the negative affect subscale of the Positive and Negative Affect Schedule in Sample 1 and the ten-item version in Sample 2 (PANAS; Watson et al. 1988) at both at T1 (Sample 1: $\alpha = .78$; Sample 2: $\alpha = .82$) and T3 (Sample 1: $\alpha = .82$; Sample 2: $\alpha = .83$). Participants were asked to rate the extent to which they had felt certain feelings and emotions (e.g., “irritable”) over the past week using a seven-point scale ranging from 1 “*not at all*” to 7 “*extremely*”. The reliability and validity of a short form of the negative affect scale was confirmed by Mackinnon et al. (1999).

Since depressive symptoms and negative affect were highly positively related ($r = .68$), we formed a combined psychological distress measure by standardizing each scale and calculating a mean for both T1 and T3. Similar combining of depressive symptoms and negative affect was reported in Saragovi et al. (1997).

Time 2—Midyear

Motivation for career-related need sacrifices

After being reminded of their career goal, participants were asked to rate the extent to which they made their career-related sacrifices for autonomous reasons: “because I want to, it feels personally meaningful to do so” and controlled reasons “because I feel like I ought to, other people want me to” on 100-point slider scale. Similar single item slider scale motivation assessments were used by Holding et al. (2019a).

Career goal-related sacrifice

Participants were asked to rate their career goal-related sacrifices by responding to the question “In order to pursue your career goal, how much have you had to make the following sacrifices?” followed by a series of 14 items. Ratings for these sacrifice items were made on a seven-point Likert scale ranging from (1) “Not at all” to (7) “Very much”. These 14 items corresponded to three different types of sacrifice: *sacrifice of maintenance activities* (six items) involved giving up on activities such as healthy eating, enough sleep, and enough exercise (Sample 1: $\alpha = .83$; Sample 2: $\alpha = .88$); *sacrifice of leisure activities* (5 items) involved giving up activities such as hobbies, dating, and community (Sample 1: $\alpha = .82$; Sample 2: $\alpha = .87$). The *maintenance activity sacrifice* and the *leisure activity sacrifice* items were adapted items found in the American Time Use Survey (ATUS; e.g., Basner et al. 2007). The American Time Use Survey is a United States wide survey sponsored by the Bureau of Labor Statistics and conducted by the United States Census Bureau which provides data on the amount of time that Americans spend on various activities, such as work, leisure, socializing and personal care. The ATUS data and scales have been employed in a wide variety of publications (e.g., Eldridge and Pabilonia 2010; Kofman and Bianchi 2012) and are both reliable and valid (United States Bureau of Labor Statistics 2018). We chose to base our scale on the ATUS in order to include a list of sacrifice items that is comprehensive, consistent with the previous research on work-life trade-offs (e.g., Caproni 1997; Mennino and Brayfield 2002), and related to Csikszentmihalyi’s (1997) distinction between maintenance and leisure activities.

After indicating the extent to which they were sacrificing various activities, participants received the prompt “Making personal sacrifices for my career has” followed by three items used to assess basic psychological needs on the Balanced Measure of Psychological Needs (BMPN; Sheldon and Hilpert 2012). The items were “Made me feel less connected to people than usual.” (*relatedness*), “Made me feel less competent than usual.” (*competence*), “Made me feel more pressured and less free than usual.” (*autonomy*) (Sample 1: $\alpha = .77$; Sample 2: $\alpha = .82$).

Time 3—End of academic year

Career goal progress

Career goal progress was assessed at the end of the year with two items: “I have made a lot of progress toward this goal” and “I feel like I am on track with my career goal plan.” A similar method has been used in previous studies (e.g., Koestner et al. 2002, 2012). All ratings were made on

a seven-point scale ranging from (1) “Strongly Disagree” to (7) “Strongly Agree”. In the follow-up surveys, participants were reminded what their specific career goal had been at the beginning of the year (Sample 1: $\alpha = .88$; Sample 2: $\alpha = .95$).

