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The Role of Nonattachment in the Development of Adolescent Mental Health: a Three-Year Longitudinal Study

Joseph Ciarrochi[1] · Baljinder K. Sahdra[1] · Keong Yap[2] · Theresa Dicke[1]

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Abstract

Objectives Nonattachment involves a flexible way of relating to ideas without clinging to them and is hypothesized to be beneficial to mental health. However, no longitudinal research has examined this hypothesis. We conducted a three-wave longitudinal study to examine the extent that nonattachment was an antecedent to improvements in mental health.

Method A large sample of students (males = 1162; females = 1186) from 16 high schools completed the Nonattachment Scale (NAS-7) and the General Health Questionnaire (GHQ) over 3 years in Grades 10, 11, and 12.

Results Nonattachment predicted approximately 4.5% of the variance in mental health measured 1 year later. Supporting an antecedent model, structural equation modeling revealed that nonattachment reliably predicted reductions in poor mental health from Grades 10 to 11 ($\beta = -.091$, $p = .006$) and Grades 11 to 12 ($\beta = -.121$, $p < .001$). The consequence model of poor mental health leading to lower nonattachment was only supported in the Grades 10 to 11 ($\beta = -.127$, $p < .001$).

Conclusions Nonattachment protects against the development of poor mental health. Further research into interventions that enhance nonattachment in youth is warranted.

Keywords Nonattachment · Mental health · Adolescent · Development

Past research suggests that nonattachment—a flexible, non-clinging way of relating to ideas—is correlated to positive indices of mental health (Bhambhani and Cabral 2016; Sahdra et al. 2010; Whitehead et al. 2018). Based on results like these, researchers have hypothesized that nonattachment promotes mental health (Sahdra et al. 2016). However, past cross-sectional studies lack the power to establish if nonattachment precedes the development of mental health, a critical piece of evidence that would be consistent with a causal relationship.

The cultivation of nonattachment has a long history in Eastern philosophical and religious traditions (Lama and Thubten 2014; Sargeant 1994). According to Buddhist psychology, suffering arises from "attachments" or rigid clinging to ideas that fail to match reality (Sahdra et al. 2016; Sahdra et al. 2010; Sahdra and Shaver 2013). Attachments reflect our tendencies to reify or make-solid phenomenal experiences that are impermanent. When we are "attached," we cling to the idea that we should always be treated fairly, be better than others, have pleasant experiences that last, have friends and family who are present and supportive, have a life that is consistently ideal, or have a life with no problems or regrets. The clinging to such ideas in the face of a reality that violates them leads to suffering. For example, we suffer not only when we lose a joy (e.g., a good friend stops calling) but also when we insist that the joy should never be lost (e.g., the friend should always call). Nonattachment is thus the ability to let go of, or not cling to, ideas and feelings.

Nonattachment can also be understood, in part, in terms of its relationship to the related variables of mindfulness and decentering. All three variables have approximately 47% of their variance in common (Bhambhani and Cabral 2016), but are theoretically and empirically distinguishable (Gecht et al.

✉ Joseph Ciarrochi
ciarrochij@gmail.com

1 Institute for Positive Psychology and Education, Australian Catholic University, 25A Barker Rd, Strathfield, Sydney, NSW 2135, Australia

2 School of Behavioural and Health Sciences, Australian Catholic University, Sydney, Australia

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2014; Lebois et al. 2015; Montero-Marin et al. 2016; Sahdra et al. 2016). For example, Sahdra et al. (2016) examined the relationship between mindfulness and nonattachment in a large sample of adults and showed that nonattachment was related to, but distinct from each of the five facets of mindfulness. Furthermore, they found that nonattachment mediated the relationship between mindfulness and both satisfaction with life and life effectiveness. Thus, mindfulness was hypothesized to lead to psychological benefits at least partly through increases in nonattachment.

