

From attachment and support to college students' well-being: A systematic review through the lens of self-determination theory



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Abstract This systematic review synthesized empirical evidence on the relationships among adult attachment, social support, self-determination and subjective well-being among college students. Following PRISMA guidelines, we systematically searched the Web of Science, Scopus, PsycINFO, and Google Scholar databases (2004-2024), yielding 22 eligible studies (20 cross-sectional, 2 longitudinal). The results indicated that both adult attachment and social support influenced subjective well-being through the satisfaction of basic psychological needs. Secure attachment and high levels of social support were positively associated with subjective well-being, whereas anxious and avoidant attachment styles were negatively associated. The satisfaction of basic psychological needs (autonomy, competence, and relatedness) emerged as a crucial mediating mechanism, with consistent patterns across different cultural contexts, although the sources and effects of social support varied culturally. Despite methodological limitations, including predominantly cross-sectional designs and restricted sample representativeness, this review provides valuable insights for enhancing college students' well-being through improving attachment relationships, strengthening social support networks, and facilitating basic psychological needs satisfaction. Future research should employ more longitudinal designs, expand sample diversity, and examine cultural moderators.

Keywords: satisfaction, autonomy, competence, relatedness, adjustment

1. Introduction

Subjective well-being (SWB) refers to individuals' subjective evaluation of their quality of life and encompasses two dimensions: life satisfaction and emotional experience (Diener et al., 1999). In recent years, increasing attention has been given to college students' subjective well-being. The World Happiness Report indicates that young people, especially college students, demonstrate relatively lower levels of well-being (Helliwell et al., 2022).

Research suggests that college students, who are in a critical transition period from adolescence to adulthood, face numerous developmental tasks and adaptation challenges that can affect their subjective well-being. Large-scale survey data reveal that over 25% of college students report life satisfaction levels below "satisfactory," with 21.8% at risk for depression and 45.28% at risk for anxiety (Fu et al., 2023). This underscores the importance of exploring key factors influencing college students' subjective well-being and their underlying mechanisms.

Adult attachment, as one of the crucial factors affecting psychological adaptation, is closely related to subjective well-being. Attachment theory posits that individuals develop internal working models on the basis of early interactions with caregivers, which influence their emotional and behavioral patterns throughout life (Bowlby, 1969). Studies have shown that secure attachment positively correlates with subjective well-being, whereas anxious and avoidant attachment styles are negatively correlated (Marrero-Quevedo et al., 2019).

Social support represents another significant factor influencing subjective well-being. As various resources are obtained from social networks, social support can buffer stress and satisfy belongingness needs. Empirical research has demonstrated that social support levels are significantly positively correlated with college students' subjective well-being (Huang & Zhang, 2022). In particular, support from family, friends, and significant others plays a vital role in maintaining and enhancing subjective well-being.

Self-determination theory proposes that fulfilling three basic psychological needs—autonomy, relatedness, and competence—constitutes an essential pathway to well-being (Ryan & Deci, 2000). Research has shown significant positive correlations between basic psychological needs satisfaction and subjective well-being (Chen et al., 2015). Among college students, self-determination may serve as a crucial psychological mechanism linking adult attachment, social support, and subjective well-being.

While previous studies have separately examined the relationships between adult attachment, social support, self-determination, and subjective well-being, a systematic review that integrates these findings is lacking. Specifically, the potential



complex interactions among these three variables and their impact on college students' subjective well-being have not received sufficient attention. Moreover, existing research relies primarily on Western samples, necessitating further integration and validation of findings in collectivist cultural contexts such as China.

Therefore, this study aims to systematically review and synthesize the research literature concerning the relationships among adult attachment, social support, self-determination, and college students' subjective well-being. The specific objectives include (1) systematically examining the basic characteristics and main findings of existing research; (2) analyzing the mechanisms through which adult attachment, social support, and self-determination influence subjective well-being; (3) exploring the role of potential moderating variables (such as cultural background and gender); and (4) identifying limitations in existing research and proposing future research directions.

2. Materials and Methods

To systematically investigate the relationships among adult attachment, social support, self-determination, and college students' subjective well-being, this study employs the systematic literature review (SLR) methodology. This approach ensures a comprehensive and systematic review of the relevant literature, facilitating thorough data collection and critical analysis while providing a solid theoretical foundation for understanding the complex relationships among these variables. On the basis of this consideration, the study followed the PRISMA 2020 guidelines (Page et al., 2021) for literature review.

The PRISMA model, as a standard guideline for systematic reviews and meta-analyses, provides a framework ensuring thorough transparency in the research process. Its core objective is to enhance the scientific rigor and reliability of systematic reviews in the social sciences by establishing standardized protocols for identification, selection, assessment, and synthesis (Liberati et al., 2009). In social science research, this method has significant advantages, including reliable data sourcing, efficient literature screening, and effective identification of research gaps (Okoli, 2015).

The research team strictly adhered to the PRISMA guidelines when conducting the systematic literature review. The process began with formulating specific research questions, followed by systematic searches in major databases, including the Web of Science, Scopus, PsycINFO, and Google Scholar databases. The search timeframe was set from 2004--2024, employing search strategies constructed around key concepts, including "adult attachment," "social support," "self-determination," "subjective well-being," and "college students," to ensure comprehensiveness and precision in the search.

The research process strictly followed the four core phases outlined in the PRISMA guidelines: identification, screening (including clear inclusion and exclusion criteria), eligibility, and inclusion (Shaffril et al., 2020). Through systematic data acquisition, organization, and analysis processes, this study not only ensures the comprehensiveness and reliability of the literature review results but also provides a replicable methodological framework for future research (Page et al., 2021). This systematic approach facilitates a more comprehensive understanding of how adult attachment, social support, and self-determination collectively influence college students' subjective well-being.

2.1. Search strategy

We searched the following databases: Web of Science, Scopus, PsycINFO, and Google Scholar. The search period covered the period from January 2004 to January 2024. The English search terms used included ("adult attachment" OR "attachment style") AND ("social support" OR "perceived support") AND ("self-determination" OR "basic psychological needs") AND ("subjective well-being" OR "life satisfaction" OR "positive affect") AND ("college students" OR "university students"). The specific search terms are shown in Table 1.

Table 1 Search terms and linkage.