Results

Plan of analyses

The results are organized into two sections: preliminary analyses and primary analyses. In our preliminary analyses section, we report the factor structure of the measures related to sacrifice to distinguish need sacrifice from (A) maintenance and leisure activity sacrifice and (B) need frustration. We used Sample 1 to conduct exploratory factor analyses (EFAs), and Sample 2 to conduct confirmatory factor analyses (CFAs). Next, we report descriptive analyses related to all the main variables in the study. In the primary analyses section, we report the results of an integrative structural equation model tested in both samples. This model tested both the role of the hypothesized antecedents on psychological need sacrifice, as well as the mediating role of change in need frustration in the associations between need sacrifice and the outcomes of change in psychological distress and end-of-year career goal progress. All structural equation modeling (SEM) and CFA analyses in the present study were performed on a raw data file using robust maximum likelihood estimation (MLR) procedures with MPLUS 7.3 (Muthén and Muthén 2012) because this method is able to handle potential deviations in normality. Prior to all analyses, variables were examined for accuracy of data entry, normality, missing data, and fit between their distributions and the assumptions underlying maximum likelihood procedures (Tabachnick and Fidell 2007). The missing values in Sample 1 (10.6%) appeared to be missing completely at random (Little’s MCAR $\chi^2 (df=34) = 27.39, p = .78$). In Sample 2, 5.4% of the values appeared to be missing at random (Little’s MCAR $\chi^2 (df=31) = 45.82, p = .04$). Further inspection of the missing data showed that participants who did not respond to the controlled motivation for sacrificing report lower levels of all three types of sacrifices ($F > 9.23, p < .003$), as well as lower levels of change in need frustration over the duration of the study ($F > 4.42, p < .04$). As recommended by Graham (2003), the full information maximum likelihood (FIML) procedure implemented within MPLUS was used to handle missing data in both samples. FIML is considered to be the most effective method to estimate models with missing data (Allison 2003). Finally, the following fit indices were given priority in model evaluation: the comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean squared residual (SRMR). According to Kline (2011) the

CFI should be .95 or higher, while the RMSEA and SRMR should be 0.06 or lower for acceptable model fit.

Preliminary analyses

To provide evidence for the distinctiveness of the three types of sacrifices, we conducted exploratory factor analyses (EFA) with all 14 sacrifice items in Sample 1, using maximum likelihood extraction with direct oblimin rotation to allow for correlated factors. Two items hypothesized to be part of the leisure activity sacrifice subscale showed high cross-loadings and were thus dropped from further analyses: sacrifice of personal goals showed high cross-loadings on leisure sacrifice and the psychological need sacrifice subscales, whereas household activities cross-loaded highly onto the leisure sacrifice and the maintenance sacrifice subscales. Appendix Table 2 shows the factor loadings from the rotated matrix for all 12 items kept for the EFA, which yielded a three-factor solution that accounted for 64% of the variance. The first factor consisted of five items and represented sacrifice of maintenance activities (Eigenvalue = 5.34, average loading = 0.62); the second factor consisted of three items and represented sacrifice of psychological needs with an (Eigenvalue = 1.30, average loading = 0.71); finally, the third factor consisted of four items and represented sacrifice of leisure activities (Eigenvalue = 1.05, average loading = 0.65). In Sample 2 a confirmatory factor analysis (CFA) was conducted to confirm the three-factor structure of the sacrifice items. Results of the CFA provided support for the distinction between all three facets (see Appendix Fig. 3): MLR $\chi^2 (df=51) = 74.30, p = .02, CFI = .98, RMSEA = .05 (.02, .07), SRMR = .04$.

Using the same procedure outlined above we conducted a second EFA to distinguish psychological need sacrifice from need frustration (see Appendix Table 3). Two factors emerged and accounted for 44% of the variance. The first consisted of the nine need frustration items, with an Eigenvalue of 3.59 (average loading = 0.52); the second consisted of three items representing psychological need sacrifice with an Eigenvalue of 1.74 (average loading = 0.76). Next, we conducted a CFA with the Sample 2 data (see Appendix Fig. 4). Items from the need sacrifice and need frustration scales were used as indicators of the two latent variables. The results of an initial CFA revealed an unacceptable model fit: MLR $\chi^2 (df=53) = 140.57, p < .001, CFI = .86, RMSEA = .09 (.07, .11), SRMR = .07$. Inspection of the modification indices provided by MPLUS suggested the addition of correlated residuals between one set of items from the frustration of competence subscale (items 1 with 9) as well as between two sets of items from the frustration of relatedness subscale (items 4 with 2 and 8). Allowing residuals to correlate indicates that measures are related to each other for reasons other than the latent variable of interest

(e.g., item wording; see Cole et al. 2007). In the current analysis, all correlated residuals occurred within competence frustration and relatedness frustration, and were positively related. This revised two factor model yielded acceptable fit indices: MLR χ^2 ($df=50$) = 84.72, $p = .002$, CFI = .94, RMSEA = .06 (.04, .08), SRMR = .06.

The mean levels of all three forms of sacrifice were moderately high, straddling the midpoint of the 1–7-point scale. In both samples, paired t-tests showed that both leisure activity sacrifice ($M_1=4.23$, $M_2=3.99$) and psychological need sacrifice ($M_1=4.10$, $M_2=4.09$) were rated significantly higher than sacrifice of maintenance activities ($M_1=3.91$, $M_2=3.56$), [Leisure vs. maintenance sacrifice: Sample 1 $t(351) = -5.44$, $p < .001$, Sample 2 $t(216) = -5.85$, $p < .001$; psychological needs vs. maintenance sacrifice: Sample 1 $t(351) = -2.72$, $p = .007$, Sample 2 $t(216) = 5.57$, $p < .001$]. There was no mean difference between leisure and psychological need sacrifice in either sample.