There is also some overlap between nonattachment and decentering which is defined as the ability to take a detached view of one's thoughts and feelings, as temporary events that are experienced as separate from the self (Fresco et al. 2007). Like nonattachment, decentering may be seen as a natural consequence of mindfulness practice (Gecht et al. 2014; Lebois et al. 2015). However, despite the connection, nonattachment and decentering have been shown to be distinct. For example, a mindfulness intervention improved nonattachment but not decentering (Montero-Marin et al. 2016). Other research suggests that both nonattachment and mindfulness predict depression over and above decentering (Bhambhani and Cabral 2016). Conceptually, a person may be capable of being mindful and decentered from experience, but still remain psychologically attached to some ideas about themselves and life (e.g., that other people must always treat them with respect).

Given its association with mindfulness and decentering, it is not surprising that Sahdra et al. (2010) showed that nonattachment was negatively associated with depression, anxiety, and stress, and difficulties in emotion regulation. More recently, multiple research groups have demonstrated a link between nonattachment and mental health. For example, Bhambhani and Cabral (2016) found that nonattachment was linked to lower levels of anxiety and depression, while Lamis and Dvorak (2014) found that nonattachment was negatively associated with suicidal ideation. Likewise, Whitehead et al. (2018) found in two cross-sectional studies that nonattachment was positively associated with subjective well-being and negatively associated with depression, anxiety, and stress. Importantly, they also showed that nonattachment mediated the relationship between mindfulness and the outcome variables, indicating that nonattachment predicted mental health outcomes even after accounting for mindfulness.

Similar associations have also been reported cross-culturally (Chao and Chen 2013; Feliu-Soler et al. 2016; Ju and Lee 2015; Montero-Marin et al. 2016). Of note is Tran et al.'s (2014) study in two large independent German and Spanish samples of meditators. In addition to demonstrating a significant negative association between nonattachment and depression, they showed that nonattachment significantly mediated the effects of mindfulness on depression. This finding was recently replicated by Burzler et al. (2018) in a large sample of German-speaking adults; although nonattachment was strongly correlated with mindfulness, nonattachment showed incremental validity in predicting depression in both meditators and non-meditators.

The benefits of nonattachment have also been observed in studies examining the effectiveness of meditation. Arch et al. (2016) showed that individuals with higher levels of nonattachment responded more positively to self-compassion meditation training and showed lower stress responses in a lab test. More recently, Wu et al. (2019) conducted a randomized controlled trial for a group-based Mahayana Buddhist meditation intervention. They found significant improvements in nonattachment, and these improvements mediated the effects of the meditation treatment on stress and psychological well-being. Furthermore, improvements in nonattachment from baseline to the 3-month follow-up predicted improvements in stress and psychological well-being at follow-up.

The above studies on nonattachment have been conducted in adult samples. The association between nonattachment and mental health in adolescents is thus unknown. Adolescence is a time of rapid biological, social, and psychological change (Blakemore et al. 2010). It is also a critical period of personality development when values and attitudes are consolidated, culminating in identity formation and a sense of a stable self (Erickson 1968). The changes and demands during adolescence are highly stressful, and it is not surprising that the onset of mental disorders is at its highest at this time (Kessler et al. 2007; Paus et al. 2008). It follows that a better understanding of nonattachment during this stage of development is important. There are however very few studies on nonattachment in adolescents. An exception is a cross-sectional study by Sahdra et al. (2015) who found in a large sample of 1831 15-year-old adolescents that empathy and nonattachment independently predicted the extent to which a young person was observed (by their peers) to be kind and helpful, and this effect occurred even after controlling for self-esteem, empathy, and peer nominations of liking. The findings indicate the importance of nonattachment in adolescent prosocial behavior and hint at the possibility that nonattachment may be relevant to adolescent mental health.

In summary, studies to date indicate that nonattachment might be a potential pre-cursor to the development of psychological well-being. However, these studies have examined the association between nonattachment and mental health using cross-sectional designs. As noted by Whitehead et al. (2018), the temporal direction is thus unknown, and there remains a possibility that the significant associations are primarily a result of mental health improvements leading to greater nonattachment. In addition, research on nonattachment and mental health has focused almost exclusively on adults and thus neglects the important adolescent developmental period. The central focus of this paper is therefore to evaluate the extent that nonattachment is an antecedent to improvements in adolescent mental health during senior high school years (Grades

10 to 12). In addition to this antecedent model, we also explored a consequence model which assumed that nonattachment was a consequence of mental health improvements. The reciprocal model would be supported if there is evidence for both the antecedent and consequence models.

