

Prevalence and Influencing Factors of Technophobia: A Systematic Review and Meta-Analysis

Xiaofang Song, Shasha Li, Liying Dong, Yue Li, Xinyu Yang, Jianyi Bao, Shufang Liao, Yingxue Xi, Guojing Guo

Submitted to: JMIR Mental Health
on: April 29, 2025

Disclaimer: © The authors. All rights reserved. This is a privileged document currently under peer-review/community review. Authors have provided JMIR Publications with an exclusive license to publish this preprint on its website for review purposes only. While the final peer-reviewed paper may be licensed under a CC BY license on publication, at this stage authors and publisher expressly prohibit redistribution of this draft paper other than for review purposes.

Table of Contents

Original Manuscript..... 5

Supplementary Files..... 61

..... 61

Figures 62

Figure 1..... 63

Figure 2..... 64

Figure 3..... 65

Prevalence and Influencing Factors of Technophobia: A Systematic Review and Meta-Analysis

Xiaofang Song¹; Shasha Li¹ PhD; Liying Dong²; Yue Li¹; Xinyu Yang¹; Jianyi Bao¹; Shufang Liao¹; Yingxue Xi¹; Guojing Guo¹

¹ Huzhou University Huzhou CN

² The First People's Hospital of Huzhou Huzhou CN

Corresponding Author:

Shasha Li PhD

Huzhou University

59 Second Ring Road, Huzhou District, Zhejiang 313000, China

Huzhou

CN

Abstract

Background: The rapid advancement of digital health technology has led to increased technophobia.

Objective: This study aimed to explore the prevalence of technophobia in different groups and its influencing factors.

Methods: The study searched ten electronic databases retrieved up to 30 April 2024. The meta-analysis was conducted to calculate the effect size using the standardized mean difference (SMD) and mean difference (MD) with a 95% confidence interval (CI); summary r with a 95% confidence interval (CI) served as the combined effect size for the influencing factors of technophobia.

Results: A total of 21 studies were included. The findings revealed that technophobia was significantly lower in the digital natives (SMD=3.07, 95%CI: 2.89-3.26). Older adults exhibited a higher technophobia (MD=39.90, 95% CI: 35.87-43.94), with privacy and security concerns scoring the highest among the three dimensions assessed (MD=3.29, 95%CI: 2.94-3.64). Additionally, digital health literacy, personality traits, language proficiency, self-perceived health status, self-efficacy, technology use, and Internet use are updated relevant factors identified from this review based on health ecology modeling ($r = -0.446$ to 0.235 , $P > 0.05$).

Conclusions: There is a high level of technophobia among older digital immigrants, with particular concerns about privacy and security. Age, gender, personality traits, education, language proficiency, monthly income per capita, self-perceived health status, digital health literacy, family support, social networks, self-efficacy, technology use, and Internet use were associated with technophobia. Understanding these predictors can help develop targeted strategies to address the technophobia issue. Clinical Trial: This systematic review and meta-analysis are reported according to PRISMA (Preferred Reporting Items for Systematic Evaluation and Meta-Analysis) guidelines. The systematic review is registered in PROSPERO (CRD42024516773) and is available online.

(JMIR Preprints 29/04/2025:76686)

DOI: <https://doi.org/10.2196/preprints.76686>

Preprint Settings

1) Would you like to publish your submitted manuscript as preprint?

✓ **Please make my preprint PDF available to anyone at any time (recommended).**

Please make my preprint PDF available only to logged-in users; I understand that my title and abstract will remain visible to all users.

Only make the preprint title and abstract visible.

No, I do not wish to publish my submitted manuscript as a preprint.

2) If accepted for publication in a JMIR journal, would you like the PDF to be visible to the public?

✓ **Yes, please make my accepted manuscript PDF available to anyone at any time (Recommended).**

Yes, but please make my accepted manuscript PDF available only to logged-in users; I understand that the title and abstract will remain visible to all.

Yes, but only make the title and abstract visible (see Important note, above). I understand that if I later pay to participate in [JMIR Publications](#), my accepted manuscript PDF will be available to all.

No. Please do not make my accepted manuscript PDF available to anyone. I understand that if I later pay to participate in [JMIR Publications](#), my accepted manuscript PDF will be available to all.



Original Manuscript

Prevalence and Influencing Factors of Technophobia: A Systematic Review and Meta-Analysis

Authors

Xiaofang Song BS¹⁺, Shasha Li PhD^{1*+}, Liying Dong BS², Yue Li¹, Xinyu Yang¹, Jianyi Bao¹, Shufang Liao¹, Yingxue Xi¹, Guojing Guo¹

1. Department of Nursing, College of Medical Science, Huzhou University, 759 Second Ring Road, Huzhou District, Zhejiang 313000, China.

2. Department of Nursing, The First People's Hospital of Huzhou, 158, Square Back Road, Wuxing District, Huzhou City, Zhejiang 313000, China.

Xiaofang Song BS,

Department of nursing, college of medical science, Huzhou University, Huzhou, Zhejiang, China.

E-mail: sxf2625498860@163.com, Tel: 19863828013

Mailing address: No. 759 Second Ring Road, Huzhou City, 313000, Zhejiang Province, China.

⁺Corresponding Author: Shasha Li PhD, [Associate Professor](#)

Department of nursing, college of medical science, Huzhou University, Huzhou, Zhejiang, China.

E-mail: 270037615@qq.com, Tel: 15088352606

Mailing address: No. 759 Second Ring Road, Huzhou City, 313000, Zhejiang Province, China.

Liying Dong BS RN

Department of Nursing, The First People's Hospital of Huzhou, Huzhou, Zhejiang, China.

