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FACTOR ANALYSIS IN MEDIATING EFFECT OF COGNITIVE REAPPRAISAL ON RELATIONSHIP BETWEEN PERCEIVED AUTONOMY SUPPORT AND SUBJECTIVE WELL-BEING OF VOCATIONAL COLLEGE STUDENTS IN MALAYSIA

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Abstract

This study investigates the mediating role of cognitive reappraisal in the relationship between perceived autonomy support and subjective well-being among Malaysian vocational college students. A total of 185 students participated through simple random sampling and completed validated questionnaires measuring perceived autonomy support, cognitive reappraisal, and subjective well-being. Data were analyzed using SPSS, including reliability analysis, Exploratory Factor Analysis (EFA) to explore the factor structure, and mediation analysis to examine hypothesized relationships. Results showed that perceived autonomy support significantly predicts cognitive reappraisal, which in turn positively influences subjective well-being. The mediation analysis revealed that cognitive reappraisal (CR) partially mediates the relationship between perceived autonomy support (PAS) and subjective well-being (SWB), indicating that supportive learning environments enhance students' well-being both directly and indirectly through emotion regulation strategies. These findings underscore the importance of fostering autonomy-supportive educational environments and promoting adaptive emotion regulation skills among vocational students. Practically, educators and policymakers should provide opportunities for student autonomy and offer guidance in cognitive reappraisal to improve mental health outcomes. The study contributes to understanding the psychological mechanisms linking autonomy support, emotion regulation, and well-being, providing a foundation for interventions aimed at enhancing the mental health and resilience of vocational college students.

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Kata kunci:
Penilaian semula kognitif, persepsi sokongan autonomi, kesejahteraan subjektif, pelajar kolej vokasional

Kajian ini bertujuan untuk meneliti peranan pengantaraan penilaian semula kognitif dalam hubungan antara persepsi sokongan autonomi dengan kesejahteraan subjektif dalam kalangan pelajar kolej vokasional di Malaysia. Seramai 185 orang pelajar telah terlibat dalam kajian ini melalui kaedah persampelan rawak mudah dan melengkapkan soal selidik yang telah disahkan bagi mengukur persepsi sokongan autonomi, penilaian semula kognitif dan kesejahteraan subjektif. Data dianalisis menggunakan SPSS, merangkumi analisis kebolehpercayaan, Analisis Faktor Penerokaan (Exploratory Factor Analysis, EFA) untuk meneroka struktur faktor instrumen, serta analisis pengantaraan bagi menguji hubungan yang dihipotesiskan. Dapatan kajian menunjukkan bahawa persepsi sokongan autonomi merupakan peramal yang signifikan terhadap penilaian semula kognitif, yang seterusnya mempunyai hubungan positif dengan kesejahteraan subjektif. Analisis pengantaraan turut menunjukkan bahawa penilaian semula kognitif (CR) mengantara secara separa hubungan antara persepsi sokongan autonomi (PAS) dengan kesejahteraan subjektif (SWB). Dapatan ini menunjukkan bahawa persekitaran pembelajaran yang menyokong autonomi berpotensi meningkatkan kesejahteraan pelajar secara langsung dan secara tidak langsung melalui strategi pengawalan emosi. Penemuan ini menekankan kepentingan mewujudkan persekitaran pendidikan yang menyokong autonomi serta memupuk kemahiran pengawalan emosi yang adaptif dalam kalangan pelajar kolej vokasional. Dari sudut amalan, pendidik dan pembuat dasar disarankan untuk menyediakan peluang kepada pelajar membuat pilihan dan mengambil bahagian secara aktif dalam pembelajaran, di samping memberikan bimbingan tentang penggunaan strategi penilaian semula kognitif bagi menyokong kesejahteraan psikologi mereka. Kajian ini menyumbang kepada pemahaman tentang mekanisme psikologi yang menghubungkan sokongan autonomi, pengawalan emosi dan kesejahteraan, sekali gus menyediakan asas bagi pembangunan intervensi untuk meningkatkan kesihatan mental dan daya tahan psikologi pelajar kolej vokasional.