Methods

Participants

In total, 2348 students (males = 1162; females = 1186) in 16 schools completed a series of self-report questionnaires in Grades 10, 11, and 12. As is typical in most longitudinal studies, the sample changed slightly as participants left the school, joined the school, or were absent on the day of testing. The students completed assessments in Grade 10 (M_{age} = 15.65, SD_{age} = .43; n = 1964), Grade 11 (M_{age} = 16.58, SD_{age} = .46; n = 1711), and Grade 12 (M_{age} = 17.73, SD_{age} = .40; n = 1626). The reduction in sample size from Grades 10 to 11 was, in part, due to a subset of participants shifting their education from an academic path to more trade-oriented paths (Donald et al. 2018). A total of 1135 students participated in all time waves and 1818 in at least two waves. The demographic makeup of our sample is similar to the Australian population in terms of ethnicity, employment, and religious belief (Australian Bureau of Statistics 2012). However, the schools in this sample were, on average, .60 SD above the Australian norm on socio-economic status (Donald et al. 2018).

Procedure

Participants completed the self-report questionnaires in the third term of school each year. Participants were part of the Australian Character Study—a longitudinal study of psychological well-being in adolescents (Ciarrochi et al. 2016a; Donald et al. 2018; Sahdra et al. 2015). The current study involves three waves that included an assessment of nonattachment and mental health. Students participated from 16 secondary schools within the Cairns (Queensland) and Illawarra (New South Wales) Catholic Dioceses of Australia. Confidential surveys were administered in all schools using a similar procedure. Power analyses revealed that we had over a 95% chance of detecting a small (.10) effect (Faul et al. 2007)

Measures

Nonattachment The NAS-7 scale has been validated in the independent USA and Australian samples (Sahdra et al. 2015; Sahdra et al. 2016; Sahdra et al. 2017), and had good internal consistency in the present sample (α_{10} = .82, α_{11} = .82, α_{12} = .81). Participants used a 6-point scale (1 "disagree strongly" to

6 "agree strongly") to rate items, such as, "I can enjoy pleasant experiences without needing them to last forever," and "I can enjoy my family and friends without feeling I need to hang on to them."

Mental Health The 12-item General Health Questionnaire (GHQ-12; Goldberg et al. 1997) was used as the measure of mental health. Participants rated on a 4-point scale the extent to which, over the past few weeks, they have had experiences, such as, "Lost much sleep over worry?," "Been feeling unhappy and depressed?," and "Felt that you are playing a useful part in things?" The GHQ-12 has been widely used and validated (Goodchild and Duncan-Jones 1985), and has been shown to be reliable and valid in adolescent samples (Huuskes et al. 2016; Tait et al. 2003). The instrument had strong internal consistency in all years (α_{10} = .90, α_{11} = .91, α_{12} = .90).

Data Analysis

We measured nonattachment and mental health at yearly intervals from Grades 10, 11, and 12. To test the main hypothesis, we used structural equation modeling to assess the extent that nonattachment was an antecedent to the development of mental health, a consequence of mental health, or reciprocally related to mental health. To assess the fit of the model, we utilize the chi-squared statistic, the Tucker–Lewis index (TLI), comparative fit index (CFI), and the root mean square error of approximation (RMSEA), and a criteria of .90 for TLI and CFI, and .08 for RMSEA (Chen 2007; Cheung and Rensvold 2002). We assumed invariance existed between models if changes in CFI and TLI were < .01 (Cheung and Rensvold 2002), and change in RMSEA was ≤ .015 (Chen 2007). All analyses were conducted in R (R Core Team 2018). The SEM models were conducted using the R package, *lavaan* (Rosseel 2012).