E-mail: 19761029anny@163.com, Tel: 13819289915

Mailing address: 158, Square Back Road, Wuxing District, Huzhou City, Zhejiang 313000, China.

Yue Li BS

Department of nursing, college of medical science, Huzhou University, Huzhou, Zhejiang, China.

E-mail: 2424603995@qq.com, Tel: 19816901365

Mailing address: No. 759 Second Ring Road, Huzhou City, 313000, Zhejiang

XinYu Yang BS

Department of nursing, college of medical science, Huzhou University, Huzhou, Zhejiang, China.

E-mail: 421284460@qq.com, Tel: 15261667378

Mailing address: No. 759 Second Ring Road, Huzhou City, 313000, Zhejiang Province, China.

Jianyi Bao BS

Department of nursing, college of medical science, Huzhou University, Huzhou, Zhejiang, China.

E-mail: 448650459@qq.com, Tel: 17395719831

Mailing address: No. 759 Second Ring Road, Huzhou City, 313000, Zhejiang Province, China.

Shufang Liao BS

Department of nursing, college of medical science, Huzhou University, Huzhou, Zhejiang, China.

E-mail: 1756424996@qq.com, Tel: 15270990936

Mailing address: No. 759 Second Ring Road, Huzhou City, 313000, Zhejiang

Yingxue Xi BS, RN

Department of nursing, college of medical science, Huzhou University, Huzhou, Zhejiang, China.

E-mail: 2295270322@qq.com, Tel: 18999922156

Mailing address: No. 759 Second Ring Road, Huzhou City, 313000, Zhejiang Province, China.

Guojing Guo BS

Department of nursing, college of medical science, Huzhou University, Huzhou, Zhejiang, China.

E-mail: 513794443@qq.com, Tel: 13645500401

Mailing address: No. 759 Second Ring Road, Huzhou City, 313000, Zhejiang Province, China.

Abstract

Objective: The rapid advancement of digital health technology has led to increased technophobia. This study aimed to explore the prevalence of technophobia in different groups and its influencing factors.

Methods: The study searched ten electronic databases retrieved up to 30 April 2024. The meta-analysis was conducted to calculate the effect size using the standardized mean difference (SMD) and mean difference

(MD) with a 95% confidence interval (CI); summary r with a 95% confidence interval (CI) served as the combined effect size for the influencing factors of technophobia.

Results: A total of 21 studies were included. The findings revealed that technophobia was significantly lower in the digital natives (SMD=3.07, 95%CI: 2.89-3.26). Older adults exhibited a higher technophobia (MD=39.90, 95% CI: 35.87-43.94), with privacy and security concerns scoring the highest among the three dimensions assessed (MD=3.29, 95%CI: 2.94-3.64). Additionally, digital health literacy, personality traits, language proficiency, self-perceived health status, self-efficacy, technology use, and Internet use are updated relevant factors identified from this review based on health ecology modeling ($r = -0.446$ to 0.235 , $P \leq 0.05$).

Conclusions: There is a high level of technophobia among older digital immigrants, with particular concerns about privacy and security. Age, gender, personality traits, education, language proficiency, monthly income per capita, self-perceived health status, digital health literacy, family support, social networks, self-efficacy, technology use, and Internet use were associated with technophobia. Understanding these predictors can help develop targeted strategies to address the technophobia issue.

Keywords: technophobia; influencing factors; meta-analysis; review

Introduction

Intelligent terminals have become widely prevalent in the context of the rapidly aging global population and the swift societal upgrade and transformation.¹ Digital information technologies, such as cloud computing, big data, Internet of Things, mobile Internet, artificial intelligence, blockchain, and virtual reality technology, are increasingly integrating and embedding in various fields.^{1,2} They are gradually evolving into a new service model for promoting human health.² The World Health Organization (WHO) defines *digital health technologies* as the field of knowledge and practice that develops and utilizes digital technologies to enhance healthcare, encompassing smart devices, digital consumers of smart devices, the Internet of Things, and other related health services.³ However, the threshold nature of digital health technologies and the complexities involved in collecting, storing, and sharing sensitive personal health data have led people to approach or anticipate using these technologies with a certain degree of fear, stress, anxiety, or concern about their potential impacts and risks.⁴ This has given rise to the phenomenon of technophobia. Indeed, technophobia is an inevitable consequence of the development of digital health technology and is closely related to it.⁵

Technophobia refers to individuals' irrational anxiety and fear of various digital technologies, such as mobile communication devices, artificial intelligence, and robotics, and this emotional response may lead to individuals avoiding the use of digital health technologies.^{5,6,7} A previous study has contended that technophobia is not specific to a particular technology but encompasses all forms of digital technology, often associated with the field of computing, thus suggesting a more comprehensive perspective.⁵ Technophobia is a social phenomenon reflecting concerns about potential issues and risks in developing digital health technologies, such as personal privacy protection, data accuracy, healthy use of technology, and the digital divide.⁸

Technophobia hinders individuals' well-being through digital health technologies and is an essential psychological factor influencing their acceptance of digital health technologies.⁹ It has become a risk factor for hindering individuals' health-promoting behaviors and coping with health challenges in a digital society.¹⁰ Study has shown that technophobia has led to varying degrees of disconnect between different social groups regarding digital healthy living.¹¹ Some older individuals are dissuaded from utilizing digital health technologies due to the pervasive ageism and stereotypes associated with aging, which impede their ability to benefit from publicly available digital health services.¹² Studies have indicated that exposure to digital environments, or the lack thereof, can impact an individual's usage, fluency, comfort, literacy, and engagement with technology.^{13,14} Simultaneously, it can influence an individual's perception and cognition of digital health technologies. Accordingly, studies have proposed that the population can be divided into two generations based on their experience and use of technology: the digital natives (born after 1980) and the digital immigrants (born before 1980).^{15,16} Significant differences between the digital immigrant and digital native regarding technology exposure, usage habits, cultural backgrounds, and social environments may result in varying technophobia when confronted with digital health technologies.¹⁷ Understanding these differences helps us to better provide appropriate health management and technical support to different generations.

