

## GOAL CONTENT, WELL-BEING, AND PSYCHOLOGICAL NEEDS SATISFACTION IN CHINESE ADOLESCENTS

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We examined the mediating role of psychological needs satisfaction in the association between goal content and subjective well-being (SWB) in a Chinese cultural context. Chinese adolescents ( $N = 493$ ) completed the Aspiration Index, the Basic Needs Satisfaction in General Scale, and the Index of Well-Being. The results suggested that SWB was positively correlated with intrinsic goals and psychological needs satisfaction, and intrinsic goals were positively correlated with psychological needs satisfaction. Mediation analysis revealed that psychological needs satisfaction partially mediated the association between intrinsic goals and SWB. These results imply that pursuit of intrinsic goals helps individuals meet their psychological needs, thus promoting SWB. Together, these results suggest that educators and parents can help Chinese adolescents enhance their SWB by encouraging them to form intrinsic life goals and satisfy their psychological needs.

*Keywords:* life goals, intrinsic goals, extrinsic goals, psychological needs satisfaction, subjective well-being.

With the development of positive psychology, well-being has become an active research topic in psychology. Current research on well-being is founded on two perspectives: the psychological well-being perspective and the subjective well-being perspective (Ryan & Deci, 2001). *Psychological well-being* defines well-being in terms of fulfillment of human potential and a meaningful life, which includes six dimensions: self-acceptance, positive relationships with others, autonomy, the purpose of life, personal growth, and environment mastery

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(Ryff, 1989). Although research into psychological well-being has made great progress, its nature and structure are still in doubt (Chen, Jing, Hayes, & Lee, 2013). Compared to psychological well-being, there is a greater consensus among scholars concerning the structure of *subjective well-being* (SWB), which refers to the evaluation of one's own quality of life according to personal standards, and which contains three dimensions: satisfaction, positive affect, and negative affect (Diener, 1994). As an important personal trait, SWB has a positive effect on physical health (Diener & Chan, 2011), political participation (Lorenzini, 2015), and posttraumatic growth (Hamama & Sharon, 2013). Factors that influence SWB have thus attracted more and more attention from researchers in recent decades. For example, Jeon, Lee, and Kwon (2016) found that a higher level of social support is associated with a higher level of SWB. Soto (2015) reported that individuals with more extraverted, agreeable, conscientious, and emotionally stable personalities than their peers have, tend to have higher SWB. Others have shown that students with an external locus of control had a lower SWB (Ye & Lin, 2015).

Many researchers have argued that SWB is related to personal goals. For example, Myers and Diener (1995) noted that having goals and making progress toward goals are predictors of happiness. Previous researchers have found that SWB is associated with several characteristics of personal goal systems, such as goal content (Lekes, Gingras, Philippe, Koestner, & Fang, 2010), goal progress (Klug & Maier, 2015), and goal regulation (Litalien, Lüdtkke, Parker, & Trautwein, 2013). Furthermore, Kasser and Ryan (1996) suggested that life goals can be divided into intrinsic and extrinsic types according to their content. *Intrinsic life goals*, such as self-acceptance, affiliation, physical health, and a feeling of community, are thought to be inherently satisfying and to depend on internal rewards. By contrast, *extrinsic life goals*, such as financial success, attractive appearance, and popularity depend on external rewards and the evaluations of others. Perhaps because of these distinctions, it has been proposed that the two types of life goals have different relationships with SWB. For example, Guillen-Royo and Kasser (2015) reported that people who give priority to intrinsic rather than extrinsic life goals are happier than others are. Similarly, Lekes et al. (2010) found that intrinsic life goals were significantly and positively associated with well-being, whereas extrinsic life goals were unrelated to well-being.

