Efficacy of school-based career guidance interventions: A review of recent research

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Abstract

This paper aims to examine the impacts of career guidance interventions on school students' career-related skills, knowledge and beliefs by combining relevant empirical studies conducted in the last 10 years. A random-effects meta-analytic technique was employed for this purpose. After screening, electronic databases using pre-defined eligibility criteria, nine studies involving a total of 1,433 participants were included in the final meta-analysis. The analysis yielded a weighted mean effect size of 0.42 (95% confidence interval = 0.19, 0.65; $z = 3.61$, $p < 0.01$) which may be construed as a moderate-to-high effect size with a significant difference between the treatment and control conditions at post-treatment. As a result, post-test career-related outcomes in students who received career guidance were significantly higher than in non-guidance groups. The results suggest that career interventions may provide some modest developmental progression in school-age children and adolescents particularly through improving learners' career decidedness and attitudes such as future time perspective. These findings might have strategic implications for policy and practice. This paper extends past research on career guidance effectiveness by identifying the combined effect size of relevant career interventions.

Keywords: Career, Decision-making, Education, Meta-analysis, School, Self-efficacy.

Contents

Contribution of this paper to the literature
There has been no other research screening the academic papers published over the last decade to find out the overall impact of career interventions on school students' career-related indicators.

1. Introduction

Career planning is an important task for young people because it influences their future social adaptation and well-being. The choice of profession is one of the issues that should be emphasised in planning one's life. The complexity of the career selection and the need to reconcile one's personal traits with the characteristics of a profession make the career decision-making process enigmatic. Career guidance is aimed at helping individuals make educational, training and occupational choices as well as manage their careers. Watts (2013) defines career education as group activities designed to assist learners in acquiring competencies essential for career development, career counselling activities focused on individuals' career issues and career information addressing courses, occupations and career paths.

The concept of career guidance emerged during a phase of fast social and economic upheaval, when the social reform movement aimed to provide vocational counselling to help those from underprivileged backgrounds. Social justice has been a central component of career guidance. The global social and labour markets are changing globally (Zainil, Kenedi, Indrawati, & Handrianto, 2023). Attention has now turned to topics such as fair employment as well as the concept of job within the framework of technological advancement (Ananda, Rafida, & Mardhatillah, 2023; Gutiérrez-Santiuste, García-Segura, Olivares-García, & González-Alfaya, 2022; McMahon & Watson, 2020; Siagian, Ibrahim, & Supardi, 2023). Students and employees are facing more pressure than ever (Tham, Thuc, Phuong, & Giang, 2022) as they have to reassess their professional lives and make critical career decisions due to the massive shifts in the workplace (Maree, 2020). Evidence suggests that youths' environmental experiences throughout their school predetermine their future career path (Benson & Owens, 2022; Ekmekci & Serrano, 2022; Reed, Kaplita, McKenzie, & Jones, 2022). Young learners can be aided to facilitate their learning achievement, self-concept and interactional development enabling them to make essential life-changing decisions (Sim-Sim et al., 2022). It may be achieved by helping them build their long-term goals and consolidate career-related knowledge (Maree & Maree, 2021). This underlines how vital it is to offer youths such fundamental direction and assistance as soon as possible in order to improve their lives. One of the pillars that normally bears this burden is education (Alfares, 2021; Mamba et al., 2021; Tabor, Larsen, & Oberle, 2022).

Students are often unsure about making career decisions. There are numerous reasons for career indecision. For example, learners' abilities may not be in line with their interests or they may believe they have the opportunity to self-realise in more than one field. However, the lack of self-knowledge or difficulties in clarifying one's preferences are likely to be noteworthy reasons for career indecision (Dozier, Morgan, Burbrink, & Peace, 2022). Furthermore, it is argued that individuals who are left on their own in a decision-making situation often have self-confidence problems and need the approval of others so occupational guidance is crucial (Wilmot & Ones, 2021).

The ability to make appropriate career decisions is one of the 21st-century skills (Dinu et al., 2022; Dube & Hlalele, 2018; Krelová, Berková, Krpálek, & Kubisová, 2021; Tham et al., 2022; Zotova, Likhouzova, Shegai, & Korobeynikova, 2021), occupational market and career guidance environment (Drosos, Theodoroulakis, Antoniou, & Rajter, 2021). Career guidance promotes students' career-related performance. According to Chiesa, Massei, and Guglielmi (2016), probing into career interventions is beneficial for national guidance systems since it informs policymakers regarding the expediency of the infusion of funds while allowing guidance practitioners to reflect on the efficacy of their contribution.