Although there have been studies exploring different groups in terms of technophobia, to the best of our knowledge, there needs to be more systematic scientific studies summarizing the prevalence of technophobia.^{4,18,19} At the same time, considering the many influencing factors that affect technophobia, it is necessary to elaborate on these relevant factors through a comprehensive conceptual model.²⁰ Collins' study proposed the health ecology model, and its core idea is that the health status of individuals and groups is not

only affected by individual biological characteristics and behaviors but also by the combined effects of factors such as health services, physical environment, and social environment.²¹ These factors are interdependent and interact, and together, they shape the health status of individuals and groups. The factors influencing technophobia are vital for developing interventions.²⁰ The health ecology model integrates the impact of individual, social, and environmental factors on health, which helps us understand and analyze technophobia more comprehensively.²²

The purpose of this systematic review was as follows: (i) To explore the prevalence of technophobia levels in different groups of two generations (digital natives and digital immigrants). (ii) To explore the overall situation of technophobia and the prevalence of its dimensions among older adults. (iii) Based on a health ecology model, determine what factors may influence technophobia to provide a theoretical reference for subsequent mechanism exploration and intermediate path analysis of the causes of technophobia.

Methods

Registration

This systematic review and meta-analysis are reported according to PRISMA (Preferred Reporting Items for Systematic Evaluation and Meta-Analysis) guidelines. The systematic review is registered in PROSPERO (CRD42024516773) and is available online.

Search Strategy

Following the principle of PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), we searched CNKI, CBMdisc, WanFang, VIP, PubMed, Embase, Web of Science, Cochrane Library, Medline, and CINAHL databases. The search time limit was from establishing the database to the end of April 2024. Additionally, the study's references were manually searched to complement the literature on the topic. The search was conducted using a combination of subject terms and accessible terms, and the key search terms were as follows: "technophobia," "fear of technology," "cyber phobia," "risk factors," "factor, risk," "factors, risk," "risk factor," etc. Two independent researchers manually screened references. Details of the search strategy are summarized in Appendix 1 of the Supplementary Material.

Literature inclusion and exclusion criteria

Literature inclusion criteria: (1) participants were aged 18 years or older; (2) the type of study is observational; (3) the content of the study includes the level of technophobia or the factors affecting or related

to it; (4) scores were made using a scale and the original literature data provided the mean and standard deviation or could be obtained by data conversion for the level of technophobia; for the factors influencing the level of technophobia: the sample size, the correlation coefficient r -value, or the β -value, the F -value and the t -value provided by the study and the r -value obtained by data conversion were reported in the study.²³ Literature exclusion criteria: (1) literature such as reviews, abstracts, and commentaries ; (2) unavailability of the original text, incomplete data, duplicate publications, poor quality of literature (AHRQ score ≤ 3); (3) literature not in Chinese or English.

Literature screening and data extraction

After establishing the search strategy, all records were imported into NoteExpress for document management, and duplicates were eliminated. Two researchers using Microsoft Excel independently extracted data for inclusion, with any disagreements resolved through consultation with a third researcher. Data extraction included the first author's name, publication date, study type, region, sample size, level of technophobia (technology tension, technology fear, privacy, and security concerns), and its moderators. Every effort was made to contact the original authors and obtain relevant data for studies with incomplete or uncertain information.

Literature quality evaluation

Two reviewers independently assessed the quality of the included literature, and disagreements were resolved by discussion with a third person. Cross-sectional studies were graded according to the Agency for Healthcare Research and Quality (AHRQ) Treatment Evaluation Criteria for Cross-Sectional Studies. The scale consists of 11 items with "yes," "no," and "unclear" responses. "Yes" is scored as 1, while a "unclear" or "no" is scored as 0. A score of 8-11 is considered high quality, 4-7 is moderate quality, and 0-3 is low quality.²⁴ Literature with medium to high quality was included in this study.

Statistical analysis

RevMan 5.4 software was used for statistical analysis. For the level of technophobia, the standardized mean difference (SMD) was used as the combined effect size; for the factors influencing technophobia, the correlation coefficient (r) was used as the combined effect size. For literature that did not report correlation coefficients, the reported r s, β , t , and F values were extracted and converted to r

using the formula.²³ The r was converted to Fisher's Z and its Se using the formula and entered into RevMan5.4 software for meta-analysis to derive the combined Z value and 95% CI, and then converted to summary r and 95% CI using the formula as described in Appendix 2 of the Supplementary Material.²⁵

The heterogeneity of the included studies was assessed using the Q -test and I^2 values. If $I^2 < 50\%$ or $P > 0.1$, it could be assumed that there was no significant heterogeneity, and a fixed-effects model was used. Otherwise, a random effects model was used. Sensitivity analysis was performed by observing the stability of the combined effect size after the removal of any study. The funnel plot was utilized to analyze the publication bias of each confounding factor; if the two sides of the funnel plot graph were symmetric, it indicated that the publication bias was likely to be minor and vice versa. The publication bias was likely to be significant. $P < 0.05$ suggested that the difference was statistically significant. Finally, according to Cohen's criteria for determining the effect size of correlation coefficients, the correlations of the factors influencing technophobia were comprehensively evaluated using the summary r value: the combined effect size r of 0-0.2 is a low correlation factor, 0.20-0.40 is a moderate correlation factor and 0.40-1 is a high correlation factor, with $r > 0$ for positive correlation and $r < 0$ for negative correlation.²⁶

Results

Study Selection

A total of 622 relevant records were retrieved through a systematic search of databases, comprising 191 records in Chinese and 431 in English. Initially, 107 duplicate records and 36 records marked as ineligible by automation were eliminated. Subsequently, based on a review of the titles and abstracts, 413 records that did not meet the predefined inclusion criteria were excluded. Finally, after a comprehensive full-text assessment, a significant number of 13 studies were included. Additionally, 14 studies were obtained from relevant study references, of which 8 met the inclusion criteria. In total, a substantial number of 21 studies were finally included. The literature screening process and results are depicted in Figure 1.