1.0 Introduction

In recent years, Malaysia's Technical and Vocational Education and Training (TVET) system has grown rapidly, emphasizing the development of students' skills and employability (Yasin, Othman, & Ahmad, 2024). At the same time, TVET students face considerable psychological challenges, including academic stress, social pressures, and career-related uncertainties. Surveys indicate that Malaysian vocational students report elevated levels of depression, anxiety, and stress, influenced by family environment, socioeconomic status, and parental education (Ahmad, Shahar, Aris, & Azhar, 2022). These findings highlight the importance of interventions that support mental health and emotion regulation among vocational students.

Cognitive reappraisal (CR) is a key emotion regulation strategy that allows individuals to reinterpret stressful situations to reduce negative emotions and enhance positive experiences (Gross, 1998). Previous research has shown that Malaysian TVET students who use CR report higher life satisfaction and better mental health (Zhang & Li, 2023). CR is closely linked to higher-order cognitive functions, such as cognitive flexibility and decision-making, which are crucial for students to cope with academic and social stress effectively (Schweizer & Blakemore, 2020; Cutuli, 2014). By applying CR, students can reinterpret academic setbacks and social challenges as opportunities for growth, thereby improving emotional resilience and subjective well-being.

Perceived autonomy support (PAS) from parents, peers, and teachers plays a

critical role in promoting students' autonomy, competence, and emotional resources, which can enhance well-being through emotion regulation mechanisms. Research indicates that students who perceive higher levels of autonomy support are more likely to use CR strategies and experience greater subjective well-being (Ryan & Deci, 2000; Ma, Yasin, & Othman, 2022; De France & Hollenstein, 2022). However, empirical studies examining the mediating role of cognitive reappraisal between PAS and subjective well-being among Malaysian vocational students are limited. Understanding these mechanisms is essential for developing targeted interventions that promote mental health and positive psychological outcomes in vocational education.

Therefore, the general objective of this study is to examine the mediating role of cognitive reappraisal in the relationship between perceived autonomy support and subjective well-being among Malaysian vocational college students. In line with this objective, the study seeks to answer the following research question (RQ):

RQ: Does cognitive reappraisal mediate the relationship between perceived autonomy support and subjective well-being among Malaysian vocational college students?

Based on the research objective and research question, four hypotheses are formulated to examine the relationships among the study variables and the mediating effect of cognitive reappraisal. Assuming that the study adopts a quantitative correlational research design, the following hypotheses are proposed:

H1: Perceived autonomy support is positively and significantly associated with subjective well-being among Malaysian vocational college students.

H2: Perceived autonomy support is positively and significantly associated with cognitive reappraisal among Malaysian vocational college students.

H3: Cognitive reappraisal is positively and significantly associated with subjective well-being among Malaysian vocational college students.

H4: Cognitive reappraisal mediates the relationship between perceived autonomy support and subjective well-being among Malaysian vocational college students.

These hypotheses provide a basis for examining both the direct relationships among the study variables and the indirect relationship between perceived autonomy support and subjective well-being through cognitive reappraisal.

2.0 Literature Review

Cognitive reappraisal (CR) is an emotion regulation strategy that involves altering one's interpretation of a situation to modify its emotional impact (Gross, 1998). As an antecedent-focused strategy, it influences emotional processing before emotions fully arise, thereby reducing negative affect and enhancing positive experiences (Gross, 1998). Compared to suppression, which only inhibits external emotional expression, CR reshapes the underlying cognitive appraisal of emotion-eliciting events, making it a more adaptive and effective regulatory approach (Ochsner & Gross, 2005).

CR plays a critical role in promoting subjective well-being (SWB) among adolescents and young adults. Students who effectively use reappraisal tend to reinterpret academic or personal challenges in a constructive manner, which strengthens emotional resilience and psychological adjustment (Brockman et al., 2023). SWB itself is a multidimensional construct comprising cognitive judgments (e.g., life satisfaction) and emotional experiences (balance of positive and negative affect) (Diener et al., 1985, 1999). High levels of SWB are associated with enhanced mental health, adaptive coping, and greater life satisfaction (Fredrickson, 2001; Dewi et al., 2021). Thus, CR and SWB together form an essential foundation for understanding psychological functioning and emotional resilience in educational settings.