1.1. Why this Study is Important

Earlier literature reviews on recent career guidance outcomes have included career interventions across the entire life-span from childhood to adulthood (Whiston, Li, Goodrich Mitts, & Wright, 2017) or addressed the effectiveness of career interventions for university or graduate students (Langher, Nannini, & Caputo, 2018) whereas we could not find a study providing a synthesis of how effective career interventions carried out over the last 10 years are for school students' career-related outcomes. This investigation might thus contribute to the existing literature on the topic by yielding some summarised evidence.

1.2. Study Objectives

The present study seeks to assess the effectiveness of career guidance interventions for school students by investigating relevant experimental and quasi-experimental studies from the last 10 years. We hypothesised that children and adolescents who participated in career guidance interventions would report better career-related outcomes in comparison with those who did not.

2. Methods

2.1. Information Sources and Search Strategy

For the present study, research was conducted targeting eligible articles published in peer-reviewed academic journals from 2011 to 2022 using Science Direct and Academic Search Ultimate. The literature search included combinations of the following keywords: career, guidance, intervention and school.

2.2. Evaluating the Literature Using Inclusion Criteria

After a preliminary research of the literature, a total of 4,070 records were retrieved. The titles and keywords of potentially relevant papers were analyzed for inclusion in accordance with the following eligibility criteria: (a) school settings with school students as participants; (b) either a randomized or quasi-experimental research design adopted; (c) data sufficient for computing an effect size (Hedge's g)

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provided; (d) primary research reported (not reviews and alike). The reference lists of the literature reviews were screened for inclusion as well. A total of 25 papers remained for full-text inspection which resulted in the selection of nine studies that met the aforementioned conditions and were subjected to data extraction for descriptive analysis.

2.3. Data Synthesis

Given the diversity in outcome measurement instruments and interventions across the collected studies, we performed a random-effects meta-analysis to organise and quantify the studies using typical steps. That is, the weighted mean Hedge's g and standard deviation were computed (Core Team, 2023) based on the posttest mean scores and standard deviations. If there were more than one outcome of interest in a study, the means were calculated. The effect sizes were construed in an educational context in the manner suggested by Hillman et al. (2020), i.e., standardised effect sizes were low (0.05), moderate (0.19), high (0.45) and very high (0.70). Significance was declared at $p < 0.05$ for all analyses. Taking into account the common recommendation to include 10 studies for each covariate within meta-regression (Spineli & Pandis, 2020), the moderator analysis was not applied in order to avoid speculative conclusions. Between-study heterogeneity was tested using the I^2 index as well as Kendall's tau and chi-squared tests. Heterogeneity was categorised as unimportant, moderate and substantial for I^2 of 0-25%, 26-50%, and 51-99%, respectively (100% is impossible). Publication bias was assessed by visual inspection of the normal quantile plot generated in Meta-Essentials (Suurmond, van Rhee, & Hak, 2017).

3. Results

The literature research and selection yielded nine eligible papers evaluating the effectiveness of career interventions that were executed in the school setting in the period between 2011 and 2021 (Table 1). The final corpus accounted for a total of n = 1,433 participants. It can be seen that there were mostly mixed results.

Table 1. Key characteristics of the interventions.

Study, country	Population	Intervention	Measure	g	Results
Di Fabio and Kenny (2011) Italy	High school students (n = 48; mean age = 18.23 years)	A training program (Four weekly 2.5-hour sessions) aimed to improve learners' emotional intelligence.	Mayer-Salovey-Caruso emotional intelligence test Emotional intelligence scale Indecisiveness scale Career decision difficulties Questionnaire	1.33 0.53 -0.07 -0.48	Improvements in most subscales.
Ferrari, Nota, and Soresi (2012) Italy	High school students (n = 624; mean age = 16.26 years)	A structured 10-didactic unit intervention (Ten weekly 2-hour meetings) aimed to promote learners' future time perspective (person's orientation towards the future), help them learn more about the current world of work and elevate their career determination.	Long- term personal direction scale Achievability of future goals scale Hope scale Ideas and attitudes on school-career future: high school version (Only the 1st factor, level of decision and assurance related to one's school-career future)	0.98 0.46 0.97 0.86	Greater sense of continuity as well as higher levels of career decidedness and hope as compared to controls.
Miles and Naidoo (2017) South Africa	High school students (n = 222; mean age = 16.36 years)	A career development program (Six 1.5-hour sessions) aimed to inform participants of the world of work, provide occupational information, and enhance learners' self-efficacy in goal selection and facilitate vocational planning.	Career decision-making self-efficacy scale – short form	0.27	Career decision-making self-efficacy improved significantly.
Nota, Santilli, and Soresi (2016) Italy	Middle school students (n = 200; mean age = 13 years)	An online career intervention (Three 2-hour sessions) aimed to advance learners' goals of life design particularly by fostering career goal setting and planning including educational pathways and occupational	Career and education decision status scale Locus of control subscale of the ideas and attitudes on school-career future (Middle	0.65 0.55	higher levels of career adaptability and life satisfaction compared to the traditional intervention group.