Study Characteristics

A total of 21 published papers were included, all of which were cross-sectional studies. The sample

size ranged from 62-3392 people, with a total of 9564 people covering 26 countries. The Scale was utilized to evaluate the degree of technophobia. Among them, the Technophobia Scale was developed by Khasawneh and further refined by Sun Erhong et al, encompassing 13 dimensions such as privacy and security concerns, technology tension and technology fear, with a total score range of 13-65;^{5,7} the Technophobia Scale created by Sinkovics et al includes three dimensions - fear of personal failure, ambiguity between human and machine, and perceived convenience - with a total of 13 items and a score range from 13-65;²⁷ the standardized Short Computer Anxiety Scale (SCAS) was formulated by Lester consisting of six items;²⁸ the CARS scale was compiled by Heinssen comprising 19 items with a scoring range from 19-95;²⁹ the CARS-C was developed by Rosen and Weil including 20 entries with a total score ranging from 20-100.³⁰ Relevance factors include age, gender, personality traits, education, language proficiency, monthly income per capita, self-perceived health status, digital health literacy, family support, social networks, self-efficacy, technology use, Internet use, etc, shown in Table 1.

Quality Assessment

Results of the quality assessment are presented in Table 1, and the detailed evaluation process for each study is shown in Supplementary Material Appendix 3. For cross-sectional studies (n=21), there were 11 studies (52%) with a score of 4 to 7 (i.e., middle quality) and 10 studies (48%) with a score of 8 to 10 (i.e., high quality). All studies scored met the criteria and were included.

Meta-analysis results

Overall level of technophobia

Different measuring tools were used to detect the level of technophobia. A total of 16 studies^{4,18,19,28,29,31-41} reported the overall level of technophobia. After sensitivity analysis, Michelle M. Weft et al. (Indonesia).1995 and Michelle M. Weft et al.(Poland).1995 were the primary sources of heterogeneity. After excluding this study, the heterogeneity among studies decreased but still existed ($I^2 = 64\%$ and Q test $P < 0.00001$). Therefore, the random effects model was adopted for meta-analysis. After combining effect sizes, the overall standardized technophobia level SMD was (3.58, 95%CI: 3.31-3.85, $Z=25.85$, $P < 0.00001$), which was statistically significant. Subgroup analysis was conducted according to the generation, explicitly divided into two generations: digital immigrants and digital

natives. Four^{28,29,31,40} reported the technophobia level of digital natives, and twelve^{4,18,19,32-36,38-41} reported the technophobia level of digital immigrants. It can be seen from the following figure that the standardized technophobia level of the two groups is statistically different. The standardized technophobia level of the digital immigrant group is higher than that of the digital native group (SMD of the digital immigrant group is (3.89, 95%CI: 3.52-4.26); the SMD of the digital native group was (3.07, 95%CI: 2.89-3.26). It is shown in Figure 2.

Technophobia Levels by Dimension for Older Adults

The technophobia scale developed by Khasawneh and adapted by Sun Erhong was utilized to assess the scores of elderly digital immigrants aged ≥ 60 in three dimensions: technology tension, fear, and privacy and security concerns. The dimension of technology tension consists of five items with a total score range of 5-25. The dimension of technology fear includes five items with a total score range of 5-25. Lastly, the privacy and security concern dimension comprises three items with a total score range of 3-15 points.⁷ The random effects model was adopted due to the significant heterogeneity among the studies. The results were as follows: nine studies^{4,8,18,19,32,35,36,38,39} reported overall scores for technophobia in older adults, seven studies^{18,19,32,35,36,38,39} reported the total score of each dimension, six studies^{4,18,36,38,39,41} reported the average score of total items in the scale, and seven studies^{4,18,32,36,38,39,46} reported the average score of items in each dimension.

As shown in Table 2 below, the total 3-dimensional MD was (39.90, 95%CI: 35.87-43.95). The total score of the technology fear dimension MD was (15.50, 95%CI: 12.32-18.69). The total score MD of technology tension dimension was (16.38, 95%CI: 14.44-18.33). The total privacy and security concern dimension MD is (9.89, 95%CI: 8.68-11.10). The mean score MD of the total items of the scale was (3.07, 95%CI: 2.69-3.44), while the mean score MD of the dimension of privacy and security concerns was (3.29, 95%CI: 2.94-3.64), higher than the mean score of the total items. The mean score MD of the technology fear dimension items was (3.02, 95%CI: 2.53-3.50). The mean score MD of the technology tension dimension was (2.89, 95%CI: 2.69-3.09), and the mean score of the two dimensions was lower than the mean score of the total item. See Supplementary Material Appendix 4 for forest plots of the scores for each dimension of technophobia levels in older adults.