Preliminary analyses examined the relations of gender and age to all of the major variables in both samples. In Sample 1, there was only one significant effect for gender with females scoring higher on intrinsic aspirations ($r = .16$, $p = .003$). Three significant effects emerged for age with older participants reporting greater leisure activity sacrifice ($r = .16$, $p = .004$), less need frustration ($r = -.14$, $p = .02$), and less psychological distress ($r = -.15$, $p = .01$). In Sample 2, there were two significant effects for gender with females scoring higher on intrinsic aspirations ($r = .21$, $p = .002$) and on psychological distress ($r = .18$, $p = .01$). Three significant effects emerged for age with older participants reporting greater leisure activity sacrifice ($r = .21$, $p = .002$) and maintenance sacrifice ($r = .16$, $p = .02$). Older participants also reported greater career goal progress ($r = .23$, $p = .002$). No other gender or age effects approached significance in the two studies. The results that we present in later sections remain unchanged if gender and age are controlled for.

To assess change in need frustration and psychological distress over the course of the academic year, two residualized change scores were obtained by conducting a regression analysis with the T3 measurement entered as the dependent variable and the T1 measurement entered as the independent variable. The residual value of need frustration and psychological distress obtained from these analysis represent change in the variable that cannot be predicted from the initial value of the variable (Zumbo 1999). Correlations and descriptive statistics for the main variables in the study are presented in Table 1. Correlations showed that in both studies need sacrifice was positively related to controlling motivational processes, such as extrinsic aspirations, controlled motivation for pursuing the career goal, and controlled motives for sacrifice during career goal pursuit. Psychological need sacrifice was positively associated with change in need frustration and psychological distress over

the year. There were also positive associations between the different forms of sacrifice.

Primary analyses

To answer our questions about the antecedents and outcomes of psychological need sacrifice, we tested the same integrative structural equation models in each sample. In the first part of the model, we entered the three hypothesized antecedents of need sacrifice in order of most general (extrinsic life aspirations) to most specific (controlled motives for sacrificing). Next, we entered the three types of sacrifices. Finally, we entered the outcomes which included changes in need frustration, changes in psychological distress, and career goal progress (see Fig. 2). Moreover, we sought to test if the path from extrinsic aspirations to need sacrifice was mediated by controlled career goal motivation and controlled motives for sacrificing. Next we tested whether change in need frustration mediated the associations between both need sacrifice and increases in end-of-year distress, as well as end-of-year career goal progress.

With regards to our hypotheses about the antecedents of need sacrifice, results of the SEM analysis revealed that extrinsic aspirations were positively related to controlled career goal motives [Sample 1: $\beta = 0.21$, $SE = 0.05$, 95% CI (0.12, 0.31); Sample 2: $\beta = 0.37$, $SE = 0.06$, 95% CI (0.24, 0.49)]. Controlled career goal motives were positively related to controlled motives for sacrificing [Sample 1: $\beta = 0.30$, $SE = 0.05$, 95% CI (0.20, 0.39); Sample 2: $\beta = 0.32$, $SE = 0.06$, 95% CI (0.18, 0.44)], and controlled motives for sacrificing were positively associated with psychological need sacrifice [Sample 1: $\beta = 0.28$, $SE = 0.06$, 95% CI (0.17, 0.39); Sample 2: $\beta = 0.44$, $SE = 0.06$, 95% CI (0.31, 0.54)]. The indirect path from extrinsic aspirations to psychological need sacrifice was significant [Sample 1: $\beta = 0.02$, $SE = 0.01$, 95% CI (0.01, 0.04); Sample 2: $\beta = 0.05$, $SE = 0.02$, 95% CI (0.03, 0.09)], suggesting that this path is mediated by controlled motives for the career goal and controlled motives for sacrificing. Controlled motives for sacrificing were also positively related to maintenance activity sacrifice [Sample 1: $\beta = 0.26$, $SE = 0.06$, 95% CI (0.15, .37); Sample 2: $\beta = 0.24$, $SE = 0.08$, 95% CI (0.09, 0.39)], and leisure activity sacrifice [Sample 1: $\beta = 0.23$, $SE = 0.06$, 95% CI (0.11, 0.34); Sample 2: $\beta = 0.15$, $SE = 0.07$, 95% CI (0.01, 0.30)].

With regards to our hypotheses about the outcomes of need sacrifice, results of the SEM analysis revealed that psychological need sacrifice¹ was positively associated with

¹ We did not find a moderating role for motivation for sacrifice. In other words, regardless of whether individuals felt more autonomous or controlled about sacrificing their needs, the sacrifice of psychological needs enhanced psychological distress and negatively impacted goal self-regulation.