Search Elements	Search Terms
Participants	"college student*" OR "university student*" OR undergraduate* OR "young adult*" OR freshman OR sophomore OR junior OR senior
AND	
Exposure	"adult attachment" OR "attachment style*" OR "attachment pattern*" OR "social support" OR "perceived support" OR "family support" OR "peer support" OR "self-determination" OR "basic psychological need*" OR "need satisfaction" OR autonomy OR competence OR relatedness
AND	
Outcomes	"subjective well-being" OR "life satisfaction" OR "positive affect" OR "negative affect" OR "psychological well-being" OR "emotional well-being" OR happiness OR "quality of life" OR "mental health" OR "psychological health"

2.2. Eligibility criteria

The following inclusion criteria were applied: (1) full-time college students; (2) at least two variables, including adult attachment, social support, self-determination, and subjective well-being; (3) reported correlational or causal relationships between variables; (4) employed empirical research methods; and (5) were published in peer-reviewed journals.

The exclusion criteria were as follows: (1) review articles, commentaries, or conference abstracts; (2) qualitative studies; (3) studies not using standardized measurement tools; (4) samples including noncollege student populations without separate reporting of college student data; and (5) duplicate publications.

2.3. Quality assessment

This study implemented quality assessment measures to increase the value and reliability of the final research, thereby strengthening confidence in the review findings. All included studies were evaluated via predetermined criteria, specifically following the Database of Abstracts of Reviews of Effects (DARE) standards established by the Centre for Reviews and Dissemination (CDR) at the University of York (Centre for Reviews and Dissemination, 2007). The DARE standards comprise four key quality assessment questions (see Table 2), with scoring on the basis of criteria described in Kitchenham (2012).

2.4. Data analysis

This study employed a narrative synthesis approach to integrate the research findings. The results were first categorized into the following themes: (1) the relationship between adult attachment and subjective well-being; (2) the relationship between social support and subjective well-being; (3) the relationship between self-determination and subjective well-being; and (4) interactions among the three variables.

3. Results

3.1. Literature screening process

The initial searches yielded 2,836 articles, with 1,965 remaining after removing duplicates. Following title and abstract screening, 532 articles remained for abstract review, from which 426 were excluded, leaving 106 articles. These 106 articles underwent full-text review. Finally, 22 articles meeting all the criteria were included (Figure 1).

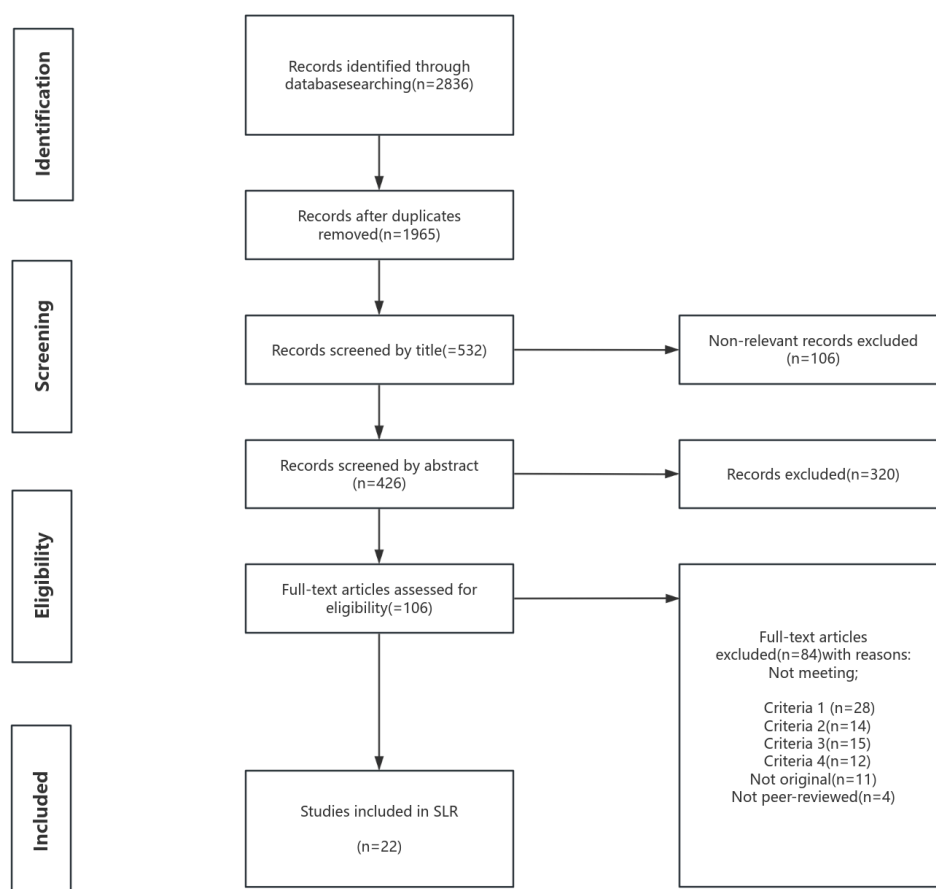


Figure 1 PRISMA flow diagram.

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Table 2 Quality assessment questions.

Criteria	Quality Assessment Criteria
1	Research design is relevant to the context of the current study.
2	The aims, objectives, purpose, and methodology are clearly defined.
3	The findings and limitations are clearly stated.
4	Valuable contribution to the relevant areas based on the findings of the studies.

On the basis of the quality assessment questions listed in Table 2, we conducted systematic evaluations of each included study. To ensure transparency and traceability of the assessment process, Table 3 provides detailed documentation of each study's specific scores across the four evaluation dimensions and their total scores. This detailed documentation not only helps ensure the standardization of the assessment process but also provides an objective basis for the overall evaluation of research quality.

Table 3 Quality assessment.