Results

Preliminary Analyses

Missing Data Using ANOVAs to examine the link between number of waves missing and our key mental health and nonattachment variables, we found a very small, significant link between higher missingness and worse mental health in Grade 10 (F (2) = 4.12, p = .016, η^2 = .004), and Grade 11 (F (2) = 4.66, p = .01, η^2 = .006), but not in Grade 12 (F (2) = .69, p = .50). There was also a small, significant link between higher missingness and lower nonattachment in Grade 10, (F (2) = 11.84, p < .001, η^2 = .012), but no reliable differences in Grade 11 or 12, ps > .05.

Table 1 Means and standard deviations of the study variables in Grades (G) 10 to 12, and statistical significance test results for sex differences

	Males M (SD)	Females M (SD)	df	F	p
Nonattachment G 10	4.07 (.94)	4.02 (.90)	1921	1.18	.28
Nonattachment G 11	4.05 (.90)	3.95 (.99)	1674	4.46	.03*
Nonattachment G 12	4.20 (.86)	4.19 (.85)	1595	0.10	.75
Poor mental health G 10	1.85 (.50)	2.11 .(58)	1940	108.40	< .001***
Poor mental health G 11	1.93 (.52)	2.19(.61)	1678	86.73	< .001***
Poor mental health G 12	1.97 (.50)	2.26 (.60)	1614	104.0	< .001***

*p < .05, **p < .01, ***p < .001. All tests have one degree of freedom for numerator

Descriptive Statistics and Gender Differences We present the means and standard deviations of the study variables in Table 1. On average, there was little difference between males and females on nonattachment, but substantial differences in mental health, with females reporting worse mental health than males. To evaluate if the means in Table 1 differed by grade and gender, we conducted multilevel models with grade nested within person and gender predicting nonattachment and mental health. There were no significant interactions involving grade and gender for either nonattachment (F (2) = .96, p = .38) or mental health (F(2) = .48, p = .62). There were main effects of grade on nonattachment (F (2) = 32.54, p < .001) and mental health (F (2) = 47.08, p < .001). As seen in Table 1, nonattachment was higher in Grade 12 than the other two grades, and mental health got worse from Grades 10 to 12.

Zero-Order Correlations Table 2 presents the correlations and 95% confidence intervals involving the study variables. There was moderate stability in nonattachment and mental health from year to year (r = .40 to .60). There were modest negative correlations between mental health and nonattachment, with earlier nonattachment explaining approximately 4.5% of the variance in mental health at a 1-year lag and approximately

3% of the variance at a 2-year lag. For the sake of complete reporting, we present all scatter plots with regression lines in Supplementary Materials (S1). As shown in Table 2, the confidence intervals of the correlations in males and females tended to overlap, suggesting few gender differences. However, there were some gender differences worth noting. Females showed higher stability than males in nonattachment from Grades 10 to 11 (i.e., the two correlations had non-overlapping confidence intervals), but did not show higher stability in Grades 11 to 12. There was also some evidence that the cross-sectional link between nonattachment and mental health was larger for females than that for males in Grades 10 and 11, but not in Grade 12. We explore gender differences in more detail below.

Is Nonattachment an Antecedent?

We used structural equation modeling in which the latent variables of nonattachment and mental health predicted the degree and direction of change in each other. Full information likelihood estimation (FIML) was employed for all models to deal with missing data. A strength of the FIML approach is that it uses all the available information for parameter