Influential Factors Related to Technophobia

The present study conducted a quantitative meta-integration of research findings across different feature groups, as shown in Table 3 below. The results indicated that the level of technophobia was associated with several factors, three of which showed high correlations: social networks^{4,18} ($r = -0.537$, 95% CI: -0.647 to -0.405), self-efficacy^{4,8,28,43, 44} ($r = -0.446$, 95% CI: -0.572 to -0.300), and digital health literacy^{19,38,39} ($r = -0.414$, 95% CI: -0.462 to -0.354)). A total of six factors showed moderate correlation with technophobia, including the number of online activities^{28,34} [$r = -0.371$, 95%CI: -0.438 to -0.300], technology experience^{29,31,37,45} [$r = -0.319$, 95%CI: -0.388 to -0.235], attitude towards the Internet^{28,39} [$r = -0.273$, 95%CI: -0.470 to -0.050), frequency of technology use^{4,8,39,43,44} [$r = -0.236$, 95%CI: -0.282 to -0.188], personality traits^{29,45} ($r = 0.235$, 95%CI: 0.139-0.319) and language proficiency^{29,31,44} [$r = -0.226$, 95%CI: -0.345 to -0.110]. A total of nine factors exhibited weak correlation with technophobia, namely gender^{28,38,39} [$r = 0.188$, 95%CI: 0.090-0.282], family support^{4,18,35,38} [$r = -0.178$, 95%CI: -0.245 to -0.110], technology use intention^{4,8,28,43} [$r = -0.178$, 95%CI: -0.236 to -0.129], total online activity hours^{28,33,34} [$r = -0.178$, 95%CI: -0.226 to -0.129], self-perceived health status^{33,36,41} [$r = -0.159$, 95%CI: -0.207 to -0.110], education^{4,19,33,35,38,39,41} [$r = -0.149$, 95%CI: -0.188 to -0.110], age^{4,19,28,35,39,41} [$r = 0.139$, 95%CI: 0.050-0.226], online activity program categories^{28,33,34} [$r = -0.139$, 95%CI: -0.188 to -0.090] and monthly income per capita^{4,18,35} [$r = -0.110$, 95%CI: -0.168 to -0.050). Forest plots depicting relevant factors are presented in Supplementary Material Appendix 5.

Evaluation of publication bias

Due to the small amount of literature assigned to each factor, a funnel plot was made to analyze the publication bias only for technophobia with some literature ≥ 10 . The two sides of the funnel plot are symmetrical, which suggests that there should not be any publication bias in this study. The details of the funnel plot can be found in Supplementary Material Appendix 6.

Improvement of theoretical model

According to COLLINS' health ecology model,²¹ this study has classified the relevant impact factors of technophobia through qualitative comprehensive technology and further refined the health ecology model based on results.⁴⁷ See Figure 3 for details.

Discussion

To the best of our knowledge, this is the first systematic review and meta-analysis to quantitatively investigate the differences in technophobia levels between two generations-digital natives and digital

immigrants a large sample size from an intergenerational perspective. It is also the first systematic review and meta-analysis to qualitatively categorize the factors associated with the technophobia level and refine the theoretical modeling framework based on the health ecology model. This systematic review comprises 21 studies involving 9564 individuals from 26 countries.

From an intergenerational cohort perspective, the results indicate a significant discrepancy in technophobia levels between digital immigrants and natives, with digital immigrants exhibiting notably higher levels. The difference in the duration of digital technology immersion between the two generations may account for this phenomenon. Compared to Indigenous people exposed to digital technology from an early age, they exhibit greater comfort with and reliance on digital technology for health information search and management of health conditions.⁴⁸ Therefore, facilitating active integration of the digital immigrant community into the intelligent environment is crucial for bridging this gap.³⁸ Surprisingly, among the three dimensions of technophobia, older digital immigrants are more concerned about privacy and security and less technology fear. This trend may be due to the global spread of digital technology, which leads to lower technophobia as they perceive digital technology as less of a threat to their established lifestyles.⁴ However, research conducted in New Zealand found that 73.3% of respondents expressed severe concerns about the security and privacy of their health information.⁴⁹ Furthermore, the potential risk of privacy breaches due to a lack of awareness of personal data management was highlighted.⁴⁸ Therefore, educating older digital immigrants about privacy and security risks and how to avoid them, as well as fully respecting the privacy of older adults, is critical to addressing technophobia among older adults.⁴

In addition, based on the health ecology model, this study provides a comprehensive review of factors associated with technophobia at five levels: individual traits, behavioral traits, interpersonal networks, living environment, and policy environment.^{21,22} However, it is worth noting that this study has not yet identified factors that significantly influence technophobia at the policy environment level, which deserves further exploration and research. The other dimensions are specifically analyzed below.

This review identifies age, education, gender, language proficiency, personality traits, and digital health literacy as factors that contribute to an individual's baseline level of technophobia, fitting them into the individual trait level. The weak positive correlation between technophobia and age suggests that

technophobia increases with age, particularly among older digital immigrants, some of whom are even actively choosing to "digitally disconnect".⁵⁰ Older adults experience physiological decline and increased disease risk, so their need for digital health technologies grows.^{35,49} However, their diminished ability to learn and adapt creates a paradox of high demand but low capacity, leading to feelings of helplessness and technophobia.⁴ This technophobia reduces adherence to digital lifestyles, creating a vicious cycle that significantly impacts their daily lives and physical and mental health.⁸ Furthermore, The weak negative correlation between technophobia and education indicates that individuals with higher education levels have lower technophobia. Those with less education are more likely to feel intimidated and reject digital health technologies due to perceived difficulty and lack of self-control.³⁸ In addition, the study found that women exhibit higher technophobia than men. Traditional cultural attitudes and insufficient digital skills education create a digital "use gap" for women, limiting their ability to adopt digital health technologies effectively.⁵⁰

To our astonishment, neurotic personality and language proficiency were identified as critical for updating. The moderate positive correlation between technophobia and neurotic personality indicated that individuals with neurotic personality traits had significantly higher technophobia than individuals with non-neurotic personalities. Study has argued that the hypersensitive, emotionally unstable, and anxiety-prone characteristics of the neurotic personality make them more likely to overreact to the changes and potential risks involved in using digital health technologies.⁵¹ In addition, language proficiency, encompassing listening, reading, writing, translating, and the capacity to handle complex utterances, exhibits a moderate negative correlation with technophobia, reflecting its positive impact.⁵² Individuals with higher language proficiency have more advantages in cognitive reserve, seeking communication help, and information processing, which reduce their technophobia when using digital health technology.³¹ Future studies should create targeted programs to enhance language proficiency and further explore the mechanism of neurotic personality and technophobia at this level.