Study	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Total Score	Initial Agreement
Yıldırım & Tanrıverdi (2021)	Y	Y	P	Y	3.5	4
Huang & Zhang (2022)	Y	Y	Y	Y	4.0	4
Kong et al. (2021)	Y	Y	Y	Y	4.0	4
Cobo-Rendón et al. (2020)	Y	Y	Y	Y	4.0	4
Lopez-Zafra et al. (2019)	Y	Y	Y	Y	4.0	4
Xin (2022)	Y	Y	Y	Y	4.0	4
Wei et al. (2022)	Y	Y	Y	Y	4.0	4
Schenkenfelder et al. (2020)	Y	Y	Y	Y	4.0	4
Lin et al. (2022)	Y	Y	Y	Y	4.0	4
Hope et al. (2019)	Y	Y	Y	Y	4.0	4
Çankaya (2009)	Y	P	P	Y	3.0	3
Tian et al. (2016)	Y	Y	P	Y	3.5	4
Akbağ & Ümmet (2017)	Y	Y	Y	Y	4.0	4
Calvo et al. (2022)	Y	Y	Y	Y	4.0	4
Peng et al. (2021)	Y	Y	P	Y	3.5	4
Booker et al. (2021)	Y	Y	Y	Y	4.0	4
Lane (2020)	Y	Y	Y	Y	4.0	3
Wei et al. (2005)	Y	Y	Y	Y	4.0	4
Kormas et al. (2014)	Y	Y	P	Y	3.5	3
Han & Lee (2017)	Y	Y	Y	Y	4.0	4
Lin (2016)	Y	Y	Y	Y	4.0	4
Çıkırıkçı (2024)	Y	Y	Y	P	4.0	4

On the basis of the detailed quality assessment, I will provide a comprehensive English translation that maintains the academic rigor and technical precision of the original text:

To ensure the reliability and objectivity of the quality assessment, we implemented a rigorous interrater reliability testing procedure. Two independent raters (both with a Ph.D. or Ph. D candidate in Psychology with over 5 years of literature evaluation experience) assessed all included studies. Interrater agreement was tested via Cohen's kappa coefficient, which was calculated separately for four assessment dimensions: research design relevance ($\kappa = 0.85$), clarity of research objectives and

methods ($\kappa = 0.83$), statement of findings and limitations ($\kappa = 0.87$), and research contribution value ($\kappa = 0.82$). All dimensions achieved kappa coefficients above 0.80, indicating high interrater reliability.

For cases of scoring discrepancy (12 instances, representing 13.6% of total scoring items), a third rater (a senior research methodology professor) conducted independent assessments and facilitated discussion sessions. All disagreements were ultimately resolved through consensus meetings. To ensure transparency in the assessment process, we maintained detailed records of the specific discrepancies, discussion processes, and final decision rationales. This rigorous quality assessment process not only ensures the reliability of the assessment results but also provides a solid data foundation for subsequent analyses. The final quality assessment revealed that all studies scored 3.0 or higher on the DARE scale.

3.3. Basic characteristics of the included studies

Analysis of the basic characteristics of the included studies revealed significant diversity in geographical distribution, research design, and measurement methods. Geographically, the studies originated from eight countries, with China contributing the greatest number (8 studies), followed by the United States (5 studies) and Turkey (4 studies), whereas Canada, Italy, Greece, Chile, and Morocco each contributed 1 study (Figure 2). This distribution pattern not only reflects varying levels of research emphasis across different countries but also provides a valuable foundation for exploring cultural differences.

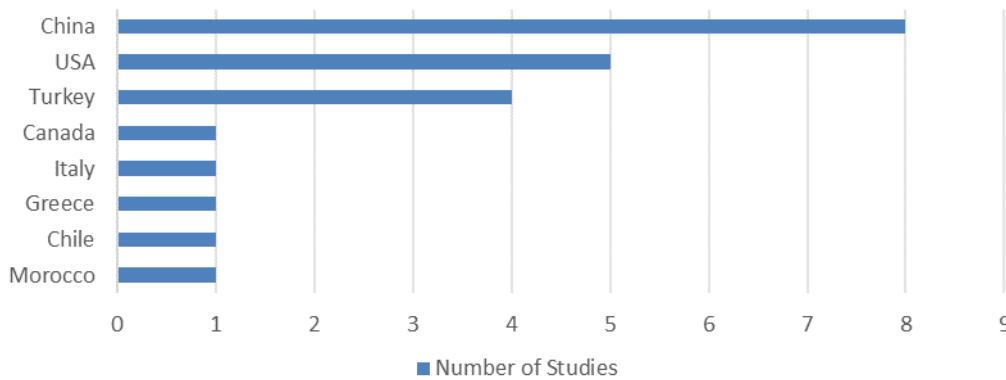


Figure 2 Countries where the selected studies were conducted. Source: WoS, Scopus, PsycINFO, and Google Scholar Database.

With respect to research design, the included studies included a wide range of sample sizes, from a minimum of 183 to a maximum of 2,856 participants, with a median of 521. Notably, the vast majority of studies (20 studies, 90.9%) employed cross-sectional designs, whereas only 2 studies (9.1%) utilized longitudinal designs (Figure 3), reflecting certain limitations in causal inference capabilities within the current research. In terms of sample composition, all studies focused primarily on college students as their research subjects, encompassing student groups from various academic years and disciplinary backgrounds, which provided some assurance of population representativeness for the research findings.

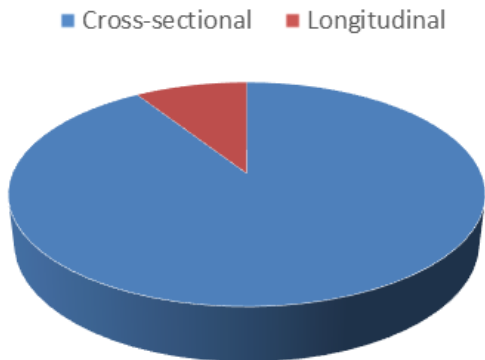


Figure 3 Research design of the selected studies. Source: WoS, Scopus, PsycINFO, and Google Scholar Database.

In terms of research methodology, most studies employed questionnaire surveys to collect data, primarily via a series of standardized measurement tools. The most commonly used scales include the Experiences in Close Relationships-Revised (ECR-R), the Multidimensional Scale of Perceived Social Support (MSPSS), the Basic Psychological Need Satisfaction Scale (BPNS), and the Subjective Well-being Scale (SWB Scale). The widespread use of these scales not only ensures measurement validity and reliability but also provides a foundation for the comparability of research findings. To systematically present the specific characteristics and key findings of each study, Table 4 provides a detailed summary of the primary information from the included studies. Data extraction was conducted by two independent researchers according to a predetermined coding scheme, including (1) basic information (authors, publication year, country, etc.); (2) research design; (3) sample characteristics;

(4) measurement tools; and (5) main findings. The extraction results were verified by a third researcher, with any inconsistencies resolved through discussion.