2.1 Relevant Theories

Self-Determination Theory (SDT), proposed by Deci and Ryan (1985, 2000a), is an important theoretical framework for understanding individual motivation, psychological needs, and mental health. SDT emphasizes that human behavior is driven by three basic psychological needs: autonomy, competence, and relatedness. When these needs are met, individuals are more likely to exhibit autonomous behavior, positive emotions, and good mental health; conversely, unmet needs can lead to psychological stress, anxiety, and maladaptive behaviors (Ryan & Deci, 2000).

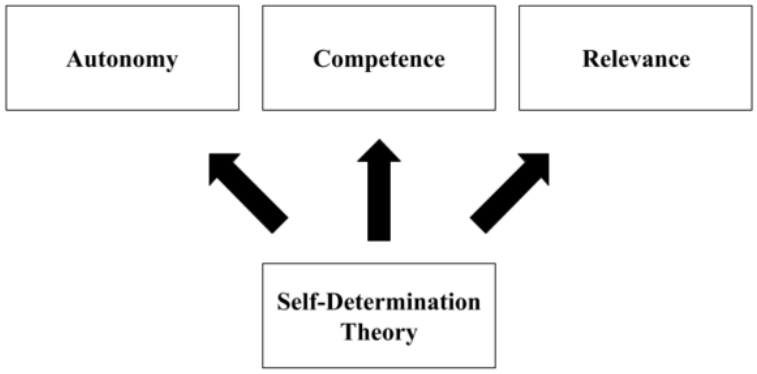


Figure 1. Self-determination theory (SDT) (Deci & Ryan, 2000)

Figure 1 illustrates the three basic psychological needs of SDT and their mechanisms of influence on individual behavior and mental health. Autonomy refers to an individual's freedom and sense of self-control in making behavioral choices; competence refers to an individual's confidence and sense of control when completing tasks or facing challenges; and relatedness reflects the support, recognition, and sense of belonging an individual receives in their social environment. These three needs interact and jointly influence an individual's motivation level and mental health.

In educational contexts, SDT emphasizes the influence of environmental factors on the fulfillment of students' psychological needs. Perceived Autonomy Support (PAS) from teachers and parents is a key factor. By encouraging choice, respecting interests, and reducing controlling behavior, teachers help students meet their needs for autonomy and competence, thereby improving learning motivation, classroom participation, and emotional well-being (Deci & Ryan, 1985; Reeve, 2009; Tang et al.,

2013). Similarly, parental support within the family that fosters independent decision-making and self-regulation can promote adolescents' psychological adaptability, emotional stability, and subjective well-being (Grolnick, 2003; Ku & Ahn, 2015; Joussemet et al., 2008).

SDT is also closely related to emotion regulation strategies. Theory suggests that when individuals' need for autonomy is met, they are more inclined to employ constructive emotion regulation methods, such as cognitive reappraisal (CR), which reduces negative emotions and enhances positive experiences by reinterpreting situations (Gross, 1998; Wang & Yin, 2023). In the context of vocational education, when students face academic pressure and career uncertainty, cognitive reappraisal not only helps with emotion management but also enhances subjective well-being (SWB) and psychological resilience (Brockman et al., 2023; Yan et al., 2023).

In summary, SDT provides a theoretical framework that links self-reliance support (PAS), cognitive reappraisal (CR), and subjective well-being (SWB), explaining the mechanisms by which vocational college students experience psychological needs fulfillment, emotion regulation, and overall well-being. This provides a solid theoretical foundation for studying the mediating role of cognitive reappraisal in the relationship between self-reliance support and subjective well-being.