Study, country	Population	Intervention	Measure	*g*	Results
		possibilities.	school version) Career adaptabilities scale Italian form Satisfaction with life scale	0.75 0.38	
Glessner, Rockinson-Szapkiw, and Lopez (2017) USA	Eighth grade students (n = 173; age not specified)	A 4-day intervention including virtual career exploration activities aimed to increase learners' skills and knowledge about college and career entry and success culminating in a local college campus tour to encourage college enrollment.	College-Going self-efficacy scale Career decision-making self-efficacy scale (Short form)	0.75 0.52	Higher levels of college and career self-efficacy than controls.
Cerrito, Trusty, and Behun (2018) USA	Elementary students (n = 122; mean age = 10 years)	The Kuder Galaxy Program, an online career program designed for children to let them look into their career interests and learn more about themselves through games, videos, songs, etc., incorporated into four 45-minute weekly lessons.	Four subscales of the childhood career development scale: - Information - Curiosity and exploration Interests Locus of control	-0.12 0.20 -0.25 -0.20	Information subscale scores improved significantly.
Babarovic, Devic, and Blazev (2020) Croatia	Eighth-grade students (n = 276, mean age not specified)	A career development school program including eight 45-minute group workshops aimed at helping school students better understand their interests, skills, work values, and learn more about the labour market and secondary schools as well as improve career planning and decision making.	Career decision-making self-efficacy scale Short form Career decision-making difficulties questionnaire Career readiness scale	-0.07 0.08 0.13	Career readiness and career decision-making independence improved along with the shortage of career information.
Gu, Tang, Chen, and Montgomery (2020) China	High school students (n = 413; mean age = 16.6 years)	A 3-month career counseling intervention geared towards fostering learners' self-exploration as well as understanding the work environment and the process of making a career decision.	Major decision-making self-efficacy scale Career decision-making difficulties questionnaire Chinese version	-0.25 0.12	Self-efficacy, self-appraisal and problem solving improved significantly improved in career decision making. Regarding career decision-making difficulty, the lack of preparation and inconsistent information subscales significantly improved.
Gulsen, Secim, and Savickas (2021) Cyprus	High school students (n = 80; mean age = 14.25 years)	A psychoeducational course (Five 60-75-minute sessions) aimed to foster learners' key career construction processes, including self-exploration, career adaptability, future orientation, narrative identity and life satisfaction.	- Design my future scale Career adapt-Abilities scale Short form career adaptability scale. Satisfaction with life scale Belief-in-your-dreams item	1.07 0.69 0.97 0.91	Significant increases in scores on all measures.

Six of these studies used random assignment of participants to treatment and comparison groups (Cerrito et al., 2018; Di Fabio & Kenny, 2011; Ferrari et al., 2012; Glessner et al., 2017; Gu et al., 2020; Gulsen et al., 2021) whereas three had a quasi-experimental design implying no random allocation (Babarovic et al., 2020; Miles & Naidoo, 2017; Nota et al., 2016). As for the theoretical models underlying the interventions, Di Fabio and Kenny (2011) relied upon Mayer and Salovey's emotional intelligence model. Ferrari et al. (2012) used Janis and Mann's

theory of decisional conflict and Krumboltz's theory of planned happenstance. Miles and Naidoo (2017) referred to Bandura's social cognitive career theory. The intervention described by Gu et al. (2020) was based on Taylor and Betz's concept of career decision self-efficacy. Gulsen et al. (2021) applied Savickas' career construction theory. Glessner et al. (2017) used Bandura's self-efficacy theory and Lent's social cognitive career theory. In three studies (Babarovic et al., 2020; Cerrito et al., 2018; Nota et al., 2016), the theoretical background was not obviously specified. The number of assessed outcomes ranged from one to four per study. Most frequently measured were career decision-making efficacy and career decision-making difficulties.