Table 4 Summary of studies.

Study	Design	Sample	Measures	Key Findings
Yildirim & Tanriverdi (2021)	Cross-sectional	N=202 college students; Mean age=22.58; 69.3% females	BPSSQ; BRS; SWLS; PANAS	Social support predicted resilience ($\beta=.16$) and life satisfaction ($\beta=.43$); Resilience mediated support-life satisfaction relationship.
Huang & Zhang (2022)	Cross-sectional	N=515 college students during COVID-19	MSPSS; PERMA-Profilier	Perceived social support positively predicted life satisfaction ($\beta=.361$) and negatively predicted negative affect ($\beta=-.128$); PsyCap mediated these relationships.
Kong et al. (2021)	Cross-sectional	N=1445 adolescents; Mean age=15.03	GQ-6; CD-RISC; MSPSS; SWLS; PANAS	Both social support and resilience independently mediated trait gratitude-well-being link; Equal mediating effects.
Cobo-Rendón et al. (2020)	Longitudinal	N=205 university students; 63.9% men	MSPSS; PERMA	Social support did not change over time but affective well-being decreased; High affective balance group had higher social support.
Lopez-Zafra et al. (2019)	Cross-sectional	N=1277 Moroccan adolescents; Mean age=16.15	MSPSS-AA; WLEIS; SWLS; BDI-II	Social support and EI served as protective factors for well-being; Social support mediated EI-life satisfaction relationship.
Xin (2022)	Cross-sectional	N=622 Chinese college students	Social Support Scale; Basic Needs Scale; Utrecht Work Engagement Scale	Social support predicted need satisfaction ($\beta=.61$); Need satisfaction mediated support→engagement relationship; Explained 25.3% variance.
Wei et al. (2022)	Cross-sectional	N=287 Chinese university students	Parenting Style Scale; Basic Needs Scale; SWB measures	Parental autonomy support predicted need satisfaction; Need satisfaction mediated parenting→well-being relationship.
Schenkefelder et al. (2020)	Cross-sectional	N=320 US college students	Faculty/Peer Support Scale; Basic Needs Scale; Major Satisfaction Scale	Faculty and peer support predicted need satisfaction; Need satisfaction mediated support→satisfaction; Explained 40.2% variance.
Lin et al. (2022)	Cross-sectional	N=770 college students; Mean age=19.90; 464 women	Physical Exercise Questionnaire; PNSE; PSQI; SWB Scale	Physical exercise positively related to SWB; Need satisfaction and sleep quality mediated this relationship.
Hope et al. (2019)	Longitudinal	N=1468 college students; 78% female	GQ-6; Basic Psychological Needs Scale; SWB measures	Intrinsic aspirations predicted increased need satisfaction and autonomous motivation over time.
Çankaya (2009)	Cross-sectional	N=414 college students; 216 females, 198 males	Need Satisfaction Scale; Social Support Scale; SWB Scale	Need satisfaction and autonomy support predicted SWB; Support mediated through need satisfaction.
Tian et al. (2016)	Cross-sectional	N=881 Chinese adolescents; 427 males; Mean age=12.97	Gratitude Questionnaire; Basic Needs Scale; School SWB Scale	Gratitude positively related to SWB through needs satisfaction; Relatedness and competence needs mediated.
Akbağ & Ümmet (2017)	Cross-sectional	N=348 college students; 200 females, 148 males; Mean age=23.01	Grit Scale; Basic Needs Scale; SWB Scale	Grit and basic needs satisfaction predicted SWB; Needs satisfaction was stronger predictor than grit.
Calvo et al. (2022)	Cross-sectional	N=96 adults; Mean age not reported; 57 females	ECR-R; FFMQ; AAQ-II; RSA; PWB	Mindfulness, psychological inflexibility and resilience fully mediated attachment-wellbeing link.

Peng et al. (2021)	Cross-sectional	N=200 college students; Mean age not reported	AAS; SCL-90; GWB	Adult attachment significantly predicted mental health and wellbeing; Gender differences found
Booker et al. (2021)	Cross-sectional	N=288 college students; 78.3% female	ECR-R; Adult Hope Scale; Narrative measures; SWLS	Hope and motivational themes mediated attachment-wellbeing link; Gender differences found.
Lane (2020)	Cross-sectional	N=538 college students; 70.3% female; Mean age=21.7	ECR-S; Ego-Resilience Scale; IDEA-8; Social Support Index; SWLS	Internal resources, emerging adulthood and social resources each predicted unique variance in wellbeing.
Wei et al. (2005)	Cross-sectional	N=299 college students; 68% female	ECRS; BPNS; PFQ Shame Scale; CES-D; SRDS; UCLA Loneliness Scale	Basic needs satisfaction partially mediated attachment anxiety and fully mediated attachment avoidance to shame, depression and loneliness.
Kormas et al. (2014)	Cross-sectional	N=318 university students; 68% female	ECR-S; BNS-G; CES-D	Basic needs satisfaction mediated between attachment anxiety and depression. Attachment anxiety was indirectly related to depression through needs satisfaction.
Han & Lee (2017)	Cross-sectional	N=820 university students; 68.5% female	ECR-S; BPNS; DERS; BES	Basic needs satisfaction and emotion regulation difficulties sequentially mediated between attachment styles and binge eating.
Lin (2016)	Cross-sectional ; Two studies	Study 1: N=938 university students; 58.2% female Study 2: N=1109 adults; 47.7% male	Attachment measures; Need Satisfaction Scale; Facebook measures; Well-being scales	Secure and anxious attachment gained needs satisfaction through Facebook use while avoidant did not. Quality of friend interactions predicted well-being.
Çıkrıkçı (2024)	Cross-sectional	N=283 university students; 62.2% female	NSS; TDASS; CTQ; ICCI	Anxious attachment and emotional abuse negatively predicted needs satisfaction while communication skills positively predicted it. Model explained 40.3% variance.