3.0 Method

This study employed a quantitative correlational research design to examine the mediating role of cognitive reappraisal in the relationship between perceived autonomy support and subjective well-being among vocational college students in Malaysia. A total of 185 students from Malaysian vocational colleges participated in this study through simple random sampling. Data were collected using an online questionnaire while samples were recruited through such as vocational college coordinators, student groups, or institutional communication platforms in the participating vocational colleges. Before completing the questionnaire, samples were provided with information about the study's purpose, procedures, potential risks, confidentiality measures, and their rights as research participants. Informed consent was obtained electronically, and participation was entirely voluntary. Participants were informed that they could withdraw from the study without penalty. The questionnaire was administered anonymously, and no personally identifiable information was collected. Ethical approval for the study was obtained from university ethics committee (Approval No.: JKEUPM-2025-359) before data collection commenced. Where applicable, permission to conduct the study was also obtained from the relevant educational authorities and participating vocational college institutions. Following data collection, the responses were screened for completeness, duplicate submissions, missing data, and potentially invalid or inconsistent responses. The dataset was subsequently examined for outliers, normality, and the assumptions relevant to the planned statistical analyses. Only responses meeting the established data-quality criteria were retained for analysis. Data analysis was conducted using IBM SPSS Statistics 27.0 and AMOS 29.0., including reliability analysis, Exploratory Factor Analysis (EFA) to confirm the factor structure, and mediation analysis to test the hypothesised relationships.

3.1 Demographic Information

Table 1 shows that the respondents consisted of 40.54% (n = 75) male students and 59.46% (n = 110) female students. The sample involved students across three grade levels, with 55.14% (n = 102) from Grade 1, 29.19% (n = 54) from Grade 2, and 15.68% (n = 29) from Grade 3. A total of 185 students participated in this study.

Table 1. Demographic Profile of Students (n=185)

Demographic Variable	Profile	Frequency	Percentage (%)
Gender	Male	75	40.54
	Female	110	59.46
Grade	Grade 1 / First-year	102	55.14
	Grade 2 / Second-year	54	29.19
	Grade 3 / Third-year	29	15.68
Total		**185**	**100.00**

3.2 Reliability Analysis

The reliability of the instruments was assessed using Cronbach's α. As shown in Table 2, the Emotion Regulation Questionnaire (ERQ), consisting of a single factor, demonstrated good reliability (α = .904). The Autonomy Support Questionnaire (ASQ), which includes three dimensions: Parents, Friends, and School Peers, showed excellent reliability (α = .981). The Subjective Well-Being Scale (SWB), comprising three dimensions, Physical Health and Well-Being (PH), Psychological Health Well-being (PSH), and Relationship (R), also demonstrated excellent reliability (α = .957). These results indicate that all scales exhibited high internal consistency and were suitable for further analysis.

Table 2. Reliability Cronbach Alpha

Instrument	Dimensions	Cronbach's Alpha	No. of Items
Emotion Regulation Questionnaire (ERQ)	ERQ (1)	.904	6
Autonomy Support Questionnaire (ASQ)	Parents; Friends; School Peers (3)	.981	30
The Subjective Well-Being Scale (SWB)	PH; PSH; Relationship (3)	.957	23

4.0 Findings

This section presents the findings of the preliminary factor analysis and mediation analysis conducted to examine the relationships among perceived autonomy support (PAS), cognitive reappraisal (CR), and subjective well-being (SWB) among Malaysian vocational college students. First, Exploratory Factor Analysis (EFA) was performed to assess the suitability of the data and explore the factor structures of the instruments used to measure the three study variables. Subsequently, mediation analysis was conducted to investigate the direct and indirect relationships between perceived autonomy support and subjective well-being, with cognitive reappraisal serving as the proposed mediating variable. Bootstrapping was employed

to estimate the indirect effect and its 95% confidence interval. The following sections present the results of these analyses in relation to the research objective and hypotheses.

4.1 Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) was conducted to assess the factor structure of each instrument. The Kaiser-Meyer-Olkin (KMO) values and Bartlett's Test of Sphericity confirmed the suitability of the data for factor analysis. As shown in Table 3, for the Emotion Regulation Questionnaire (ERQ), KMO = 0.895 and Bartlett's $\chi^2(15) = 718.452$, $p < .001$, with a single factor extracted. The Autonomy Support Questionnaire (ASQ) had KMO = 0.960 and Bartlett's $\chi^2(435) = 8517.322$, $p < .001$, with three factors extracted. The Subjective Well-Being Scale (SWB) had KMO = 0.949 and Bartlett's $\chi^2(253) = 3313.043$, $p < .001$, also with three factors extracted. These results indicate that all instruments had a valid factor structure suitable for further analysis.