In Figure 1, a random-effects meta-analysis of the nine interventions attempting to improve career-related skills, knowledge and beliefs in school-aged students resulted in a combined effect size of 0.42 (95% confidence interval = 0.19, 0.65; z = 3.61, p < 0.01) which can be interpreted as a moderate to high effect size with a significant difference between the treatment and control conditions at post-treatment. Based on these measures, post-test career-related outcomes in the treatment groups were significantly higher as opposed to those recorded in the comparison groups.
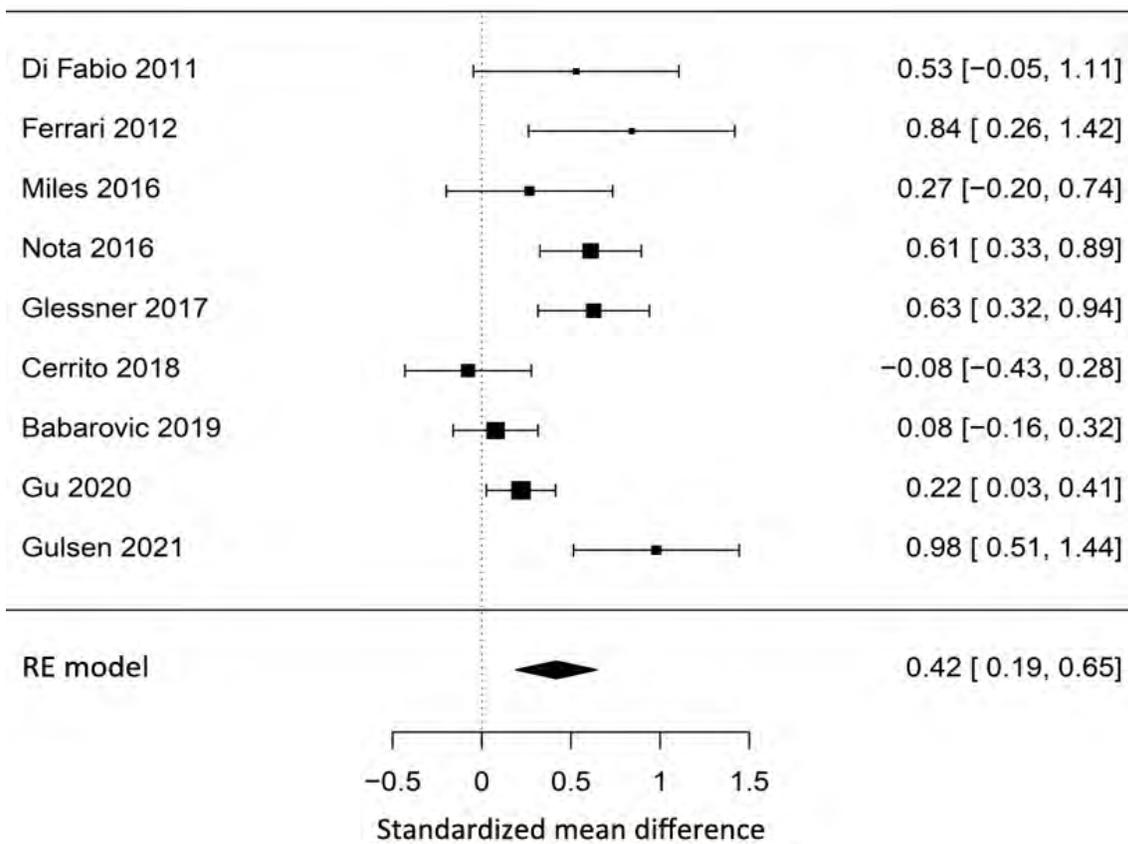

Figure 1. Forest plot of the effect sizes. RE = random effects.