Table 2 Correlations of study variables and 95% confidence intervals

Variable	1	2	3	4	5	6
Nonattachment G 10	.82	.60**	.41**	− .50**	− .32**	− .24**
		[.55, .65]	[.34, .47]	[− .54, − .45]	[− .39, − .26]	[− .31, − .17]
Nonattachment G 11	.43**	.82	.50**	− .42**	− .53**	− .33**
	[.37, .49]		[.44, .55]	[− .47, − .35]	[− .57, − .48]	[− .39, − .26]
Nonattachment G 12	.35**	.37**	.81	− .25**	− .27**	− .39**
	[.28, .42]	[.30, .44]		[− .32, − .18]	[− .34, − .20]	[− .45, − .33]
Poor mental health G 10	− .39**	− .25**	− .23**	.89	.48**	.38**
	[− .44, − .33]	[− .32, − .18]	[− .30, − .15]		[.42, .53]	[.31, .44]
Poor mental health G 11	− .22**	− .42**	− .19**	.40**	.90	.51**
	(− .29, − .14)	(− 47, − .36)	(− .27, − .12)	(.33, .46)		(.45, .56)
Poor mental health G 12	− .18**	− .24**	− .29**	.36**	.46**	.90
	[− .25, − .10]	[− .31, − .17]	[− .36, − .23]	[.29, .43]	[.40, .52]	

G grade. Values in square brackets indicate the 95% confidence interval for each correlation. Females, above diagonal; males below. All values were statistically significant at p < .001; scale reliabilities are in the diagonal

estimation—both complete and incomplete cases—and identifies parameter values that have the highest probability of producing the sample data (Baraldi and Enders 2010). We also used a "no pooling" approach and controlled for school (Gelman and Hill 2007). Furthermore, to address method bias, we included a method factor by for mental health by correlating the errors between the negatively worded items (DiStefano and Motl 2009).

A series of progressively more constrained models was conducted to evaluate the extent that model assumptions were met. The results of these tests are in Table 3. Model 1 tests configural invariance, or the extent that the same items measured our construct across administrations. M1 fit the data well, with CFI and TLI above .90 and RMSEA < .08 (Chen 2007; Cheung and Rensvold 2002). Metric invariance (M2) is a critical assumption for testing our cross-lag models, because support for this model indicates that the basic meaning of the construct is similar at each time point (Ciarrochi et al. 2016a). The fit of M2 did not deteriorate beyond the thresholds outlined above, suggesting that metric invariance was a reasonable assumption.

Scalar invariance (M3) assumes that the item intercepts are equivalent across administrations and justifies mean comparisons across time. This model also fit the data well. Finally, strict invariance (M4) assesses whether residual variance is equivalent across times and is important for group comparisons based on sum of observed item scores. This model fit the data reasonably well, but the reduction in fit from M1 to M4 was just above our criteria for CFI change < .01. Given this form of invariance was not essential to any of our hypotheses, and strict invariance is rarely achieved in practice (Bialosiewicz et al. 2013), we focused on the scalar invariant Model 3. Our final model removed all lags greater than 1 year and did not result in significant deterioration from Model 1. We utilized model 3b in all remaining analyses. However, we also conducted sensitivity analyses, to evaluate if the key cross-lag results presented below occur independent of metric, scalar, and strict invariance assumptions. Supplementary Table 2 (S2) illustrates that results in all models were virtually identical to what is presented below.

Figure 1 presents the significant autocorrelations, cross lags, and Grade 10 covariance from the structural equation

model that assumed scalar invariance. Both nonattachment and mental health showed moderate stability. There was a moderate link between nonattachment and mental health, consistent with the scales being related but not redundant with each other. The nonattachment-as-antecedent model was clearly supported, with higher nonattachment predicting better mental health in both Grades 11 and 12. The effects were small but reliable. The nonattachment-as-consequence results were mixed. Low mental health preceded reductions in nonattachment in Grade 11, but clearly not in Grade 12. Thus, there was evidence of reciprocal influence in Grades 10 to 11, but not in Grades 11 to 12.