In addition to personal goals, another variable that has consistently been shown to have a positive association with SWB is *psychological needs satisfaction*. Self-determination theorists have postulated that people are born with three basic psychological needs: a need for competence, for relatedness, and for autonomy (Deci & Ryan, 2000). The *need for competence* means the need to be effective in dealing with one's environment. The *need for relatedness* involves the need

to experience a sense of belonging and attachment to other people. Finally, the *need for autonomy* reflects the need to experience activities as self-endorsed and volitionally enacted. According to self-determination theory, when these needs are satisfied, individuals feel more competent than they previously did, are more satisfied with their interpersonal relationships, and are more likely to take responsibility for their actions, which eventually enhances their mental health and well-being (Deci & Ryan, 2008). Indeed, a variety of scholars have demonstrated that psychological needs satisfaction is associated with a wide range of positive outcomes in different life domains. For example, C. Yu, Li, and Zhang (2015) showed that psychological needs satisfaction is positively correlated with school engagement. Related to this finding, Ümmet (2015) found that when college students have satisfied their needs for autonomy and relatedness, this significantly predicts higher self-esteem. Thus, it is our view that it is not surprising that psychological needs satisfaction significantly contributes to the prediction of SWB (Tian, Chen, & Huebner, 2014).

According to self-determination theorists, psychological needs satisfaction is related to personal goal content (Deci & Ryan, 2008). Intrinsic goals can lead people to engage in the activities associated with personal growth, affiliation, and physical health; the pursuit and attainment of intrinsic goals can, thus, facilitate the satisfaction of the individual's need for autonomy, competence, and relatedness. By contrast, extrinsic goals reflect people's desire to impress others, and can lead to engagement in activities that go against intrinsic interests and potential; individuals who prioritize extrinsic goals may ignore their intrinsic needs. Consistent with self-determination theory, researchers have found that intrinsic goals are related to psychological needs satisfaction, whereas extrinsic goals are unrelated to psychological needs satisfaction (Lindwall, Weman-Josefsson, Sebire, & Standage, 2016). Thus, psychological needs satisfaction might be one of the mechanisms by which goal content exerts an influence on SWB. Although some researchers have investigated the relationship between goal content and SWB (Lekes et al., 2010) and the mediating role of psychological needs satisfaction in the association between goal content and SWB (Qiu, Jiang, & Wang, 2012), the samples tested consisted only of adults. Adolescence is a period that is distinct from adulthood. It is considered a critical phase for understanding the development of life goals, because the development of self-identity during adolescence influences individuals' choice of goals (Massey, Gebhardt, & Garnefski, 2008). Therefore, it is unclear whether or not the previous findings can be generalized to adolescents. We suggest that it is important to examine the mediating role of psychological needs satisfaction in the association between goal content and SWB in a sample of adolescents.

The purpose of our research was, therefore, to explore the relationship between goal content and SWB in Chinese adolescents, and to test the mediating effect

of psychological needs satisfaction in this relationship. On the basis of empirical evidence regarding the associations between goal content, psychological needs satisfaction, and SWB in adults, we formed the following hypotheses:

**Hypothesis 1:** Intrinsic life goals will be positively associated with psychological needs satisfaction and subjective well-being of adolescents.

**Hypothesis 2:** Extrinsic life goals will be unrelated to psychological needs satisfaction and subjective well-being of adolescents.

**Hypothesis 3:** Psychological needs satisfaction will be positively correlated with subjective well-being of adolescents.

**Hypothesis 4:** Psychological needs satisfaction will mediate the association between intrinsic life goals and subjective well-being of adolescents.

## Method

### Participants and Procedure

Participants were 493 Chinese adolescents (52.3% male and 47.7% female) who were pupils at two middle schools in Wuhan, China. Participants' age ranged from 12 to 18 years ( $M = 14.76$ ,  $SD = 1.23$ ). The Institutional Review Board of South-Central University for Nationalities approved the research protocol and participants were informed that they could withdraw from the study at any time. Eight data collectors informed the students of the purpose of the study. After participants had each filled in an informed consent form, they were asked to respond anonymously to a series of paper-and-pencil scale items to assess their life goals, psychological needs satisfaction, and SWB. It took between 10 and 15 minutes for the students to complete all the scales in a classroom environment.

### Measures

**Aspiration Index.** We used the Chinese version of the Aspiration Index (Kasser & Ryan, 1996) to assess participants' intrinsic and extrinsic life goals. The original version of the Aspiration Index includes 32 items (e.g., "Helping the world be a better place") that are rated on a 7-point scale (1 = *not important at all* to 7 = *very important*). The Aspiration Index consists of three extrinsic goals (financial success, attractive appearance, and social recognition) and four intrinsic goals (self-acceptance, physical fitness, affiliation, and community feeling). A higher score for a goal indicates that participants place more importance on it. The Chinese version of the Aspiration Index includes 35 items, and it had a reported Cronbach's  $\alpha$  of .92 (Tang, Kuang, & Yao, 2008). The Cronbach's  $\alpha$  was .88 in the current study.