Substantial heterogeneity across the studies was revealed (Tau² = 0.073; Chi² = 28.79, df = 8 (p < 0.01); I² = 72%). With respect to publication bias, the normal quantile plot in Figure 2 suggests that data points are approximately normally distributed. The obtained results thus support our hypothesis postulated in the introduction section.
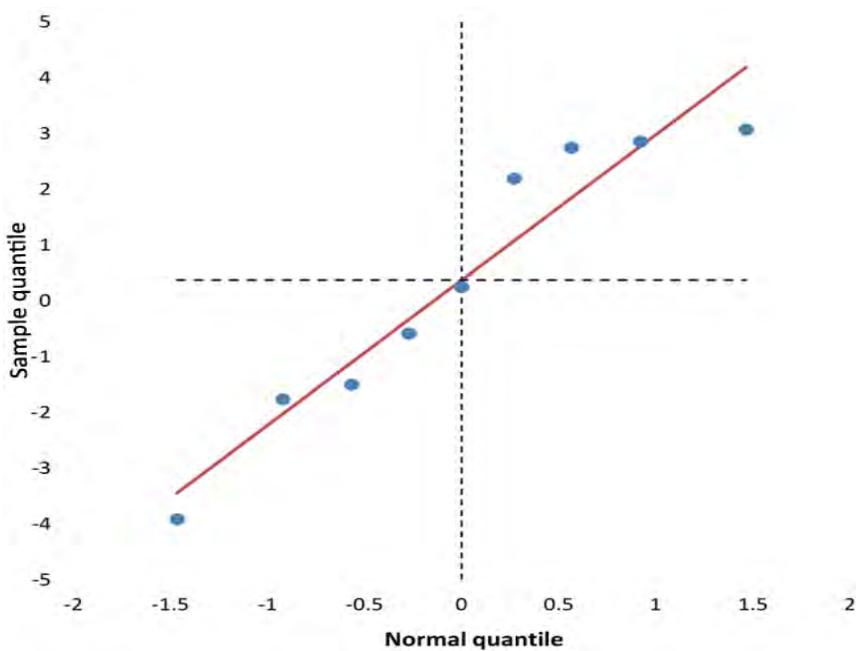

Figure 2. Normal quantile plot of the effect sizes

4. Discussion

The findings from this analysis have important implications for policy and practice. It provides some evidence that career guidance interventions can positively influence students' career development skills primarily through

bolstering learners' career decisions and attitudes such as future time perspective which can be understood as one's current envisaging of future events and goals in present time. Researchers (Dreves & Blackhart, 2019; Park, Rie, Kim, & Park, 2020; Phan, Ngu, & McQueen, 2020) claim a deep timespan into the future may contribute to an individual's performance outcomes by positively affecting his or her motivational goal-setting processes so that the person becomes more purposeful and self-regulated. At the same time, Galliott (2017) refers to empirical research data and advocates the fallacy of focusing on the conscientiousness and self-efficacy of young people when making career decisions as they are strongly influenced by environmental factors and personality variables (for instance, internal locus of control). They are in fact not acting on their own behalf so that decisions regarding career paths for children and adolescents are inevitably dictated to a large extent by emotional distractions and can hardly be completely weighted. A cross-sectional investigation (Paixão & Gamboa, 2017) indicated strong support for the substantial role of individual factors within the motivational functioning field in a person's career development processes in the sense that students' career exploration behaviours and career indecision levels varied depending on whether they were self-determined, non-self-determined or externally regulated learners according to their motivational profiles.

One of the variables measured in this analysis is students' beliefs. Those motivational beliefs encompass exploratory behavior, i.e., judging the difficulty and value of subject-specific and interdisciplinary tasks (Lazarides & Lauermann, 2019). Beliefs influence specific performance as well as educational and career decisions (Karlsson & Noela, 2022). General and specific expectations of self-efficacy form beliefs crucial for school-to-university and school-to-work transitions (Findeisen, Jüttler, Neuenschwander, & Schumann, 2022; Fuchs, Sonnert, Scott, Sadler, & Chen, 2022). This instantiates the need for differential career intervention practices whereas convenience sampling is often used in educational research.

There are various factors that can affect students' decisions about their future including their peer group, school, social and economic context etc. Similarly, family plays a fundamental role in building the students 'academic and occupational pathways. Guidance in career development must therefore take into consideration the aforementioned variables because they can influence the design and composition of each person's life. The educational community and professionals play an essential role so that students from an early age, design their life projects that allow them to achieve an integral development as a person and enable them to put into action their strengths and abilities. Thus, the career guidance programmes implemented in schools must represent constant processes of accompaniment and mediation that require school students to play an active role in the construction and development of their lives and careers. The decisions students make while in school such as what classes to take, extracurricular activities to participate in and which post-secondary education options to pursue can be consequential for their future career opportunities and success. Additionally, in post-secondary education, students' selection can also have a momentous impact on their career prospects. Therefore, it is important for students to make decisions about their education and future careers. When career guidance is addressed to youth, the aim is to encourage them towards learning so that they can manage their skills and competences and decide whether to continue their academic training or to join occupations. Hence, career guidance must recognise a range of such elements as learners' goals, aspirations, personal values and so forth.

Relevant research on how career interventions impact school-aged children and youth covering the period from 2011 to 2021. More specifically, the meta-analytic review (Whiston et al., 2017) was intended to synthesize all available empirical evidence on the effectiveness of career choice interventions. Having processed 57 works including grey literature representing the period between 1996 and 2015, the authors eventually computed a summary mean Cohen's d equal to 0.35. Nevertheless, the weighted average pertains primarily to college students who comprised about half of the analyzed sample approximately 30 percent of the included papers had school students as participants. Seven of the studies examined had not been included in similar reviews undertaken earlier primarily because they were published after those reviews were completed.