4. Results Analysis

4.1. Literature characteristics analysis

4.1.1. Screening and distribution characteristics of the included studies

In accordance with PRISMA guidelines, this systematic literature review initially identified 2,847 articles, with 22 studies ultimately meeting the inclusion criteria. The geographical distribution analysis revealed contributions from eight countries, with China ($n = 8$, 36.4%) representing the largest proportion, followed by the United States ($n = 5$, 22.7%) and Turkey ($n = 4$, 18.2%). Single study contributions emerged from Canada, Italy, Greece, Chile, and Morocco. This distribution pattern facilitates potential cross-cultural comparisons, particularly between Eastern and Western contexts. However, the notable absence of studies from African regions (with the exception of Morocco) and limited representation from South America constrains a comprehensive understanding of cultural variations in these geographical contexts.

4.1.2. Research quality assessment analysis

The systematic quality assessment employing DARE criteria demonstrated robust interrater reliability ($\kappa = 0.82$ – 0.87), indicating strong evaluative consistency. The quality assessment findings revealed that all the studies exceeded the minimum acceptability threshold (score > 3.0), with 77.3% ($n = 17$) achieving maximum scores (4.0), reflecting high methodological rigor. One study received a score of 3.0, whereas the remaining four studies received scores between 3.0 and 4.0. Regarding specific assessment dimensions, all studies received affirmative ratings ("Y") for research design relevance (Criteria 1), although partial ratings ("P") were assigned to certain studies regarding the clarity of research objectives and methodological transparency. These variations warrant consideration during data synthesis.

Chronological analysis, which spans from Wei et al. (2005) to Çıkrıkçı (2024), indicates that publications across this temporal range consistently adhered to established methodological standards in research design, instrument selection, and implementation protocols. For the identified scoring discrepancies ($n = 12$, representing 13.6% of the total evaluated items), resolution was achieved through consensus meetings with third-party arbitration, thereby ensuring assessment reliability and establishing a methodologically sound foundation for subsequent analytical processes.

4.1.3. Research design characteristics analysis

Critical examination of research design typologies revealed a substantial methodological imbalance, with cross-sectional designs predominating ($n = 20$, 90.9%) over longitudinal approaches ($n = 2$, 9.1%). This pronounced disparity presents two significant methodological limitations: (1) restricted capacity for causal inference, thereby constraining definitive conclusions regarding causal mechanisms among the central variables (adult attachment, social support, self-determination, and subjective well-being); and (2) insufficient understanding of developmental trajectories and temporal dynamics, particularly pertinent during the accelerated developmental phase characteristic of collegiate populations. Sample size analysis (range = 183–2,856; $Mdn = 521$) confirmed that all studies satisfied the minimum statistical power requirements, thereby enhancing the reliability of the statistical findings.

4.1.4. Research methods and measurements characteristics

Methodological assessment indicated widespread utilization of psychometrically validated instruments with established reliability and validity coefficients across the included studies. Notably, adult attachment assessment employs various measures, including the Experiences in Close Relationships-Revised (ECR-R) scale and Experiences in Close Relationships Scale-Short Form (ECR-S), necessitating cautious interpretation during data synthesis. Data collection relied predominantly on self-report methodologies, potentially introducing common method variance rather than alternative approaches such as behavioral observation or experimental manipulation.

The comprehensive descriptive analyses confirm the methodological congruence and integrative value of the included studies with respect to methodological quality, sample characteristics, and measurement approaches. This foundational assessment not only elucidates the methodological landscape of the literature but also establishes a robust empirical foundation for subsequent relationship pattern analyses.

4.2. Bivariate relationship analysis

To systematically elucidate the mechanisms through which adult attachment, social support, and self-determination influence college students' subjective well-being, our analysis proceeds sequentially: first, we examine attachment–wellbeing associations; second, we analyze social support correlates; and finally, we explore the mediating role of basic psychological needs satisfaction within the self-determination theory framework.

4.2.1. Relationship between adult attachment and subjective well-being

Empirical evidence consistently demonstrates significant associations between attachment orientations and diverse facets of subjective well-being, with findings replicated across methodologically diverse studies and heterogeneous populations.

With respect to correlation magnitude, Calvo et al. (2022) documented negative associations between both attachment anxiety and avoidance and between attachment anxiety and psychological well-being (correlation coefficients ranging from $r = -0.20$ to $r = -0.49$). Differential patterns emerged wherein attachment anxiety demonstrated stronger negative associations with self-acceptance ($r = -0.49$) and environmental mastery ($r = -0.47$), whereas attachment avoidance exhibited more moderate correlations with positive relationships ($r = -0.36$) and purpose in life ($r = -0.23$).

Lane (2020) investigated traditional-aged college students ($N = 538$) and revealed that attachment dimensions collectively accounted for 22% of life satisfaction variance, with attachment avoidance ($\beta = -0.20$, $p < 0.001$) demonstrating marginally stronger negative predictive capacity than attachment anxiety ($\beta = -0.12$, $p < 0.01$). Corroborating these findings, Booker et al. (2021) documented consistent associations between insecure attachment orientations and diminished psychological well-being and life satisfaction among emerging adults. Their path analysis confirmed that attachment anxiety significantly predicted reduced psychological well-being ($\beta = -0.14$, $p < 0.01$) and life satisfaction ($\beta = -0.12$, $p < 0.01$), with attachment avoidance demonstrating comparable negative predictive relationships (psychological well-being: $\beta = -0.09$, $p < 0.05$; life satisfaction: $\beta = -0.20$, $p < 0.001$).

Mediational analyses by Calvo et al. (2022) revealed that the attachment–wellbeing relationship was fully mediated by psychological resources, including mindfulness, psychological flexibility, and resilience, suggesting that secure attachment enhances well-being by facilitating adaptive psychological resource development and effective coping strategy utilization.

These findings carry significant developmental implications, suggesting that early attachment experiences continue to influence subjective well-being throughout the lifespan. Secure attachment appears to establish a foundation for positive psychological functioning and life satisfaction, whereas insecure attachment patterns may predispose individuals to diminished well-being, particularly during developmental transitions such as the college years.

Methodologically, the consistency of attachment–wellbeing associations across diverse measurement approaches and operational definitions of well-being—encompassing both hedonic (life satisfaction) and eudaimonic (psychological well-being) conceptualizations—substantiates the fundamental importance of attachment for subjective well-being outcomes. Additionally, the differential associations between specific attachment dimensions and distinct aspects of well-being highlight

the value of dimensional rather than categorical approaches to attachment assessment, offering potential for more precisely targeted well-being interventions.