**Basic Needs Satisfaction in General Scale.** We employed the Basic Needs Satisfaction in General Scale (Johnston & Finney, 2010) to measure participants'

psychological needs satisfaction. The Basic Needs Satisfaction in General Scale consists of 21 items (e.g., “I feel pressured in my life”) that are rated on a 7-point scale (1 = *not at all true* to 7 = *very true*). The Basic Needs Satisfaction in General Scale is designed to measure satisfaction of the need for autonomy, for competence, and for relatedness. Higher scores imply greater satisfaction of psychological needs. In Chinese adolescents, this scale has been shown to have satisfactory reliability and validity (e.g., C.-F. Yu et al., 2012). The Cronbach’s  $\alpha$  was .78 in the current study.

**Index of Well-Being.** We measured SWB using the Chinese version of the Index of Well-Being (Mei, Chai, & Guo, 2015). The Index of Well-Being (Campbell, Converse, & Rodgers, 1976) is a self-report scale comprising two subscales: general affect and life satisfaction. The general affect subscale includes eight semantic-differential-type items (e.g., “interesting–boring”) that are rated on a 7-point scale. The life satisfaction subscale has only one item (“At present, to what extent are you satisfied with your life as a whole?”), which is rated on a 7-point scale (1 = *completely dissatisfied* to 7 = *completely satisfied*). Higher scores indicate greater SWB. The Chinese version of the Index of Well-being has been shown to have good reliability and validity (Mei et al., 2015). The Cronbach’s  $\alpha$  was .88 in the current study.

### Data Analysis

All data were processed using SPSS version 20.0. First, we conducted Pearson correlation analyses to describe the relationships between goal content, psychological needs satisfaction, and SWB. Second, we used Preacher and Hayes’ (2008) SPSS bootstrap macro program to test mediation. In our study, SWB was entered as the dependent variable, intrinsic goals as the predictor variable, and psychological needs satisfaction as the proposed mediator in the SPSS macro, in which we used 5,000 bootstrap resamples via the accelerated and bias-corrected method.

## Results

### Relationships Among the Study Variables

The correlation coefficients for life goals content, psychological needs satisfaction, and SWB are presented in Table 1. The results of correlation analysis show that intrinsic goals were positively correlated with psychological needs satisfaction and with SWB. That is, the higher the score on intrinsic goals, the greater were both the psychological needs satisfaction and SWB. Likewise, psychological needs satisfaction was positively correlated with SWB, that is, the greater the psychological needs satisfaction, the greater was SWB.

Table 1. *Descriptive Statistics and Correlations of Study Variables*

	<i>M</i>	<i>SD</i>	1	2	3	4
1. Intrinsic goals	114.45	14.55	1			
2. Extrinsic goals	52.88	15.17	.18**	1		
3. Psychological needs satisfaction	89.55	14.52	.25**	-.02	1	
4. Subjective well-being	9.52	2.38	.27**	-.05	.46**	1

Note. \*\*  $p < .01$ .

Thus, Hypotheses 1, 2, and 3 were supported. Our results show that the adolescents' extrinsic goals were unrelated to their psychological needs satisfaction or their SWB.

### **Mediating Effect of Psychological Needs Satisfaction in the Relationship Between Intrinsic Goals and Subjective Well-Being**

We employed the bootstrapping approach recommended by Preacher and Hayes (2008) to test the mediating effect of psychological needs satisfaction in the relationship between intrinsic goals and SWB. For this method one uses sampling with replacement to estimate the indirect effect and produce a 95% confidence interval (CI) for the indirect effect. If the CI does not include zero, the indirect effect is considered to be significant at  $p < .05$ .