Table 3. Exploratory Factor Analysis Results for the Study Instruments

Instrument	KMO Value	Barlett's test of Sphercity	No. of Factors Extracted
Emotion Regulation Questionnaire (ERQ)	.895	$\chi^2(15) = 718.452$, $p < .001$	1
Autonomy Support Questionnaire (ASQ)	.960	$\chi^2(435) = 8517.322$, $p < .001$	3
The Subjective Well-Being Scale (SWB)	.949	$\chi^2(253) = 3313.043$, $p < .001$	3

The results of the Exploratory Factor Analysis (EFA) indicate that the data for all three instruments were suitable for factor analysis. The Kaiser-Meyer-Olkin (KMO) values ranged from .895 to .960, exceeding the commonly recommended threshold of .60 and indicating adequate to excellent sampling adequacy. Bartlett's Test of Sphericity was statistically significant for all three instruments ($p < .001$), suggesting that the correlation matrices were significantly different from identity matrices and that the items had sufficient intercorrelations to proceed with factor analysis.

4.2 Mediation Analysis

Mediation analysis was conducted to examine whether the relationship between perceived autonomy support (ASQ) and subjective well-being (SWB) was mediated by cognitive reappraisal (ERQ). The total effect of ASQ on SWB was significant (B = 0.503, β = 0.638, $p < 0.001$). Path a showed that ASQ significantly predicted ERQ (B = 0.584, β = 0.495, $p < 0.001$), and path b indicated that ERQ significantly predicted SWB (B = 0.379, β = 0.568, $p < 0.001$). The direct effect of ASQ on SWB after controlling for CR remained significant ($c' = 0.282$, β = 0.282, SE = 0.040, $p < .01$). The indirect effect through CR was also statistically significant ($a \times b = 0.221$, β = 0.282, SE = 0.035, $p < .001$).

Critically, a 95% bootstrap confidence interval (CI) for the indirect effect, based

on 5000 resamples, ranged from 0.154 to 0.290. This interval is both positive and does not include zero, providing strong evidence that the mediation effect is statistically reliable. Under resampling procedures, this means that across 5000 replicated datasets generated by randomly sampling with replacement from the original data, 95% of the estimated indirect effects fell between 0.154 and 0.290.

Using a large number of bootstrap samples (e.g., 5000) is recommended to ensure stable, bias-corrected, and high-precision estimates, particularly because indirect effects typically have a non-normal sampling distribution (MacKinnon et al., 2004). Compared to traditional methods such as the Sobel test, the bootstrap CI is more accurate and more powerful for detecting mediation effects (Preacher & Hayes, 2008; Hayes, 2018). Together, these findings indicate partial mediation: perceived autonomy support predicts greater cognitive reappraisal, which in turn enhances subjective well-being. These outcomes are presented in Figure 2 and Table 4.

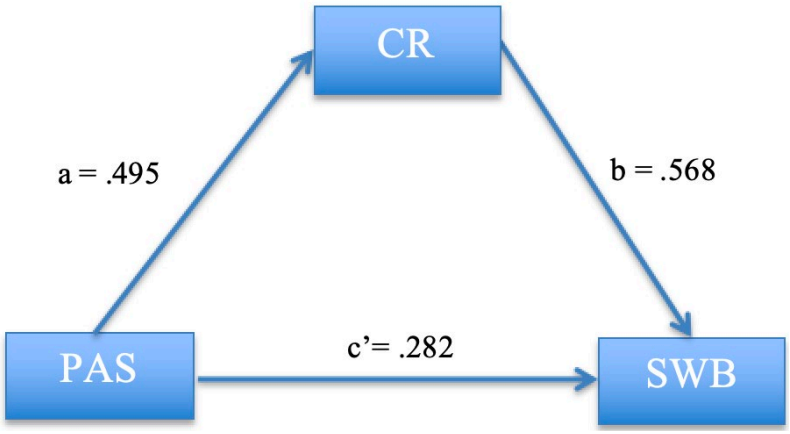


Figure 2. Standardized Path Coefficients of the Mediation Model Between Perceived Autonomy Support (PAS), Cognitive Reappraisal (CR), and Subjective Well-Being (SWB)