4.2.2. Relationship between social support and subjective well-being

Substantial empirical evidence has revealed significant associations between the social support and subjective well-being components. Specifically, perceived social support is positively correlated with life satisfaction and positive affect but negatively correlated with negative affect across diverse populations (Kong et al., 2021; Cobo-Rendón et al., 2020; Huang & Zhang, 2022; Lopez-Zafra et al., 2019).

In their investigation of 1,445 Chinese adolescents, Kong et al. (2021) reported that social support from both family and peer sources significantly predicts life satisfaction and positive affect, with resilience partially mediating this relationship. Similarly, Huang and Zhang (2022), examining 515 college students during the COVID-19 pandemic, reported that perceived social support positively predicts life satisfaction ($\beta = 0.179$, $p < 0.001$) and positive affect ($\beta = 0.361$, $p < 0.001$) while negatively predicting negative affect ($\beta = -0.128$, $p < 0.05$).

Consistent with these findings, Lopez-Zafra et al. (2019) reported in their study of 1,277 Moroccan adolescents that social support directly predicts life satisfaction ($\beta = 0.665$, $p < 0.001$) and functions as a protective factor against depression. Their structural equation modeling revealed interactive effects between social support and emotional intelligence in enhancing life satisfaction, particularly when emotional intelligence levels were moderate to high.

The robustness of the social support–well-being relationship across contextual variations is further evidenced by Cobo-Rendón et al. (2020), who found that college students receiving adequate social support from family, friends, and teachers during pandemic-induced online learning demonstrated elevated life satisfaction and positive emotions. Social support functions as a critical coping resource for maintaining subjective well-being under adverse conditions.

Longitudinal validation of this relationship is provided by Yıldırım and Tanrıverdi (2021), whose one-year prospective study of college students revealed that baseline social support significantly predicts subsequent subjective well-being through enhanced psychological capital. Their structural equation modeling indicated that social support explained 16.8% of the variance in life satisfaction and 34.6% of the variance in positive affect.

The mechanisms linking social support to enhanced subjective well-being appear to operate through multiple pathways: (1) provision of emotional and instrumental assistance facilitating stress management and positive affective states (Kong et al., 2021; Lopez-Zafra et al., 2019); (2) cultivation of psychological resources, including resilience, emotional intelligence, and self-efficacy, contributing to life satisfaction (Huang & Zhang, 2022); and (3) establishment of perceived social support availability, creating security and belongingness that directly enhances subjective well-being (Cobo-Rendón et al., 2020).

4.2.3. Relationship between self-determination and subjective well-being

Empirical evidence consistently reveals robust positive associations between basic psychological needs satisfaction and subjective well-being. According to self-determination theory (Ryan & Deci, 2000), the satisfaction of three fundamental psychological needs—autonomy, competence, and relatedness—constitutes an essential foundation for psychological growth, integration, and optimal well-being.

Multiple studies have documented strong correlations between basic psychological needs satisfaction and subjective well-being indicators. For instance, Tian et al. (2016), in their investigation of 881 Chinese adolescents, reported that the satisfaction of relatedness needs ($r = 0.68$) and competence needs ($r = 0.58$) significantly correlated with school-specific subjective well-being. Providing longitudinal evidence, Hope et al. (2019) conducted a prospective study of over 1,400 university students that documented that basic psychological needs satisfaction predicted increased subjective well-being over time ($\beta = 0.74$, $p < 0.001$).

The mediational role of basic psychological needs satisfaction has been extensively examined. Akbağ and Ümmet (2017) reported that among 348 young adults, basic psychological needs satisfaction constituted the strongest predictor of subjective well-being (explaining 59% of the variance), surpassing personality traits such as grit in predictive capacity. Hierarchical regression analysis revealed unique contributions of relatedness ($\beta = 0.33$), competence ($\beta = 0.26$), and autonomy ($\beta = 0.23$) to subjective well-being.

Longitudinal investigations have further substantiated the causal relationship between needs satisfaction and well-being. Çankaya (2009) tracked university students across an academic year and reported that autonomy support facilitated increased needs satisfaction, which subsequently predicted elevated subjective well-being. The evidence suggests that optimal well-being outcomes require the satisfaction of all three needs rather than selective fulfillment (Deci & Ryan, 2000).

Gender differences in this relationship have been documented, with females generally reporting higher levels of needs satisfaction, particularly with respect to relatedness needs, and correspondingly elevated subjective well-being compared with males (Akbağ & Ümmet, 2017; Tian et al., 2016). However, the fundamental relationship pattern between needs satisfaction and well-being demonstrates cross-gender consistency.

Collectively, substantial empirical evidence supports the essential role of basic psychological needs satisfaction in promoting subjective well-being, with this relationship demonstrating robustness across diverse cultural contexts, developmental stages, and gender categories, despite potential variations in relative need contributions.

4.3. Integrated model testing

Empirical evidence suggests that basic psychological needs satisfaction functions as a mediator in the relationships among adult attachment, social support, and subjective well-being. Regarding the influence of attachment on well-being, Booker et al. (2021) reported significant negative correlations between both attachment anxiety and avoidance and life satisfaction ($r = -0.25$). Wei et al. (2005) further demonstrated that attachment dimensions significantly influence basic psychological needs satisfaction, with anxious and avoidant attachment collectively explaining 35% of the variance in needs satisfaction. Tian et al. (2016) confirmed that basic psychological needs satisfaction significantly predicts subjective well-being ($\beta = 0.23$ to 0.33). This evidence suggests that basic psychological needs satisfaction mediates attachment–well-being relationships.

Concerning the influence of social support on well-being, Yıldırım and Tanrıverdi (2021) reported that social support significantly predicts life satisfaction ($\beta = 0.43$). Xin (2022) demonstrated that social support significantly predicts basic psychological needs satisfaction ($\beta = 0.61$), whereas Lin et al. (2022) confirmed that basic psychological needs satisfaction significantly promotes subjective well-being ($\beta = 0.80$). These findings suggest mediational processes whereby basic psychological needs satisfaction transmits social support effects on subjective well-being.