Results of the bootstrapping analysis revealed that the partially mediating effect of psychological needs satisfaction was significantly different from zero at  $p < .05$  with an unstandardized mediating effect = .0166, 95% CI [.0104, .0243]. The size of the mediating effect accounted for  $0.0166 \div (0.0166 + 0.0274) = 37.73\%$  of all the effects. Therefore, psychological needs satisfaction was a partial mediator of the relationship between intrinsic goals and SWB, partially supporting Hypothesis 4.

## **Discussion**

Self-determination theorists have suggested that the pursuit of intrinsic life goals can facilitate the individual's satisfaction of psychological needs and enhance his/her well-being (Deci & Ryan, 2000, 2008). Although researchers have verified that pursuit of intrinsic life goals is positively associated with psychological needs satisfaction and SWB (Lekes et al., 2010; Lindwall et al., 2016), in previous studies in this area only adult populations were addressed. As a key developmental period for life goal formation, adolescence is different from adulthood, and whether or not the previous results could be generalized to adolescents required further research.

As hypothesized, we found that SWB was positively associated with the intrinsic goals and unrelated to the extrinsic life goals of our participant group

of Chinese adolescents. That is, those adolescents who placed more importance on intrinsic life goals had greater SWB than their peers did. These results are consistent with those of previous studies conducted with college students (Qiu et al., 2012; Schmuck, Kasser, & Ryan, 2000). Our findings show that not only adults but also adolescents can enhance their SWB through the pursuit of intrinsic goals, which extends the findings of previous work.

Our results also indicate that the intrinsic life goals of the adolescents were positively correlated with their psychological needs satisfaction, which, in turn, was positively associated with their SWB. This is consistent with findings from previous research regarding the relationship between intrinsic life goals and psychological needs satisfaction (Lindwall et al., 2016; Qiu et al., 2012), and between psychological needs satisfaction and SWB (Sheldon & Bettencourt, 2002; Wang, Liu, Jiang, & Song, 2017). Our findings suggest that intrinsic life goals benefit psychological needs satisfaction and SWB.

The finding we found most interesting in our study was that the adolescents' psychological needs satisfaction partially mediated the relationship between their intrinsic goals and their SWB. In other words, those adolescents who valued intrinsic goals had a higher level of psychological needs satisfaction, which, in turn, was associated with increased SWB. Our findings support the self-determination theory of Deci and Ryan (2008), who proposed that intrinsic goals are beneficial for psychological needs satisfaction and for the promotion of well-being. Thus, intrinsic life goals not only directly influenced the SWB of the adolescents in our study, but also indirectly influenced their SWB by facilitating their psychological needs satisfaction. The partial mediating effects we found also indicate that, in addition to psychological needs satisfaction, other factors (e.g., interpersonal relationships and self-efficacy) may mediate the effect of intrinsic life goals on SWB. Accordingly, future researchers could explore other underlying factors that mediate this relationship.

This study has some limitations. First, we used a cross-sectional study design to explore the relationships of the selected variables, which means that no conclusions can be made regarding causation. Cross-sectional associations between SWB and intrinsic goals may in part reflect the impact of SWB on endorsement of intrinsic life goals (Lekes et al., 2010), so it is not possible to infer from our results that intrinsic goals influence SWB or that SWB influences intrinsic goals. Future researchers should use experimental and longitudinal designs to clarify the causal relationship between intrinsic goals and SWB.

Second, the data concerning life goal content, psychological needs satisfaction, and SWB were collected exclusively via self-report measures. Because of the tendency to present themselves in the best possible light in self-reports, participants' answers might have been affected by social desirability bias, which can lead to spurious and misleading research results. To gain more

reliable results, future scholars could employ multiple methods for collecting data (e.g., peer reports and parent reports). Finally, we did not assess factors likely to be correlated with both students' life goal content and SWB; thus, we could not exclude the influence of confounding factors. As past researchers have found, participants living in less economically developed districts place greater importance on extrinsic goals and less importance on intrinsic goals than do participants living in economically developed districts (Guillen-Royo & Kasser, 2015); thus, economic strain and family income are key determinants of SWB (Kostouli, Xanthopoulou, & Athanasiades, 2016; Pereira & Coelho, 2013). Accordingly, it can be inferred that the relationships among intrinsic life goals, psychological needs satisfaction, and SWB may reflect the impact of other correlated factors, such as economic strain and income. Future researchers should pay attention to potential covariates that may impact on life goal content and SWB.