Table 1 Means, standard deviations and correlations of main variables in Sample 1 and 2

Variables	<i>M</i>		<i>SD</i>		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
T1 1. Extrinsic aspirations	4.12	1.14	(1.19)	(4.20)	–	.37***	.03	–.10	.15*	.15*	.15*	.00	.10	.07	–.14
2. Controlled career goal motivation	3.55	1.09	(1.16)	(3.55)	.21**	–	–.05	–.19	.31***	.19**	.22**	.06	.14*	.16*	–.14*
3. Intrinsic aspirations	6.25	0.69	(0.64)	(6.33)	.04	.06	–	.36**	–.09	.02	–.02	.10	–.01	.05	.08
4. Autonomous career goal motivation	6.03	1.01	(0.97)	(5.99)	.01	–.00	.26***	–	–.36***	–.07	–.23***	.02	–.10	–.10	.23**
T2 5. Controlled motives for sacrifice	40.93	28.99	(31.64)	(42.20)	.10	.30***	–.01	–.15**	–	.24**	.44***	.15*	.16*	.13	–.12
6. Maintenance activity sacrifice	3.91	1.41	(1.63)	(3.56)	.11	.13*	.06	.06	.26***	–	.57***	.78***	.11	.15	.07
7. Psychological needs sacrifice	4.10	1.37	(1.52)	(4.09)	.14*	.16**	.09	.02	.28***	.48***	–	.55***	.23**	.24***	–.10
8. Leisure activity sacrifice	4.23	1.42	(1.62)	(3.99)	.10	.09	.05	.08	.23***	.65***	.46***	–	.04	.15	.15
T3 9. Δ Need frustration	0.00	1.00	(1.00)	(0.00)	.11	.08	–.04	–.06	.11	.14*	.20**	.13*	–	.59***	–.19*
10. Δ Psychological distress	0.00	1.00	(1.00)	(0.00)	.01	.06	–.02	–.06	.07	.13*	.18*	.12*	.66***	–	–.24**
11. Career goal progress	5.29	1.40	(1.60)	(4.88)	–.10	–.07	.09	.04	–.06	.06	–.07	.12*	–.18*	–.19*	–

Descriptive statistics for Sample 2 are in parenthesis; Sample 1 correlations are below the diagonal; Sample 2 correlations are above the diagonal, * $p < .05$; ** $p < .01$; *** $p < .001$

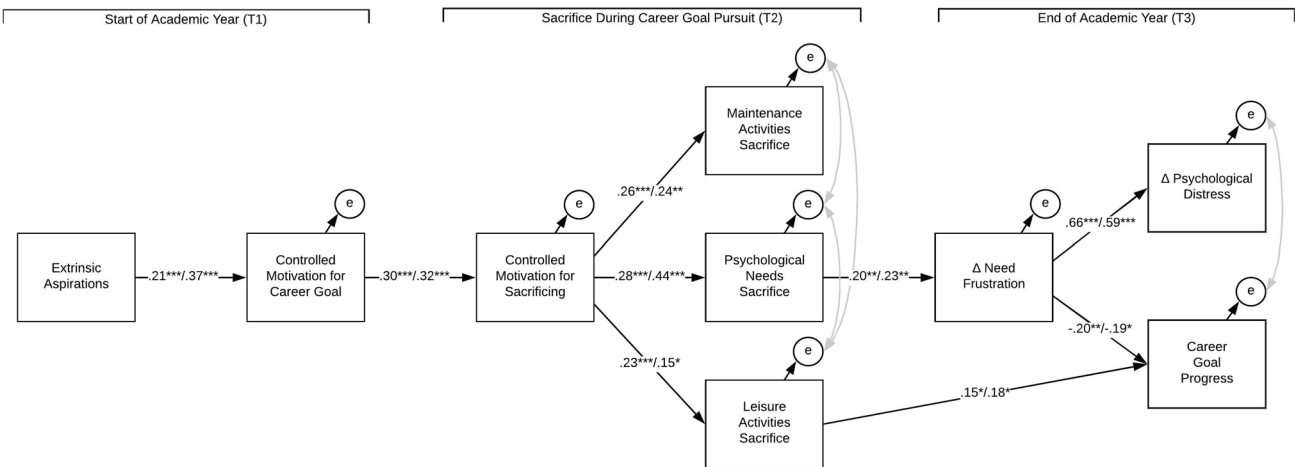


Fig. 2 Results from structural equation models testing the associations between antecedents of need sacrifice, types of sacrifice, need frustration, psychological distress, and career goal progress. * $p < .05$; ** $p < .01$; *** $p < .001$, † $p = .06$. Numbers before the dash represent results obtained in Sample 1 and behind the dash represent results

obtained in sample 2. Covariance of the error terms between the three types of sacrifices (ranging from 0.43 to 0.78), as well as between change in psychological distress and career goal progress (ranging from -0.11 to -0.17) were included in the model for both samples, but are not depicted in the figure for visual clarity