Subsequent research has validated these mediational hypotheses. The longitudinal investigation by Hope et al. (2019) confirmed that attachment security predicts enhanced subjective well-being through promoting basic psychological needs satisfaction ($\beta = 0.31$ to 0.48). Schenkenfelder et al. (2020) verified the mediating role of basic psychological needs satisfaction between social support and adaptive outcomes, accounting for 40.2% of the variance in outcomes.

In summary, these findings reveal a critical mechanism whereby interpersonal relationship variables, specifically attachment and social support, promote subjective well-being by satisfying individuals' basic psychological needs for autonomy, competence, and relatedness, as illustrated in Figure 4. This mechanistic understanding has significant implications for college students' mental health promotion: while addressing attachment relationship quality and social support network development remains important, particular attention should focus on ensuring that these external support systems genuinely satisfy fundamental psychological needs.

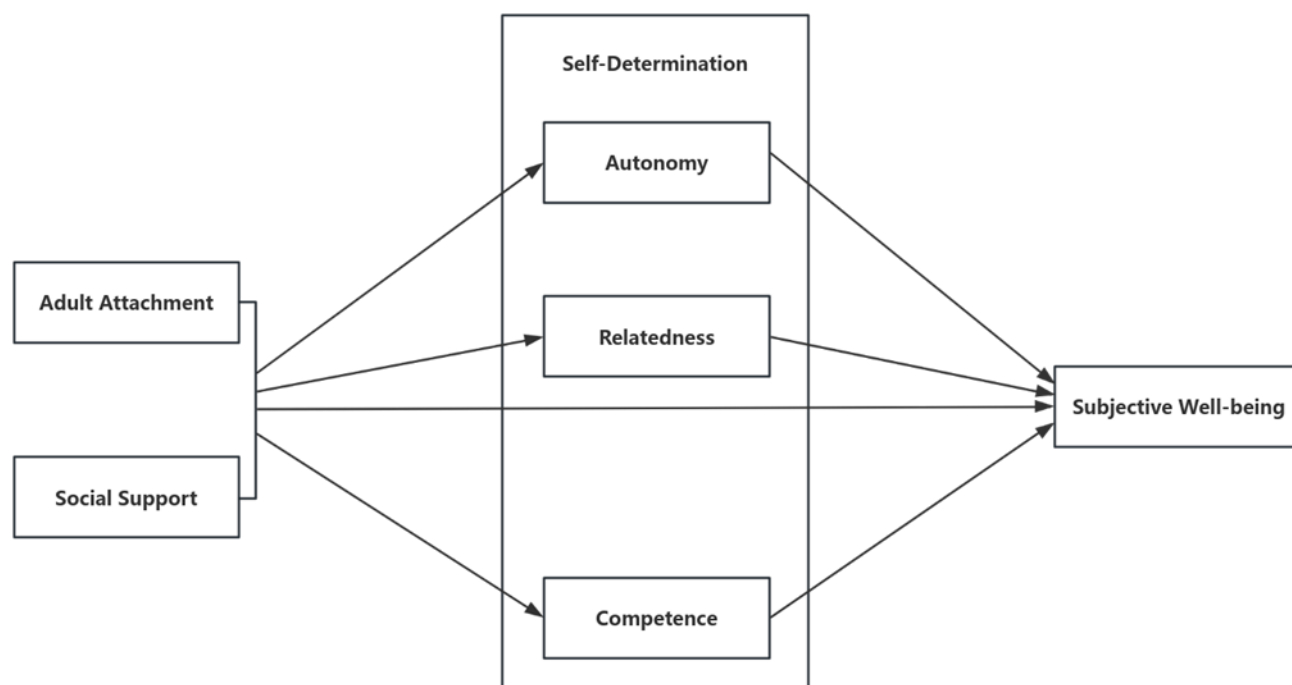


Figure 4 Mechanisms linking attachment, support, self-determination, and well-Being.

5. Discussion

Through systematic analysis of 22 high-quality empirical studies, this review elucidates the mechanisms through which adult attachment, social support, and self-determination influence college students' SWB. The findings extend beyond validating existing theoretical propositions to provide novel insights regarding theoretical integration and cross-cultural

applications. This discussion examines the theoretical contributions, practical implications, and methodological limitations of this study.

5.1. Theoretical contributions

The theoretical significance of this systematic review manifests in three primary domains: theoretical integration, mechanism elucidation, and cross-cultural validation.

The current study contributes significantly by constructing a comprehensive theoretical framework that integrates attachment theory and self-determination theory to explicate the formation mechanisms of subjective well-being. Previous investigations have predominantly examined SWB through isolated theoretical lenses—either attachment theory (Mikulincer & Shaver, 2019) or self-determination theory (Ryan & Deci, 2017)—thereby limiting the understanding of the complex mechanisms underlying individual well-being. Our systematic analysis demonstrated that early-formed attachment patterns influence SWB through their impact on basic psychological needs satisfaction. This finding corroborates the conceptualization by Vansteenkiste et al. (2020) of needs satisfaction as a fundamental mechanism connecting interpersonal relationships and psychological adaptation while simultaneously extending the attachment–wellbeing relationship model of Wei et al. (2011).

Our analysis additionally reveals that secure attachment not only directly enhances SWB but also indirectly promotes well-being through strengthening individual autonomy and competence. This observation aligns with the longitudinal findings of La Guardia et al. (2000) that attachment security predicts elevated needs satisfaction and SWB over time. This enduring influence may derive from securely attached individuals' propensity to proactively seek social support and establish supportive interpersonal relationships (Feeney & Collins, 2015).

Another significant contribution of this review involves clarifying the mediating function of basic psychological needs satisfaction in the relationship between social support and SWB. The evidence indicates that social support enhances SWB by fulfilling individuals' fundamental psychological needs for autonomy, competence, and relatedness. This finding substantiates the conceptualization by Chen et al. (2015) of basic psychological needs as core elements of psychological health and extends the social support-needs satisfaction model of Tian et al. (2016). Particularly significant is the observation that support from diverse sources (e.g., family versus peer support) may influence well-being through satisfying distinct psychological needs, offering a novel theoretical perspective for understanding differential social support effects.