The direct effect of ASQ on SWB controlling for ERQ was significant (c′ = 0.282), and the indirect effect was calculated as a × b = 0.221, indicating that ERQ partially mediates the relationship between ASQ and SWB. These findings suggest that higher perceived autonomy support is associated with greater cognitive reappraisal, which in turn enhances subjective well-being. (As illustrated in Figure 2 and summarized in Table 4)

Table 4. Mediation Analysis

Path	B	Beta	SE	P	95% CI (Bootstrap, 5000 samples)
PAS→ CR (a)	0.584	0.495	0.046	.000 < .001	0.494, 0.676
CR → SWB (b)	0.379	0.568	0.042	.000 < .001	0.296, 0.462
PAS → SWB (c′, direct)	0.282	0.282	0.040	.000 < .001	0.203, 0.361
PAS → SWB (c, total)	0.503	0.638	0.045	.000 < .001	0.415, 0.691
Std. Indirect Effect (SIE)					
PAS → CR → SWB (a × b, indirect)	0.221	0.282	0.035	.000 < .001	0.154, 0.290

Overall, the mediation analysis suggests that cognitive reappraisal mediates the relationship between perceived autonomy support (PAS) and subjective well-being (SWB) among Malaysian vocational college students. Perceived autonomy support was positively associated with cognitive reappraisal (\(B = 0.584, p < .001\)), while cognitive reappraisal was positively associated with subjective well-being (\(B = 0.379, p < .001\)). The direct effect of perceived autonomy support on subjective well-being remained significant after accounting for cognitive reappraisal (\(B = 0.282, p < .001\)), while the indirect effect through cognitive reappraisal was also significant (\(B = 0.221\), 95% bootstrap CI [0.154, 0.290]). These findings suggest that cognitive reappraisal partially mediates the relationship between perceived autonomy support and subjective well-being. However, the standardised total-effect coefficient and its confidence interval should be verified against the original statistical output before the final interpretation is confirmed.

5.0 Discussion

This study examined the mediating role of cognitive reappraisal (CR) in the relationship between perceived autonomy support (PAS) and subjective well-being (SWB) among Malaysian vocational college students. The results indicated that PAS positively predicts CR, and CR, in turn, significantly enhances SWB. Mediation analysis showed a significant indirect effect ($a \times b = 0.221$, 95% CI [0.154, 0.290]), confirming that CR partially mediates the relationship between PAS and SWB. These findings suggest that students who perceive higher levels of autonomy support are more likely to employ adaptive emotion regulation strategies, which subsequently contribute to greater well-being.

These results are consistent with prior research showing that autonomy-supportive environments foster internal resources that improve students' resilience and emotional adjustment (Ryan & Deci, 2017; Gross, 2015). Specifically, PAS may enable vocational students—who often face academic pressures and transitional challenges—to reinterpret stressful situations more positively, promoting psychological well-being (Ochsner & Gross, 2005; Brockman et al., 2023).

Overall, the findings underscore the educational importance of fostering autonomy-supportive practices and providing guidance in cognitive reappraisal to enhance students' emotional coping and well-being. However, the reliance on self-reported measures and the limited sample size may constrain the generalizability of the results. Future research could address these limitations by including larger and more diverse samples, collecting data from multiple sources, and examining additional mediators such as competence satisfaction or self-efficacy, which have been identified as important mechanisms in motivation and well-being (Vansteenkiste & Ryan, 2013).

6.0 Conclusion

This study contributes to understanding the psychological mechanisms linking perceived autonomy support, cognitive reappraisal, and subjective well-being in vocational education. By demonstrating that CR partially mediates the relationship between PAS and SWB, the findings provide empirical evidence on how supportive

learning environments can enhance students' emotional regulation and overall well-being.

The results have practical implications for educators and policymakers. Specifically, promoting autonomy-supportive practices and incorporating cognitive reappraisal guidance into vocational education can strengthen students' emotional resilience and mental health. Future research could further explore these relationships by expanding sample diversity, incorporating multiple data sources, and investigating additional mediating variables to better understand the mechanisms that support students' psychological functioning in vocational contexts.

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8.0 Conflict of Interest Statement:

The authors declare that there is no conflict of interest regarding the publication of this article.

9.0 Research and Publication Ethics Statement:

The authors confirm that this study was conducted in accordance with relevant research ethics principles. Participation was voluntary, and informed consent was obtained from all participants. Confidentiality and participant privacy were maintained throughout the research process. The authors further confirm that the manuscript is original and complies with established standards of publication ethics.