Despite the limitations, our results offer insight into the underlying mechanism of psychological needs satisfaction in the relationship between goal content and SWB in Chinese adolescents. The findings provide parents and educators with some valuable indicators for the implementation of programs designed to promote adolescent well-being. For example, instruction in which the teachers aim at guiding adolescents to form intrinsic life goals and satisfy their psychological needs could be included in programs to help Chinese adolescents enhance their SWB. Parents and educators should help adolescents to form intrinsic life goals, such as self-acceptance, affiliation, community feeling, and physical fitness, by emphasizing the value of these intrinsic life goals and setting examples for their children to follow. Furthermore, educators should create a supportive social environment to help adolescents to satisfy their basic psychological needs. For example, teachers should let adolescents make their own decisions, give them the opportunity to express themselves freely, help them to be successful in their studies, and develop supportive and respectful relationships with them.

## References

- Campbell, A., Converse, P. E., & Rodgers, W. L. (1976). *The quality of American life: Perceptions, evaluations, and satisfactions*. New York, NY: Sage.
- Chen, F. F., Jing, Y., Hayes, A., & Lee, J. M. (2013). Two concepts or two approaches? A bifactor analysis of psychological and subjective well-being. *Journal of Happiness Studies, 14*, 1033–1068. <https://doi.org/f42tsx>
- 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. <https://doi.org/bfn2hn>
- Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology, 49*, 182–185. <https://doi.org/fcnwzz>
- Diener, E. (1994). Assessing subjective well-being: Progress and opportunities. *Social Indicators Research, 31*, 103–157. <https://doi.org/cnd4xt>

- Diener, E., & Chan, M. Y. (2011). Happy people live longer: Subjective well-being contributes to health and longevity. *Applied Psychology: Health and Well-Being*, 3, 1–43. <https://doi.org/ckbjqs>
- Guillen-Royo, M., & Kasser, T. (2015). Personal goals, socio-economic context and happiness: Studying a diverse sample in Peru. *Journal of Happiness Studies*, 16, 405–425. <https://doi.org/bdx>
- Hamama, L., & Sharon, M. (2013). Posttraumatic growth and subjective well-being among caregivers of chronic patients: A preliminary study. *Journal of Happiness Studies*, 14, 1717–1737. <https://doi.org/bxjp>
- Jeon, H., Lee, K., & Kwon, S. (2016). Investigation of the structural relationships between social support, self-compassion, and subjective well-being in Korean elite student athletes. *Psychological Reports*, 119, 39–54. <https://doi.org/bxdz>
- Johnston, M. M., & Finney, S. J. (2010). Measuring basic needs satisfaction: Evaluating previous research and conducting new psychometric evaluations of the Basic Needs Satisfaction in General Scale. *Contemporary Educational Psychology*, 35, 280–296. <https://doi.org/dczpqh>
- Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic goals and extrinsic goals. *Personality and Social Psychology Bulletin*, 22, 280–287. <https://doi.org/d6j4wp>
- Klug, H. J. P., & Maier, G. W. (2015). Linking goal progress and subjective well-being: A meta-analysis. *Journal of Happiness Studies*, 16, 37–65. <https://doi.org/bxd2>
- Kostouli, M., Xanthopoulou, D., & Athanasiades, C. (2016). Economic strain and subjective well-being in married couples with children: A dyadic analysis. *The European Journal of Counselling Psychology*, 5, 43–61. <https://doi.org/bxft>
- Lekes, N., Gingras, I., Philippe, F. L., Koestner, R., & Fang, J. (2010). Parental autonomy-support, intrinsic life goals, and well-being among adolescents in China and North America. *Journal of Youth Adolescence*, 39, 858–869. <https://doi.org/fgww5>
- Lindwall, M., Weman-Josefsson, K., Sebire, S. J., & Standage, M. (2016). Viewing exercise goal content through a person-oriented lens: A self-determination perspective. *Psychology of Sport and Exercise*, 27, 85–92. <https://doi.org/f3rxtt>
- Litalien, D., Lüdtke, O., Parker, P., & Trautwein, U. (2013). Different pathways, same effects: Autonomous goal regulation is associated with subjective well-being during the post-school transition. *Motivation and Emotion*, 37, 444–456. <https://doi.org/bxft>
- Lorenzini, J. (2015). Subjective well-being and political participation: A comparison of unemployed and employed youth. *Journal of Happiness Studies*, 16, 381–404. <https://doi.org/bxd3>
- Massey, E. K., Gebhardt, W. A., & Gamefski, N. (2008). Adolescent goal content and pursuit: A review of the literature from the past 16 years. *Developmental Review*, 28, 421–460. <https://doi.org/bpckxt>
- Mei, S., Chai, J., & Guo, J. (2015). Subjective well-being and Internet addiction of adolescents: Mediating roles of self-esteem and self-control [In Chinese]. *Psychological Development and Education*, 5, 603–609. <https://doi.org/hjcc>
- Myers, D. G., & Diener, E. (1995). Who is happy? *Psychological Science*, 6, 10–19. <https://doi.org/ffb7qx>
- Pereira, M. C., & Coelho, F. (2013). Untangling the relationship between income and subjective well-being: The role of perceived income adequacy and borrowing constraints. *Journal of Happiness Studies*, 14, 985–1005. <https://doi.org/bxd4>
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, 879–891. <https://doi.org/b9b2k3>