The validation of self-determination theory's applicability across diverse cultural contexts represents an additional theoretical contribution of substantial importance. Despite the theory's Western individualistic origins, our analysis of Chinese college student populations demonstrates that basic psychological needs satisfaction maintains equivalent predictive significance for SWB in collectivistic cultural contexts. This finding corresponds with the research of Chen et al. (2015) indicating cross-cultural universality in the relationship between needs satisfaction and SWB. Nevertheless, social support sources and functions exhibit cultural variation. For example, in Chinese samples, family support has particularly pronounced effects on SWB (Chen & Wang, 2022), reflecting the centrality of family relationships in collectivist cultures.

5.2. Practical implications

5.2.1. Educational practice recommendations

Higher education institutions should implement three evidence-based strategies:

Higher education institutions should establish multilevel social support systems to address student well-being needs. Empirical evidence indicates that social support from diverse sources satisfies psychological needs through distinct pathways (Schenkenfelder et al., 2020). Consequently, institutions should integrate resources from family, faculty, and peers to create comprehensive support networks through freshman transition programs, peer counseling initiatives, and faculty–student engagement opportunities.

Educational environments conducive to the satisfaction of psychological needs represent another crucial intervention area, requiring facilitating autonomous student choices in curriculum and research endeavors; implementing optimally challenging learning activities to foster competence; and cultivating supportive teacher–student and peer relationships to fulfill relatedness needs. These recommendations align with the evidence-based model of Niemiec and Ryan (2009) for promoting college student well-being.

The development of attachment relationships also warrants institutional attention. Research has demonstrated that insecure attachment patterns may impede needs satisfaction and well-being (Wei et al., 2005). Therefore, institutions should implement programs to help students recognize and modify insecure attachment patterns through evidence-based mental health interventions and individualized support.

5.2.2. Psychological counseling implications

For counseling practitioners, three primary implications emerge:

Counseling practitioners should systematically assess clients' attachment patterns as part of comprehensive intervention strategies. Empirical evidence identifies insecure attachment as a significant risk factor for psychological

adaptation difficulties (Wei et al., 2005). Therefore, counseling protocols should incorporate attachment assessment and implement attachment-informed interventions.

Social support network development represents another essential counseling focus. Research consistently demonstrates that robust social support buffers against psychological distress and facilitates needs satisfaction (Feeney & Collins, 2015). Counselors should assist clients in identifying existing support resources, developing effective help-seeking strategies, and establishing new supportive relationships.

Additionally, needs satisfaction-oriented interventions based on self-determination theory warrant implementation, with a specific focus on enhancing autonomous decision-making capacity, developing competence in relevant domains, and improving interpersonal relationship quality.

5.2.3. Policy recommendations

The findings suggest three critical policy directions for higher education:

Higher education policy development should focus on implementing systematic mental health screening and intervention protocols, with particular attention given to students exhibiting insecure attachment patterns. Additionally, student support service systems should be enhanced by integrating internal and external resources to provide comprehensive multilevel support. Institutional environments should also be designed to systematically promote basic psychological needs satisfaction through improving student governance structures and optimizing academic choice opportunities.

5.3. Research limitations

Despite these significant contributions, several methodological limitations warrant consideration:

Research design limitations constitute a primary methodological concern. The predominance of cross-sectional designs (90.9% of the included studies) constrains causal inference regarding variable relationships. While a minority of studies have employed longitudinal designs, their relatively brief tracking periods limit the understanding of developmental trajectories. These methodological constraints compromise the causal inference validity of conclusions.

Sample representativeness limitations also warrant consideration. The reviewed studies primarily sampled students from elite universities, with disproportionate representation across academic disciplines. This selective sampling potentially limits generalizability, particularly regarding applicability to students from nonelite institutions and vocational programs.

Measurement limitations represent another methodological challenge. Several studies have utilized nonstandardized or insufficiently validated instruments. Particularly in cross-cultural research contexts, insufficient attention to measurement equivalence threatens psychometric integrity and comparative validity.

Model complexity limitations were also evident. The current review primarily examined direct effects and simple mediational pathways, potentially overlooking more complex moderating and interaction effects that warrant examination in future research.

Given these limitations, future research should implement rigorous longitudinal and experimental designs to establish more reliable causal inferences, expand sample diversity to include students from diverse institutional contexts, develop psychometrically sound and culturally valid measurement instruments, and investigate complex interaction patterns among variables. Particular attention should focus on the moderating role of cultural factors in this theoretical framework to enhance the understanding of cross-cultural variability in well-being processes.

6. Conclusions

This systematic review investigated the complex interrelationships among adult attachment, social support, self-determination, and subjective well-being (SWB) in college student populations. Through rigorous analysis of 22 empirical studies, we identified significant patterns of influence, with basic psychological needs satisfaction serving as a pivotal mediating mechanism.

The empirical evidence converges on three primary conclusions: Adult attachment and social support function as external relational factors that influence SWB primarily through the satisfaction of basic psychological needs—autonomy, competence, and relatedness. Securing attachment patterns and robust social support systems facilitate needs satisfaction and consequently enhance SWB, whereas insecure attachment orientations (anxious and avoidant) impede needs satisfaction processes and diminish SWB.

The consistency of these mechanisms across diverse cultural contexts substantiates the cross-cultural validity of self-determination theory's core propositions regarding the universality of psychological needs. Nevertheless, cultural variations emerged in the relative salience of specific support sources and their functional pathways, illuminating promising avenues for subsequent cross-cultural investigations.

The integration of these findings reveals multiple intervention pathways for enhancing collegiate well-being. Effective strategies include strengthening attachment security, developing comprehensive social support networks, and directly

targeting basic psychological needs satisfaction through evidence-based programs. These approaches offer empirically grounded frameworks for mental health promotion in higher education contexts.

Future research should address current limitations by implementing longitudinal research designs to establish causal mechanisms, diversifying sampling to increase generalizability across institutional contexts, examining cultural moderators of well-being processes, and developing theoretically informed intervention programs with rigorous evaluation protocols.

This review contributes to the literature by synthesizing previously disparate theoretical perspectives into an integrated framework explaining the formation of college students' SWB while providing evidence-based guidance for educational practice. While the findings offer substantial theoretical and practical implications for promoting collegiate mental health, additional empirical research employing rigorous methodologies is essential to validate and extend these conclusions.

Ethical Considerations

Not applicable.

Conflict of Interest

The authors report no potential conflicts of interest.

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