All previous analyses controlled for gender to ensure it did not confound results. We conducted sensitivity analysis to examine the extent that cross-lagged links between nonattachment and mental health occurred within males and females. Multi-group SEM was used to compare a model where cross-lagged paths between nonattachment and mental health were assumed to be different between the genders, and this was compared with a model where the paths were assumed to be the same. There was no difference between the two models ($\chi^2_{\text{diff}}(4) = 2.87$, $p = .58$), suggesting that the effects of nonattachment on mental health and vice versa were similar within males and females. As one additional sensitivity test, we examined the consistency of our effects using a random intercept cross-lagged panel model (Hamaker et al. 2015), which separates the within-person variance from stable between-person variance. The results we obtained were consistent with what we already reported in the traditional cross-lagged analyses, with time 1 and time 2 nonattachment predicting diminishing mental health problems ($B_{t1} = -.058$, $\beta_{t1} = -.094$, SE = .030, $p = .056$; $B_{t2} = -.064$, $\beta_{t2} = -.11$, SE = .027, $p = .018$), and time 1 but not time 2 ill-mental health predicting reductions in nonattachment ($B_{t1} = -.24$, $\beta_{t1} = -.13$, SE = .078, $p = .002$; $B_{t2} = .001$, $\beta_{t2} = .002$, SE = .076, $p = .95$).
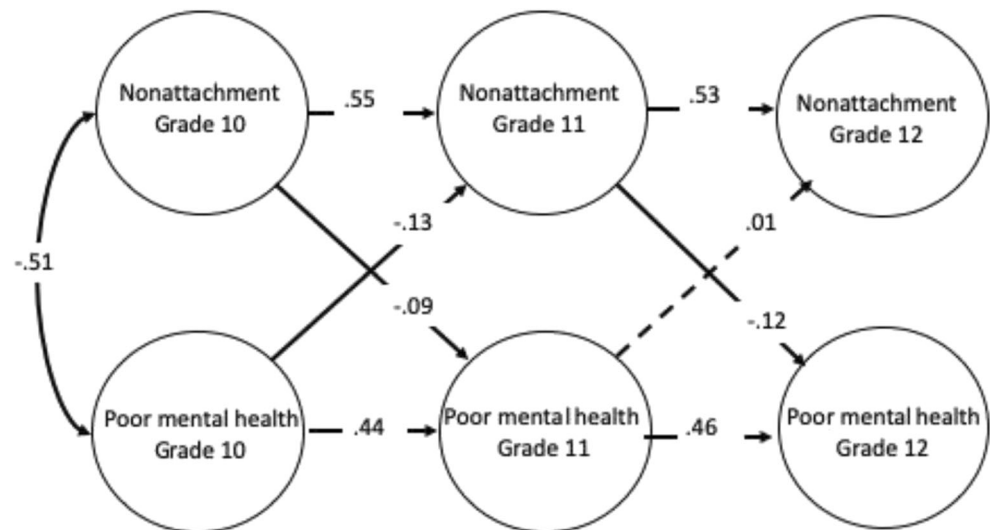
Discussion

The current study showed that nonattachment reliably predicted improvements in mental health in adolescents over all time intervals (from Grades 10 to 11 and from Grades 11 to 12). Interestingly, there was also evidence of the consequence model in that positive mental health led to greater nonattachment from Grades 10 to 11, indicating reciprocal effects in later adolescence. However, this effect did not replicate in the Grades 11 to 12 transitions.

Our findings are consistent with past research (Bhambhani and Cabral 2016; Lamis and Dvorak 2014; Sahdra et al. 2010). All of these past studies were conducted with adults and were cross-sectional. Our study extends past research by showing that nonattachment can be reliably measured in adolescents,

Table 3 Fit estimates from structural equation models of the longitudinal relationship between nonattachment and mental health

Model invariance	χ^2	df	CFI	TLI	RMSEA
M1: configural	5379.53	2220	.927	.917	.025
M2: metric	5442.22	2254	.926	.918	.025
M3: scalar	5791.27	2292	.919	.911	.025
M3b: M3 and single lag	5855.88	2296	.917	.910	.026
M4: strict	5958.23	2330	.916	.909	.026

Fig. 1 Autocorrelations, cross lags, and Grade 10 covariance from the structural equation model that assumed scalar invariance

has a consistent measurement structure across time, and longitudinally predicts the development of mental health.