Regarding limitations, the review of literature presented fewer interventions that were considerably different in terms of applied instruments (from online sessions to a college campus visit) and curricula. Therefore, it is hard to draw distinct conclusions concerning which of them has the most or the least potential for facilitating career-related outcomes.

5. Conclusion

This study indicates that there is evidence pointing to the overall effectiveness of various career development programs for school-aged children and adolescents. There is still work to be done in terms of establishing the characteristics of interventions that are conducive to their effectiveness and analyzing the characteristics of participants who are the most susceptible to the interventions. However, the findings extend past research on career intervention effectiveness by identifying a weighted mean effect size. There were not an adequate number of studies that used the same approach so it was impossible to perform a direct comparison of their effects. This study thus gets at the issue of the heterogeneity in effect sizes stemming from a diverse set of interventions with diverse outcomes. In this regard, the generalisability of these findings is in question. It is therefore, imperative to conduct and publish more appropriate control studies that employ robust experimental approaches to ascertain whether career guidance interventions may propel career-related outcomes in school students.

References

Alfares, N. (2021). The effect of problem-based learning on students problem-solving self-efficacy through blackboard system in higher education. *International Journal of Education and Practice, 9*(1), 185–200. https://doi.org/10.18488/journal.61.2021.91.185.200

Ananda, R., Rafida, T., & Mardhatillah. (2023). The guidance website: Internet strategy implementation at the university in industrial 4.0 content. *International Journal of Innovative Research and Scientific Studies, 6*(2), 227–234. https://doi.org/10.53894/ijirss.v6i2.1242

Babarovic, T., Devic, I., & Blazev, M. (2020). The effects of middle-school career intervention on students' career readiness. *International Journal for Educational and Vocational Guidance, 20*(2), 429-450. https://doi.org/10.1007/s10775-019-09411-5

Benson, K. E., & Owens, L. Z. (2022). Unpacking the shortcomings of "college and career readiness" as an educative approach in urban schools as preparation for tomorrow's economy. *Education Sciences, 12*(5), 1-15. https://doi.org/10.3390/educsci12050357

Cerrito, J. A., Trusty, J., & Behun, R. J. (2018). Comparing web-based and traditional career interventions with elementary students: An experimental study. *The Career Development Quarterly, 66*(4), 286-299. https://doi.org/10.1002/cdq.12151

Chiesa, R., Massei, F., & Guglielmi, D. (2016). Career decision-making self-efficacy change in Italian high school students. *Journal of Counseling & Development, 94*(2), 210-224. https://doi.org/10.1002/jcad.12077

Core Team, R. (2023). *R: A language and environment for statistical computing*. Retrieved from https://www.R-project.org

Di Fabio, A., & Kenny, M. E. (2011). Promoting emotional intelligence and career decision making among Italian high school students. *Journal of Career Assessment, 19*(1), 21-34. https://doi.org/10.1177/1069072710382530

Dinu, L. M., Baykoca, A., Dommett, E. J., Mehta, K. J., Everett, S., Foster, J. L., & Byrom, N. C. (2022). Student perceptions of online education during COVID-19 lockdowns: Direct and indirect effects on learning. *Education Sciences, 12*(11), 1-16. https://doi.org/10.3390/educsci12110813

Dozier, V. C., Morgan, M., Burbrink, I., & Peace, C. (2022). Standardized career course curriculum: Effects on negative career thoughts. *The Career Development Quarterly, 70*(4), 314-326. https://doi.org/10.1002/cdq.12305

Dreves, P. A., & Blackhart, G. C. (2019). Thinking into the future: How a future time perspective improves self-control. *Personality and Individual Differences, 149*, 141-151. https://doi.org/10.1016/j.paid.2019.05.049

Drosos, N., Theodoroulakis, M., Antoniou, A. S., & Rajter, I. C. E. (2021). Career services in the post-COVID-19 era: A paradigm for career counseling unemployed individuals. *Journal of Employment Counseling, 58*(1), 36-48.