10.0 Author Contributions:

All authors contributed to the conception, design, and development of this study. They participated in data collection, analysis, manuscript preparation, and revision. All authors have read and approved the final version of the manuscript.

11.0 Data Availability Statement:

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

12.0 Supplementary Materials:

No supplementary materials are associated with this article.

13.0 AI Disclosure Statement:

The authors declare that no generative Artificial Intelligence (AI) or AI-assisted technologies were substantively used in the preparation of this manuscript.

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15.0 References

Ahmad, N., Shahar, S., Aris, T., & Azhar, M. (2022). Depression, anxiety, and stress among Malaysian TVET students during online learning: A cross-sectional study. *Asian Journal of Education and Training, 8*(3), 91–99.

Brockman, R., Ciarrochi, J., & Kashdan, T. B. (2023). Emotion regulation strategies and subjective well-being in adolescents: The role of cognitive reappraisal. *Journal of Positive Psychology, 18*(2), 145–158.

Cutuli, D. (2014). Cognitive reappraisal and expressive suppression strategies role in the emotion regulation: An overview on their modulatory effects and neural correlates. *Frontiers in Systems Neuroscience, 8*, 175. https://doi.org/10.3389/fnsys.2014.00175

De France, K., & Hollenstein, T. (2022). Emotion regulation and autonomy support: A developmental systems perspective. *Developmental Psychology, 58*(2), 243–256. https://doi.org/10.1037/dev0001304

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Springer.

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*(4), 227–268.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment, 49*(1), 71–75.

Diener, E., Suh, E., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*(2), 276–302.

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*(3), 218–226.

Grolnick, W. S. (2003). *The psychology of parental control: How well-meant parenting backfires*. Lawrence Erlbaum Associates.

Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*(3), 271–299. https://doi.org/10.1037/1089-2680.2.3.271

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach (2nd ed.).* Guilford Press.

Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: A self-determination theory perspective. *Journal of Educational Psychology, 102*(3), 588–600.

Joussemet, M., Landry, R., & Koestner, R. (2008). A self-determination theory perspective on parenting. *Canadian Psychology, 49*(3), 194–200.

Ku, C., & Ahn, H. (2015). The influence of parental autonomy support on adolescents' psychological well-being: A cross-cultural study. *Journal of Child and Family Studies, 24*(9), 2849–2861.

Ma, H., Yasin, R. M., & Othman, N. (2022). Perceived autonomy support and well-being among Malaysian vocational students. *Malaysian Journal of Learning and Instruction, 19*(1), 115–136.

MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research, 39*(1), 99–128.

Ochsner, K. N., & Gross, J. J. (2005). The cognitive control of emotion. *Trends in Cognitive Sciences, 9*(5), 242–249.

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*(3), 879–891.

Reeve, J. (2009). Why teachers adopt a controlling motivating style: A self-determination theory explanation. *Educational Psychologist, 44*(3), 159–175.

Reeve, J. (2012). A self-determination theory perspective on student engagement. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 149–172). Springer.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

Ryan, R. M., & Deci, E. L. (2002). Overview of self-determination theory: An organismic-dialectical perspective. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3–33). University of Rochester Press.

Schweizer, S., & Blakemore, S.-J. (2020). The development of emotion regulation: Neural mechanisms and implications for education. *Nature Reviews Neuroscience, 21*(9), 537–550. https://doi.org/10.1038/s41583-020-0340-2

Tang, M., Wang, L., & Cheng, C. (2013). Teacher autonomy support and student engagement in learning activities: A cross-cultural study. *Asia-Pacific Education Researcher, 22*(3), 367–375.

Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration, 23*(3), 263–280.

Yasin, R. M., Othman, N., & Ahmad, N. (2024). The strategic role of TVET in Malaysia: Enhancing future employability. *Journal of Technical Education and Training, 16*(1), 1–14.

Zhang, X., & Li, J. (2023). Cognitive reappraisal and life satisfaction among Malaysian university students: The mediating role of emotion regulation. *Asian Journal of Education and Social Studies, 42*(2), 45–58.