The present research coupled with past research suggests practical benefits of promoting nonattachment in high school. This study showed that nonattachment leads to adolescent mental health. Past research suggests that nonattachment predicts adolescent prosocial behavior (Sahdra et al. 2015). Despite these benefits, a school policy maker might reasonably ask, "does being nonattached lead to academic disengagement?" The answer appears to be no. Nonattachment has been associated with a number of indices of engagement, including achievement motivation, taking initiative, and self-confidence (Sahdra et al. 2016). This suggests that if schools promote nonattachment, they might actually improve student outcomes and certainly would not hurt them. Schools may promote nonattachment by, for example, encouraging youth to focus on the learning journey and not the learning outcome (grades) and by teaching them how relationships can be harmed by pride, ego, and envy "attachments". Future research is needed to examine specific interventions in schools.

There is increasing recognition that intervention change processes need to be reliably assessed and targeted in psychotherapy outcome research for progress to be made in clinical psychology (Ciarrochi et al. 2015; Hayes et al. 2019). The current study suggests that nonattachment is a potential change process that deserves further study. This research has the potential to support the evaluation of "contextual" or third wave approaches to intervention (Hayes 2004), such as Acceptance and Commitment Therapy (Hayes et al. 2016), mindfulness-based interventions (Kabat-Zinn 2003; Linehan 1993), and some forms of contextual positive psychology interventions (Ciarrochi et al. 2016b). These interventions are distinct from the so-called second wave interventions in their de-emphasis on changing the content of thinking and feeling (e.g.,

thinking positively) and greater emphasis on one's relationship to private experience (Ciarrochi and Bailey 2008). Nonattachment is about one's relationship to experience, and willingness to let both positive and negative experiences go, if doing so is helpful. It is thus a potential mechanism of change in psychotherapy, which would be consistent with recent studies showing an increase in nonattachment following mindfulness-based interventions (Arch et al. 2016; Wu et al. 2019).

Future research should also examine how nonattachment might be related to other process measures, such as mindfulness and decentering. Sahdra et al. (2016) argued that mindfulness promotes nonattachment. Given that mindfulness is hypothesized to help people to recognize their mistaken view of reality as fixed or permanent and to gain insight into the constructed and ever-changing (interdependent and impermanent) nature of things (Sahdra et al. 2016; Sahdra et al. 2017; Sahdra et al. 2010), one would expect that mindfulness would lead to nonattachment. Future research is also needed to examine the developmental links between nonattachment and decentering. We would hypothesize that the ability to see thoughts and feelings as detached, passing events (decentering), will help set the stage for the ability to let mental experiences go.

Limitations

There are several limitations to the present study. First, as with all self-report questionnaire studies, our study may suffer from common method bias. Ideally, a future study could use multiple raters to overcome this problem. However, there are some features of the present design that are likely to have minimized common method bias, such as the predictor (time T nonattachment) is separated by a year from the outcome (time $T + 1$ mental health). This separation reduces biases to

respond consistently with previous answers, reduces common retrieval cues at a particular time point, and reduces the ability of the participant to guess what the desired outcome would be (Podsakoff, MacKenzie, Lee, and Padsakoff, 2003). In addition, the questionnaire was also anonymous, minimizing social desirability. Finally, if we assume both mental health and nonattachment are influenced by a common method factor, then our procedure of using these as covariates at time T to predict future time points should reduce or eliminate the influence of that factor (Podsakoff et al. 2003).

A second limitation is that the sample was an unselected non-clinical sample, we should be cautious about generalizing the results to adolescents with psychological disorders. Finally, although the findings showed that nonattachment predicted positive mental health 1 year later, the effect sizes were small and indicate that other factors also contribute to predicting mental health in adolescents. Furthermore, although previous studies have shown that nonattachment is distinct from mindfulness and decentering, these were not examined in our study and should be included in future longitudinal studies.

Authors' Contributions JC and BKS designed the study, executed the study, and wrote the paper. BKS and TD worked on the data analyses. KY contributed to the writing and editing of the final manuscript.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval Ethics approval was granted by the Australian Catholic University (ACU) Human Research and Ethics Committee. All procedures performed in studies involving human participants were in accordance with the ethical standards of ACU and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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