Dube, B., & Hlalele, D. (2018). Engaging critical emancipatory research as an alternative to mitigate school violence in South Africa. *Educational Research for Social Change, 7*(2), 74-86. https://doi.org/10.17159/2221-4070/2018/v7i2a5

Ekmekci, A., & Serrano, D. M. (2022). The impact of teacher quality on student motivation, achievement, and persistence in science and mathematics. *Education Sciences, 12*(10), 1-21. https://doi.org/10.3390/educsci12100649

Ferrari, L., Nota, L., & Soresi, S. (2012). Evaluation of an intervention to foster time perspective and career decidedness in a group of Italian adolescents. *The Career Development Quarterly, 60*(1), 82-96. https://doi.org/10.1002/j.2161-0045.2012.00007.x

Findeisen, S., Jüttler, A., Neuenschwander, M. P., & Schumann, S. (2022). Transition from school to work − explaining persistence intention in vocational education and training in switzerland. *Vocations and Learning, 15*(1), 129-154. https://doi.org/10.1007/s12186-021-09282-4

Fuchs, T. T., Sonnert, G., Scott, S. A., Sadler, P. M., & Chen, C. (2022). Preparation and motivation of high school students who want to become science or mathematics teachers. *Journal of Science Teacher Education, 33*(1), 83-106. https://doi.org/10.1080/1046560x.2021.1908658

Galliott, N. y. (2017). Online career guidance: Does knowledge equate to power for high school students? *Journal of Psychologists and Counsellors in Schools, 27*(2), 190-207. https://doi.org/10.1017/jgc.2017.7

Glessner, K., Rockinson-Szapkiw, A. J., & Lopez, M. L. (2017). Yes, I can": Testing an intervention to increase middle school students' college and career self-efficacy. *The Career Development Quarterly, 65*(4), 315-325. https://doi.org/10.1002/cdq.12110

Gu, X., Tang, M., Chen, S., & Montgomery, M. L. (2020). Effects of a career course on Chinese high school students' career decision-making readiness. *The Career Development Quarterly, 68*(3), 222-237. https://doi.org/10.1002/cdq.12233

Gulsen, C., Secim, G., & Savickas, M. (2021). A career construction course for high school students: Development and field test. *The Career Development Quarterly, 69*(3), 201-215. https://doi.org/10.1002/cdq.12268

Gutiérrez-Santiuste, E., García-Segura, S., Olivares-García, M. Á., & González-Alfaya, E. (2022). Higher education students' perception of the e-portfolio as a tool for improving their employability: Weaknesses and strengths. *Education Sciences, 12*(5), 1-14. https://doi.org/10.3390/educsci12050321

Hillman, K., Dix, K., Ahmed, K., Lietz, P., Trevitt, J., O'Grady, E., . . . Hedley, D. (2020). Interventions for anxiety in mainstream school-aged children with autism spectrum disorder: A systematic review. *Campbell Systematic Reviews, 16*(2), 1-35. https://doi.org/10.1002/cl2.1086

Karlsson, P., & Noela, M. (2022). Beliefs influencing students' career choices in Sweden and reasons for not choosing the accounting profession. *Journal of Accounting Education, 58*, 1-17. https://doi.org/10.1016/j.jaccedu.2021.100756

Krelová, K. K., Berková, K., Krpálek, P., & Kubisová, A. (2021). Attitudes of czech college students toward digital literacy and their technical aids in times of COVID-19. *International Journal of Engineering Pedagogy, 11*(4), 130-147. https://doi.org/10.3991/ijep.v11i4.20821

Langher, V., Nannini, V., & Caputo, A. (2018). What do university or graduate students need to make the cut? A meta-analysis on career intervention effectiveness. *Journal of Educational, Cultural and Psychological Studies*(17), 21-43. https://doi.org/10.7358/ecps-2018-017-lang

Lazarides, R., & Lauermann, F. (2019). Gendered paths into STEM-related and language-related careers: Girls' and boys' motivational beliefs and career plans in math and language arts. *Frontiers in Psychology, 10*, 1-17. https://doi.org/10.3389/fpsyg.2019.01243

Mamba, M., Tamayao, A., Vecaldo, R., Paat, F. M., Pagulayan, E., & Asuncion, J. E. (2021). Study orientation and college readiness among alternative learning system graduates in northeastern philippines. *International Journal of Education and Practice, 9*(2), 285-296. https://doi.org/10.18488/journal.61.2021.92.285.296

Maree, J. G. (2020). Connecting conscious knowledge with subconscious advice through career construction counselling to resolve career choice indecision. *South African Journal of Education, 40*(Supplement 1), s1-s13. https://doi.org/10.15700/saje.v40ns1a1863

Maree, N., & Maree, J. (2021). The influence of group life-design-based counselling on learners' academic self-construction: A collective case study. *South African Journal of Education, 41*(3), 1-16. https://doi.org/10.15700/saje.v41n3a2051