Digital health literacy is also an updated factor identified at this level, which refers to the ability to use digital technology to search for, select, and evaluate health information and to use the information obtained to manage and solve health problems.⁵³ The results found that low technophobia is strongly associated with high digital health literacy. Low digital health literacy often feel nervous and anxious

when using new technologies due to their lack of understanding and search skills.¹⁹ Their limited ability to evaluate choices in the face of complex information about medical care may lead to delays or barriers in accessing care, thus exacerbating technophobia.³⁸ Conversely, high digital health literacy effectively avoids these problems. However, the study by Tang et al. found that older, chronically ill patients with high digital information interaction skills instead had higher technophobia.³⁵ It may be that factors such as chronic illness make these patients more susceptible to technophobia and privacy concerns when using and sharing information on digital platforms.^{35,54} Overall, at the individual trait level, less educated older women with chronic conditions and limited digital health literacy may exhibit increased technophobia, and this population should be the focus of attention.

At the behavioral trait level, self-efficacy, technology use, Internet use, and self-perceived health status, as identified updated factors, directly affect individuals' technophobia, as revealed in this study. Self-efficacy, a perception or belief about an individual's ability to produce adaptive behavior in the face of internal and external environmental stressors, is a significant factor contributing to individual technophobia.⁵⁵ Its strong negative association with the level of technophobia reflects its positive role in reducing technophobia, providing a sense of reassurance and hope. Meanwhile, the weak negative correlation between technophobia and self-perceived health status shows that lower self-perceived health status may predict higher technophobia. When individuals have high health status and self-efficacy, their need for digital health technology is lower, and their confidence in their physical condition and problem-solving ability reduces technophobia.^{38,39} However, they still need to use digital health technologies to further optimize their health.

Interestingly, the moderate positive association between technophobia and technology experience suggests that technologically experienced individuals are less technophobia when using technology. Research has confirmed that providing appropriate training, curriculum, and hands-on experiences reduces technophobia.⁵⁶ The reason may be that the accumulation of technological experience increases familiarity, reducing the technophobia caused by uncertainty and complexity. In addition, the moderate positive association between technophobia and frequency of technology use suggests that high-frequency use may be somewhat predictive of lower technophobia. The reason may be that frequent use deepens users' knowledge and trust in the technology,⁴ which reduces stress caused by misunderstanding

and over-expectation. However, high frequency is not always beneficial, and appropriate frequency of use requires further research.⁵⁷ Also, the weak negative correlation between technophobia and technology use intention shows that low intention may predict some technophobia. Usage intention is an individual's subjective psychological disposition that is not easily influenced by external sources of control and drives autonomous use.²⁸ When willingness reaches a threshold, it is converted into actual use behavior,⁵⁸ encouraging individuals to learn about digital health technologies actively.⁴ Previous research has shown that technophobia, in turn, affects technology use, influencing the individual's intention to use digital health technology, frequency of use, etc.⁵⁹ Whether there is an interaction between technology use and technophobia may be an area of interest for future research.

In the data age, the Internet is an essential vehicle for healthcare resources, facilitating the sharing and dissemination healthcare data.⁶⁰ The results found that negative internet attitudes predict a higher risk of technophobia. Positive attitudes help individuals to actively learn and solve problems and reduce technophobia when faced with digital health technologies. In addition, technophobia was negatively correlated with the length of online activities and the number of items, highlighting the positive role of online activities. Online activities help reduce technophobia by providing convenient and efficient access to information and facilitating access to health information, increasing individuals' confidence and sense of security in digital health technologies.¹⁵ The study also highlighted that online activities, especially online shopping, reduce technophobia. Online shoppers show less technophobia due to their independence and the social interaction inherent in autonomous services. Future research should focus on enhancing behavioral traits, particularly self-efficacy and self-perceived health, and developing technology and Internet intervention programs to reduce technophobia and improve adaptability in the digital age.⁶¹

Interpersonal networks, encompassing connections and interactions among individuals, families, and communities, strongly correlate with technophobia. The strong negative correlation between technophobia and social networks underscores the positive role of social networks. The reason may be that older, socially sensitive individuals are more likely to accept digital health services when their social environment supports it, making acceptance more prevalent.⁶² Additionally, the accessibility, convenience, and overtime nature of social networks reduces the cost of socialization, which promotes

the active participation of older groups in digital health services and effectively alleviates negative emotions.⁶³ The weak negative association between technophobia and family support suggests that more family support may somewhat predict lower technophobia. This finding is consistent with dichotomous coping theory, suggesting that partners dealing with stressful events can help reduce technophobia.⁶⁴ Furthermore, child companionship and intergenerational support significantly positively affected older adults' mental health,⁶⁵ as support and technical assistance provided by their children could significantly reduce their technophobia.