- Qiu, H., Jiang, J., & Wang, R. (2012). On the relationship between college students' goal content, psychological needs and subjective well-being [In Chinese]. *Chinese Journal of Special Education, 12*, 92–96. <https://doi.org/bxjn>
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*, 141–166. <https://doi.org/drj227>
- Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*, 1069–1081. <https://doi.org/dvp4hb>
- Schmuck, P., Kasser, T., & Ryan, R. M. (2000). Intrinsic and extrinsic goals: Their structure and relationship to well-being in German and U.S. college students. *Social Indicators Research, 50*, 225–241. <https://doi.org/b8mfzf>
- Sheldon, K. M., & Bettencourt, B. A. (2002). Psychological need-satisfaction and subjective well-being within social groups. *British Journal of Social Psychology, 41*, 25–38. <https://doi.org/cpwnqr>
- Soto, C. J. (2015). Is happiness good for your personality? Concurrent and prospective relations of the Big Five with subjective well-being. *Journal of Personality, 83*, 45–55. <https://doi.org/bxd5>
- Tang, H., Kuang, C., & Yao, S. (2008). The Chinese version of the Aspiration Index: Reliability and validity [In Chinese]. *Chinese Journal of Clinical Psychology, 16*, 15–17. <https://doi.org/bxfg>
- Tian, L., Chen, H., & Huebner, E. S. (2014). The longitudinal relationships between basic psychological needs satisfaction at school and school-related subjective well-being in adolescents. *Social Indicators Research, 119*, 353–372. <https://doi.org/vnp>
- Ümme, D. (2015). Self esteem among college students: A study of satisfaction of basic psychological needs and some variables. *Procedia - Social and Behavioral Sciences, 174*, 1623–1629. <https://doi.org/bxd7>
- Wang, R., Liu, H., Jiang, J., & Song, Y. (2017). Will materialism lead to happiness? A longitudinal analysis of the mediating role of psychological needs satisfaction. *Personality and Individual Differences, 105*, 312–317. <https://doi.org/bxd8>
- Ye, Y., & Lin, L. (2015). Examining relations between locus of control, loneliness, subjective well-being, and preference for online social interaction. *Psychological Reports, 116*, 164–175. <https://doi.org/bxd9>
- Yu, C., Li, X., & Zhang, W. (2015). Predicting adolescent problematic online game use from teacher autonomy support, basic psychological needs satisfaction, and school engagement: A 2-year longitudinal study. *Cyberpsychology, Behavior, and Social Networking, 18*, 228–233. <https://doi.org/bxfg>
- Yu, C.-F., Zhang, W., Zeng, Y.-Y., Ye, T., Hu, J.-P., & Li, D.-L. (2012). Gratitude, basic psychological needs, and problematic Internet use in adolescents [In Chinese]. *Psychological Development and Education, 28*, 83–90. <https://doi.org/bxfb>