change in need frustration [Sample 1: $\beta = 0.20$, $SE = 0.06$, 95% CI (0.07, 0.31); Sample 2: $\beta = 0.23$, $SE = .07$, 95% CI (0.09, 0.37)]. Change in need frustration was positively associated with change in end-of-year distress [Sample 1: $\beta = 0.66$, $SE = .03$, 95% CI (0.59, 0.72); Sample 2: $\beta = .59$, $SE = .05$, 95% CI (.48, .69) and negatively associated with end-of-year career goal progress [Sample 1: $\beta = -.20$, $SE = .06$, 95% CI ($-.31$, $-.08$); Sample 2: ($\beta = -.19$, $SE = .09$, 95% CI ($-.35$, $-.02$)). The indirect path from need sacrifice to increased need frustration to increased distress was significant [Sample 1: $\beta = 0.13$, $SE = .04$, 95% CI (0.05, 0.20), Sample 2: $\beta = .14$, $SE = .05$, 95% CI (0.05, 0.23)]. Likewise, the indirect path from need sacrifice to increased need frustration to career goal progress was also significant [Sample 1: $\beta = -.04$, $SE = .02$, 95% CI ($-.08$, $-.01$), Sample 2: $\beta = -.04$, $SE = .03$, 95% CI (-0.11 , -0.01)]. These results support the mediating role of change in need frustration in explaining the associations between need sacrifice and the outcomes of change in end-of-year distress and career goal progress. There was also a significant positive association between leisure sacrifice and end-of-year career goal progress [Sample 1: $\beta = .15$, $SE = .06$, 95% CI (.03, .27), Sample 2: ($\beta = .18$, $SE = .08$, 95% CI (.03, .33)], such that the sacrifice of leisure activities midyear was associated with greater career goal progress end-of-year. Overall, the proposed model had an excellent fit to the data in both Sample 1: MLR χ^2 ($df = 23$) = 20.53, $p = .61$, CFI = 1.00, RMSEA = .00 (.00, .04), SRMR = .05; and Sample 2: MLR χ^2 ($df = 23$) = 31.17, $p = .11$, CFI = .98, RMSEA = .04 (.00, .07), SRMR = .06.

Discussion

Two large prospective, multi-wave longitudinal studies explored the extent to which young adults sacrifice their basic psychological needs in the pursuit of career goals. Results from *both* samples confirmed that need sacrifice is distinct from the sacrifice of maintenance and leisure activities, as well as from the experience of need frustration. The young adults in our studies indicated they were making high levels of sacrifice in the pursuit of their career goals. The majority of students reported leisure and need sacrifice levels that were above the midpoint of the scale. The sacrifice of leisure activities and psychological needs was more common than sacrifice of maintenance needs. The results of *both* samples converged to show that psychological need sacrifice was associated with increased psychological distress and impaired career goal progress, and that these associations were mediated by need frustration. Thus, the sacrifice of basic psychological needs for career goals seemed to backfire such that progress on career goals was less likely to be achieved and, concomitantly, students' level psychological distress increased. Finally, *both* studies provided evidence that psychological need sacrifice stemmed from controlled motivational processes. Our results suggested that placing an emphasis on extrinsic life aspirations made individuals more susceptible to feeling controlled about their career goal, and that these controlled motives for the career translated into greater controlled motives for making personal sacrifices. Moreover, controlled career goal motivation and controlled motivation for sacrificing appeared to serially mediate the positive association between extrinsic aspirations and psychological need sacrifice in *both* samples.

Outcomes associated with sacrificing

Our results have theoretical and practical implications for SDT and Basic Psychological Needs Theory (BPNT). The current studies contribute to SDT and BPNT by integrating literature on career goal pursuit, sacrifices (or trade-offs) and need frustration. One central tenet of SDT posits that the psychological needs are universal (e.g., Chen et al. 2015; Church et al. 2013; Milyavskaya and Koestner 2011; Ryan and Deci 2017) and essential to thriving and flourishing (Ryan and Deci 2017). Our findings provide further evidence for the centrality of these needs by demonstrating that, even in cases where the need frustration results from personal action (or inaction), it leads to diminished psychological and self-regulatory functioning.

The present research also introduces a new form of sacrifice—psychological need sacrifice—into the work-life balance literature, thereby connecting work-life balance research with BPNT. Our results suggest that the sacrifice of psychological needs is distinct from sacrifice of maintenance and leisure activities. Indeed, it is notable that maintenance and leisure activity sacrifices were unrelated to diminished functioning over the course of the study. In fact, participants who sacrificed their leisure activities actually made *more* progress on their career goal over the school year when controlling for psychological need sacrifice. This suggests that leisure activity sacrifice may, in some cases, be beneficial to progress toward a career goal. Temporarily sacrificing some personal activities, such as certain hobbies, may allow students to allocate more time and effort toward their desired career goal. Perhaps leisure activity sacrifice in career goal pursuit constitutes a form of “goal shielding” whereby the pursuer protects career goal striving from unwanted distractions (e.g., hobbies, time with friends) to reduce conflicting attentional and behavioural demands (Gollwitzer and Sheeran 2006). Critically however, sacrificing feelings of autonomy, competence, and relatedness undermined the pursuit of a career goal, as well as psychological well-being over the span of a school year. Our results suggest that, whereas an individual can recover from temporarily sacrificing maintenance activities or commitment toward hobbies, psychological need sacrifice may carry more enduring negative repercussions. Our findings thus underscore the importance of considering whether the activities that we sacrifice will also bleed into need sacrifice and thereby pose a risk for young adults’ adjustment and growth.