The living environment includes occupational factors, socioeconomic status, and the natural and built environment. In this stratum, monthly income per capita reflects an individual's financial capacity and quality of life. The weak negative correlation between technophobia and monthly income per capita indicates that the higher the monthly income per capita, the lower technophobia. Previous studies have pointed out that financial cost is the primary concern for using digital health technology among older adults.⁶⁶ Low-income earners are prone to psychological burdens due to economic pressure and cautious about surgery for fear of additional costs, leading to technophobia;⁴ poor device performance and financial sensitivity also significantly affect the acceptance and adaptation of digital health technology among older adults, especially long-term hospitalized patients, which further exacerbates their technophobia.^{35,67}

Limitation

This study has limitations. Firstly, we included only observational studies and excluded RCTs and gray literature, limiting causal judgments. Secondly, there is a lack of standardized criteria for measuring technophobia levels, leading to heterogeneity in results due to the limited number of studies and the extensive period. Intervention trials for addressing technophobia across different generations and comparative studies on its three-dimensional variability have not been conducted, highlighting a gap in existing research. Future research should prioritize filling these gaps by employing high-quality, large-sample, multicenter study designs to obtain more reliable evidence. Thirdly, while this paper offers a comprehensive qualitative categorization of the correlates of technophobia based on the health ecology model, it remains challenging to filter out all correlates and their associated effects. Determining the direction of association for correlates at levels other than individual traits is challenging.. Therefore,

future studies should fully consider and investigate the direction of association and estimate effects.

Conclusion

Digital native generations have significantly lower levels of technophobia than digital immigrant generations. Older adults have higher overall technophobia levels and are more concerned with privacy and security. Digital health literacy, social networks, and self-efficacy highly correlate with technophobia, while neurotic personality, technology experience, frequency of use, number of online activities, and language proficiency are moderately correlated. Addressing technophobia is imperative. To mitigate this, we should strengthen digital health technology education, ensure data security and privacy, and set reasonable expectations to promote the healthy development of digital health technology.

Supplementary Material

Supplementary data are available at International Psychogeriatrics online.

Conflict of Interest

The authors have no conflicts in the manuscript.

Funding

This work was supported by the National Natural Science Foundation of China (NO. 72204084).

Reference

1. Z. Wang et al. Digital health: opportunities and challenges. *Digital Medicine And Health* (2023). DOI:10.3760/cma.j.cn101909-20230728-00012.
2. M. Liu et al. Design and development of a disease-specific clinical database system to increase the availability of hospital data in China. *Health Information Science and Systems* (2023). DOI:[10.1007/s13755-023-00211-4](https://doi.org/10.1007/s13755-023-00211-4).
3. World Health Organization(18 August 2021). Global strategy on digital health 2020-2025 Accessed: 18 August 2021. <https://apps.who.int/iris/handle/10665/344249>.
4. Y. Peng et al. The current status and influencing factors of technophobia among the elderly from the perspective of digital health. *Chinese Journal of Nursing* (2023). DOI:10.3761/j.issn.0254-1769.2023.11.010.
5. O. Y. Khasawneh et al. Technophobia: Examining its hidden factors and defining it. *Technology in Society* (2018). DOI:10.1016/j.techsoc.2018.03.008.
6. M. E. Osiceanu et al. Psychological implications of modern technologies:“technofobia” versus “technophilia”. *Procedia-Social and Behavioral Sciences* (2015). DOI:10.1016/j.sbspro.2015.02.229.

7. E. Sun et al. Validity and reliability of the Chinese version of the Technophobia scale in older adults. *Chinese Journal of Nursing* (2022). DOI:10.3761/ j.issn.0254-1769.2022.03.021.
8. D. Di Giacomo et al. Psychological barriers to digital living in older adults: computer anxiety as predictive mechanism for technophobia. *Behavioral Sciences* (2019). DOI:10.3390/bs9090096.
9. J. Pirhonen et al. “These devices have not been made for older people's needs”—Older adults' perceptions of digital technologies in Finland and Ireland. *Technology in Society* (2020). DOI:10.1016/j.techsoc.2020.101287.
10. G. Fagherazzi et al. Digital health strategies to fight COVID-19 worldwide: challenges, recommendations, and a call for papers. *Journal of Medical Internet Research* (2020). DOI:10.2196/19284.
11. X. Guo et al. The dark side of elderly acceptance of preventive mobile health services in China. *Electronic Markets* (2013). DOI:10.1007/ s12525-012-0112-4.
12. Y. Zhao. Ethical research of the intelligent endowment. *Journal of Shanghai Jiaotong University (Philosophy and Social Sciences)* (2022). DOI:10.13806/j.cnki.issn 1008-7095.2022.01.007.
13. C. Baham et al. Generational differences in handling technology interruptions: a qualitative study. *European Journal of Information Systems* (2023). DOI:10.1080/0960085X. 2022.2070557.
14. S. Vodanovich et al. Research commentary—digital natives and ubiquitous information systems. *Information Systems Research* (2010). DOI:10.1287/ isre. 1100.0324.
15. J. Sinha et al. Online Health Information Seeking and Preventative Health Actions: Cross-Generational Online Survey Study. *Journal of Medical Internet Research* (2024). DOI:10.2196/ 48977.
16. M. Perkins. Digital natives, digital immigrants part 1. *Horizon* (2001). DOI:10.1108/10748120110424816.
17. S. Ransdell et al. Digital immigrants fare better than digital natives due to social reliance. *British journal of educational technology* (2011). DOI:10.1111/j.1467-8535.2010.01137.x.
18. L. Li et al. Status and influencing factors of digital health anxiety in elderly patients with cancer pain. *Chinese Journal of Practical Nursing* (2023). DOI:10.3760/cma.j. cn211501- 20230131-00222.
19. Y. Xie et al. Correlation analysis between technology anxiety and e-Health literacy among urban elderly people. *Journal of Modern Clinical Medicine* (2023). DOI:10.11851/j.issn.1673-1557.2023.04.011.
20. Y. Wang et al. Research progress on assessment tools and status quo of loneliness in the elderly. *Occup and Health* (2022). DOI:10.13329/ j.cnki. zyyjk.2022.0602.
21. A. E. Collins. Health ecology and environmental management in Mozambique. *Health & place* (2002). DOI:10.1016/s1353-8292(02)00005-9.
22. L. Richard et al. Ecological models revisited: their uses and evolution in health promotion over two decades. *Annual review of public health* (2011). DOI:10.1146/annurev-publhealth-031210-101141.
23. Z. Liu et al. The relationship between posttraumatic growth and health-related quality of life in adult cancer survivors: A systematic review. *Journal of affective disorders* (2020). DOI: 10.1016/j.jad.2020.07.044.