McMahon, M., & Watson, M. (2020). Career counselling and sustainable decent work: Relationships and tensions. *South African Journal of Education, 40*(Supplement 1), s1-s9. https://doi.org/10.15700/saje.v40ns1a1881

Miles, J., & Naidoo, A. V. (2017). The impact of a career intervention programme on South African Grade 11 learners' career decision-making self-efficacy. *South African Journal of Psychology, 47*(2), 209-221. https://doi.org/10.1177/0081246316654804

Nota, L., Santilli, S., & Soresi, S. (2016). A life-design-based online career intervention for early adolescents: Description and initial analysis. *The Career Development Quarterly, 64*(1), 4-19. https://doi.org/10.1002/cdq.12037

Paixão, O., & Gamboa, V. (2017). Motivational profiles and career decision making of high school students. *The Career Development Quarterly, 65*(3), 207-221. https://doi.org/10.1002/cdq.12093

Park, I.-J., Rie, J., Kim, H. S., & Park, J. (2020). Effects of a future time perspective–based career intervention on career decisions. *Journal of Career Development, 47*(1), 96-110. https://doi.org/10.1177/0894845318781043

Phan, H. P., Ngu, B. H., & McQueen, K. (2020). Future time perspective and the achievement of optimal best: Reflections, conceptualizations, and future directions for development. *Frontiers in Psychology, 11*, 1-13. https://doi.org/10.3389/fpsyg.2020.01037

Reed, D. E., Kaplita, E. C., McKenzie, D. A., & Jones, R. A. (2022). Student experiences and changing science interest when transitioning from K-12 to college. *Education Sciences, 12*(7), 1-15. https://doi.org/10.3390/educsci12070496

Siagian, A. F., Ibrahim, M., & Supardi, Z. A. I. (2023). Creative-scientific decision-making skills learning model for training creative thinking skills and student decision making skills. *Nurture, 17*(1), 10–17. https://doi.org/10.55951/nurture.v17i1.141

Sim-Sim, M., Zangão, O., Barros, M., Frias, A., Dias, H., Santos, A., & Aaberg, V. (2022). Midwifery now: Narratives about motivations for career choice. *Education Sciences, 12*(4), 1-17. https://doi.org/10.3390/educsci12040243

Spineli, L. M., & Pandis, N. (2020). Problems and pitfalls in subgroup analysis and meta-regression. *American Journal of Orthodontics and Dentofacial Orthopedics, 158*(6), 901-904. https://doi.org/10.1016/j.ajodo.2020.09.001

Suurmond, R., van Rhee, H., & Hak, T. (2017). Introduction, comparison, and validation of meta-essentials: A free and simple tool for meta-analysis. *Research Synthesis Methods, 8*(4), 537-553. https://doi.org/10.1002/jrsm.1260

Tabor, L., Larsen, T., & Oberle, A. (2022). Rounding out the vision for geography education's future: Integrating perspectives of early career scholars in geography education. *Journal of Geography, 121*(4), 119-124. https://doi.org/10.1080/00221341.2022.2123546

Tham, P. T. H., Thuc, P. T. P., Phuong, N. T., & Giang, N. D. (2022). Factors affecting the perception of happiness among teachers in vietnam. *Journal of Education and E-Learning Research, 9*(3), 199–206. https://doi.org/10.20448/jeelr.v9i3.4191

Watts, A. G. (2013). *Career guidance and orientation revisiting global trends in TVET: Reflections on theory and practice*. Retrieved from https://unevoc.unesco.org/home/Revisiting+global+trends+in+TVET+Reflections+on+theory+and+practice

Whiston, S. C., Li, Y., Goodrich Mitts, N., & Wright, L. (2017). Effectiveness of career choice interventions: A meta-analytic replication and extension. *Journal of Vocational Behavior, 100*, 175-184. https://doi.org/10.1016/j.jvb.2017.03.010

Wilmot, M. P., & Ones, D. S. (2021). Occupational characteristics moderate personality–performance relations in major occupational groups. *Journal of Vocational Behavior, 131,* 103655. https://doi.org/10.1016/j.jvb.2021.103655

Zainil, M., Kenedi, A. K., Indrawati, T., & Handrianto, C. (2023). The influence of a STEM-based digital classroom learning model and high-order thinking skills on the 21st-century skills of elementary school students in Indonesia. *Journal of Education and e-Learning Research, 10*(1), 29-35.

Zotova, M., Likhouzova, T., Shegai, L., & Korobeynikova, E. (2021). The use of MOOCS in online engineering education. *International Journal of Engineering Pedagogy, 11*(3), 157-173. https://doi.org/10.3991/ijep.v11i3.20411