Conceptually, psychological need sacrificing may be the negative parallel of need crafting, which has been defined as the ability to select contexts and seek the company of people who provide opportunities for need satisfaction (Ryan et al. 2019). In other words, some people may search for opportunities of improved need satisfaction (see Legault et al. 2017) while others may renounce such opportunities

and even behave in ways that frustrate psychological needs over time. Further research is needed to understand how environmental factors and individual differences interact to promote individuals’ need crafting or need sacrificing tendencies. For example, Ryan et al. (2019) have hypothesized that certain personality traits, for example, high self-critical perfectionism, may lead individuals to select contexts that confer greater risk for need frustration, such as highly evaluative and competitive contexts. It is likely that these individuals may be more susceptible to need sacrifice given the environmental demands of their self-selected paths and the internal pressures they seek to appease. Likewise, other personality traits may buffer against adopting certain self-regulatory styles associated with need frustration. For example, in a longitudinal study trait self-control was shown to enhance autonomous goal motivation and decrease controlled goal motivation during personal goal pursuit (Holding et al. 2019b), which may, in turn, protect individuals from need sacrifice.

Antecedents of sacrificing

Across two studies, controlling factors appeared to conspire to push young people to sacrifice their needs for autonomy, competence, and relatedness in the service of reaching career goals. In other words, individuals in our study did not appear to make personal sacrifices for their career goal for “want to” reasons and instead appeared to make them for “have to” reasons. Results suggested that valuing wealth, fame, and status (i.e., extrinsic aspirations), was positively related to pursuing a career goal to minimize feelings of guilt and shame, to obtain a reward, or to avoid a punishment (i.e., controlled motivation). In turn, controlled career goal motivation affected the extent to which participants felt forced or pressured to make personal sacrifices for their career goal. This builds on SDT’s Goal Contents Theory (Ryan and Deci 2017, p. 275) which posits that the effect of intrinsic rather than extrinsic aspirations on well-being may be “a function of the regulatory basis of goal pursuits, as extrinsic goals, will, on average, tend to be less autonomously regulated than intrinsic goals”. Recent studies have supported this assertion, showing that personal goals connected to more intrinsic aspirations tend to be pursued for more autonomous reasons compared to personal goals connected to extrinsic aspirations (Sheldon et al. 2004). Future longitudinal research is needed to replicate the present findings with temporal separation of extrinsic aspirations, controlled career goal motives, and controlled sacrifice motives, to confirm the serial relationship of these variables. It may be that controlled career goal regulation and extrinsic aspirations are dynamically associated such that changes towards greater controlled motivation predict enhanced prioritization of extrinsic aspirations (see Hope et al. 2019 for the dynamic

relationship between aspirations, motivation, need satisfaction and well-being). Interestingly, controlled motives for sacrifice were also positively related to the more “benign” sacrifices of maintenance and leisure activities. Moreover, sacrificing leisure activities appeared to facilitate career goal progress. This highlights the complex nature of controlled sacrifice in personal goal pursuit which simultaneously bolstered leisure activity sacrifice which aided career goal progress as well as enhancing psychological need sacrifice which hindered career goal progress.

Broader reflections

Our distinction of psychological need sacrifice from the sacrifice of maintenance and leisure activities invites discussion of Maslow’s hierarchy of human needs (1943). Maslow proposed a five-tier, pyramid-shaped hierarchical model of human needs. From the bottom of the hierarchy upwards, the needs are: physiological, safety, love and belonging, esteem and self-actualization. Needs lower down in the hierarchy must be satisfied before individuals can attend to needs higher up. Although a direct mapping of the different types of need sacrifices on Maslow’s model is difficult, it appears likely that psychological needs represent a higher level of functioning than maintenance or leisure activities. Interestingly, recent studies have used Maslow’s hierarchical model of human needs to examine whether the level of satisfaction of lower-level needs will limit the positive effects of satisfying higher level needs. The results appear to suggest that whether or not individuals are able to satisfy other lower-level needs, such as their needs for financial and physical security, satisfying needs for autonomy, competence, relatedness uniquely relate to greater psychological well-being (Chen et al. 2015; Rasskazova et al. 2016). Congruent with this research, we propose that sacrificing basic psychological needs for autonomy, competence, and relatedness will have negative consequences for students pursuing important career goals, regardless of whether they make other important sacrifices to their maintenance activities (i.e., healthy eating, exercise, hygiene, and self-care) and their leisure activities (i.e., friends, family, dating, romantic relationships, hobbies, sports, and community involvement).

One can also understand psychological need sacrifice from the Motivational Theory of Life-Span Development (Heckhausen et al. 2010, 2019). Heckhausen et al. (2010, p. 51) note that “individuals may develop patterns of primary control striving that reflect very high or even excessive persistence when facing insurmountable obstacles, whereas others are more amenable to disengage”. To this end, Heckhausen et al. (2010) give the example of over control in one domain (e.g., gymnastics) as potentially compromising an individual’s goal striving capacity in the future (e.g.,

because of skeletal injury). Likewise, psychological need sacrifice for a career goal may be an example of “excessive persistence” in goal pursuit and may lead to adverse mental health outcomes (e.g., burnout, depression) that compromise an individual’s goal striving capacity in the future. Given the Heckhausen et al. (2010) model of optimal goal striving, it may be most adaptive for individuals sacrificing their basic psychological needs to relinquish or re-adjust their career goal, since psychological need sacrifice increases psychological distress and undermines goal progress over time. However, switching from goal engagement to goal disengagement for goals that elicit psychological need sacrifice may be more difficult, precisely because these goals tend to be more controlled and disengagement may pose a greater threat to self-esteem. As such, future research is needed to examine how individuals regulate goals for which they have sacrificed basic psychological needs, and whether goal disengagement reverses adverse affective outcomes such as psychological distress.

It is also interesting to consider our research from the perspective of career development theory. The social cognitive theory of career development highlights the agentic role that goals, expectancies, and feelings of self-efficacy play in determining the success of career pursuits. (Lent and Brown 2006). The present research, however, highlights the potential for conflict between goals and basic needs and suggests that clear and specific goals that are combined with positive expectancies and high feelings of self-efficacy may still go awry if basic psychological needs are sacrificed in their pursuit. Recent work on social cognitive theory of careers has highlighted the proactive, self-managing aspects of pursuing a career (Brown and Lent 2016). We would suggest that an important issue to consider in this new emphasis is the extent to which setting demanding career goals may elicit sacrifices to other activities that satisfy basic psychological needs.

Limitations and future directions

The key measure of our study, need sacrificing, was assessed in a rather limited way. A critical issue for future research would be to use a broader set of items and separate the three need sacrifices to understand the unique effects of sacrificing autonomy, competence and/or relatedness. Additional assessments of the three types of sacrifices and need frustration would have allowed us to examine their dynamic interplay. It would have also allowed us to explore the relation between leisure activity sacrifice and psychological need sacrifice. Leisure activities often are designed to satisfy relatedness, autonomy and competence needs (Nakamura and Csikszentmihalyi 2014) so it is plausible that the sacrifice of leisure

activities precedes the experience of psychological need sacrifice. Additional limitations of our studies include the use of two North American college samples which raises questions of generalizability, and the use of a longitudinal study design, which raises questions about causality. Replications in diverse samples, incorporating mixed methods (e.g., informant reports), and experimental manipulations are needed to address these short-comings. We studied young people who were in the exploration stage of career development, but it would also be interesting to explore whether need sacrifice occurs during later phases of the career. Perhaps older adults are more careful about sacrificing their psychological needs during career goal pursuit as they shift towards valuing family life with increased age (Super et al. 1992). Relatedly, future work should consider whether the domain in which need sacrifice occurs (e.g., work or family) moderates the negative impact of sacrificing psychological needs.

Conclusion

The current studies contribute to the SDT and basic psychological needs literature by investigating the price that young adults pay when they sacrifice psychological needs for career goal pursuit. Our findings support the centrality of basic psychological needs and how their sacrifice has detrimental effects to affective and self-regulatory functioning beyond the effects of maintenance and leisure activity sacrifices. Far from “success being determined by what you are willing to sacrifice for it”, as suggested in the opening quote, this study proposes that sacrificing psychological needs interferes with goal success and comes at an emotional cost. During university years, programs designed to help students balance the demands of career goal pursuit without sacrificing psychological needs seem crucial. Educational institutions could

offer students guidance that promotes autonomous regulation for career goals (see Salmela-Aro et al. 2010) and discourage the prioritization of career goal pursuit above needs for autonomy, competence and relatedness.

The road to pursuing a long-term career goal is not without trials and tribulations. People are constantly forewarned that they must be willing to make sacrifices to achieve the goals that they hold most dear. We find that these words of guidance must be interpreted with caution. While sacrificing leisure activities was associated with making greater goal progress, sacrificing basic psychological needs for autonomy, relatedness, and competence was robustly associated with reduced goal progress and increased psychological distress. Thus, when people embark on the long and arduous road towards pursuing their career goals, it is paramount that they do not sacrifice the basic psychological needs that will fuel them on this journey.

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Compliance with ethical standards

Conflict of interest: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Appendix

See Tables 2 and 3; Figs. 3 and 4.

Table 2 Final rotated factor loadings for sacrifice items in Sample 1

In order to pursue your career goal, how much have you had to make the following sacrifices?			
Items	Leisure	Maintenance	Psychological
Sleep	.19	–.42	.09
Exercise	.15	–.59	–.03
Healthy eating	–.17	–.92	.06
Hygiene/appearance	.05	–.65	.02
Self-care activities	.28	–.53	.05
Hobbies, leisure or fun activities	.74	.03	.15
Friends and family	.77	.01	.07
Dating, romantic or intimate relationships	.66	–.08	–.06
Community involvement	.43	–.22	.02
Made me feel less connected to people than usual	.17	.07	.72
Made me feel less competent than usual	–.07	–.06	.71
Made me feel more pressured and less free than usual	–.01	–.04	.71

Table 3 Final rotated factor loadings for need frustration and sacrifice items in Sample 1

Items	Need frustration	Need sacrifice
Made me feel less connected to people than usual.	.01	–.77
Made me feel less competent than usual.	.04	–.67
Made me feel more pressured and less free than usual.	.03	–.83
I had disagreements or conflicts with people I usually get along with	.41	–.03
I was lonelier than I'd like to be	.50	–.09
I felt unappreciated by one or more important people	.46	.03
I had a lot of pressures I could do without	.54	–.06
There were people telling me what I had to do.	.49	.02
I had to do things against my will	.38	–.04
I experienced some kind of failure, or was unable to do well at something	.64	.06
I did something stupid that made me feel incompetent	.59	.06
I struggled doing something I should be good at	.69	.01

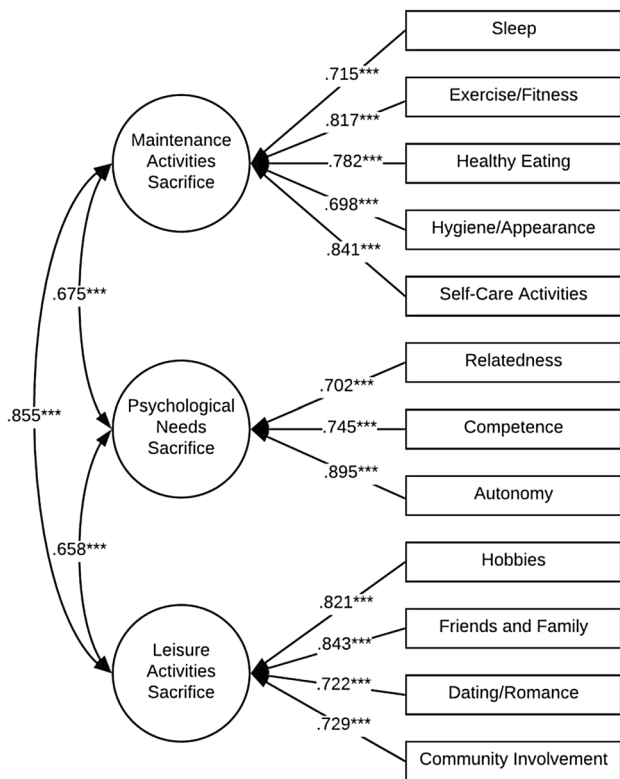


Fig. 3 Confirmatory factor analysis (CFA) of three types of sacrifice in sample 2. * $p < .05$; ** $p < .01$; *** $p < .001$

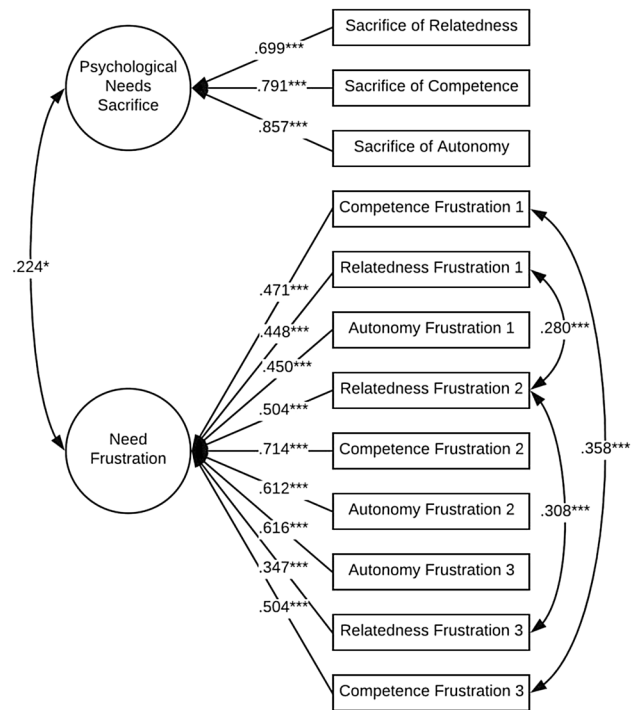


Fig. 4 Confirmatory factor analysis (CFA) of need sacrifice and need frustration in sample 2. * $p < .05$; ** $p < .01$; *** $p < .001$

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