24. M. Fabbri et al. Health literacy and outcomes among patients with heart failure: a systematic review and meta-analysis. *Heart Failure* (2020). DOI:10. 1016/j.jchf. 2019.11.007.
25. M. Borenstein, L. V. Hedges, J. P. Higgins & H. R. Rothstein. *Introduction to meta-analysis*. John Wiley & Sons;2021.
26. J. Cohen. *Statistical power analysis for the behavioral sciences*. Routledge; 2013.
27. R. R. Sinkovics et al. Reluctance to use technology-related products: Development of a technophobia scale. *Thunderbird International Business Review* (2002). DOI:10.1002/tie.10033.
28. D. Lester et al. A short computer anxiety scale. *Perceptual and motor skills* (2005). DOI:10.2466/pms.100.3c.964-968.
29. R. K. Heinssen Jr et al. Assessing computer anxiety: Development and validation of the computer anxiety rating scale. *Computers in human behavior* (1987). DOI:10.1016/0747-5632(87) 90010-0.
30. L. D. Rosen, D. C. Sears & M. M. Weil. Measuring Technophobia. A manual for the administration and scoring of three instruments: Computer Anxiety Rating Scale (Form C), General Attitudes Toward Computers Scale (Form C) and Computer Thoughts Survey (Form C).[Computerphobia Reduction Program], 1992. Available to order from: [http://www. technostress.com/WRmeasorder. htm](http://www.technostress.com/WRmeasorder.htm).
31. P. C. Chu et al. Validating the computer anxiety rating scale: Effects of cognitive style and computer courses on computer anxiety. *Computers in Human Behavior* (1991). DOI: 10.1016/0003-6870 (92)90251-p.
32. X. Guo et al. Latent Profile analysis of technophobia among the community elderly from the perspective of digital health. *Journal of Nursing Science* (2024). DOI:10.3870/j.issn.1001-4152. 2024.05.102.
33. G. Nimrod. Technophobia among older Internet users. *Educational Gerontology* (2018). DOI:10.1080/ 03601277.2018.1428145.
34. G. Nimrod. Not good days for technophobes: Older internet users during the COVID-19 pandemic. *Educational Gerontology* (2021). DOI:10.1080/ 03601277.2021.1894530.
35. X. Tang et al. Status quo and influencing factors of technophobia in elderly patients with chronic diseases under intelligent medical environment. *Chinese Nursing Research* (2023). DOI:10.12102/j.issn. 1009-6493.2023.21.024.
36. X. Tao et al. Correlation analysis between technical anxiety and home care readiness in aged caregivers of stroke patients. *Chinese Journal of Modern Nursing* (2023). DOI: 10.3760/cma.j.cn115682- 20221209-05944.
37. M. M. Weil et al. The psychological impact of technology from a global perspective: A study of technological sophistication and technophobia in university students from twenty-three countries. *Computers in human behavior* (1995). DOI:10.1016/0747- 5632(94)00026-e.
38. Q. Wu et al. Current status and influencing factors analysis of medical technophobia in elderly patients Seeking medical treatment. *Journal of Nursing Science* (2023). DOI:10. 3870/j.issn. 1001- 4152.2023.14.017.

39. Q. Yang et al. The mediating effect of self-perceived aging between digital health literacy and technophobia of rural elderly. *Modern Preventive Medicine* (2024). DOI:10.20043/j.cnki.MPM.202309424.
40. Zarina, I., Circenis, K., & Erts, R. Measuring the technophobia among middle-aged and older adults in Latvia: A pilot study. In *SHS Web of Conferences*, p. 02003. EDP Sciences; 2018.
41. D. Zhang. Survey on acceptance and its influencing factors of telehome health management system for the elderly based on technology acceptance model theory. Dissertation, Southern Medical University, 2013. http://101.42.170.182:8085/kcms2/article/abstract?v=WdAl4K16JyUPHCfiqytJkDOVdwNkpmtMK1L7YrRoeCPUUzLj3mLi8VW8fUgUDl6_d_DPtOJ7S8rfbZBP7u_xl56BIyRwDxGngCx_TJvhccXmPCEnDXtK6T3Euwt2RB22K0nr6vVFPOJRu1cvEnLQ4w==uniplatform=NZKPT&language=CHS.
42. D. Tao et al. Integrating usability and social cognitive theories with the technology acceptance model to understand young users' acceptance of a health information portal. *Health informatics journal* (2020). DOI:10.1177/ 1460458219879337.
43. D. Di Giacomo et al. Technophobia as emerging risk factor in aging: Investigation on computer anxiety dimension. *Health Psychology Research* (2020). DOI:10.4081/ hpr.2020.8207.
44. S. Korobili et al. Computer anxiety and attitudes among undergraduate students in Greece. *Computers in Human Behavior* (2010). DOI:10.1016/j.chb.2009.11.011.
45. L. M. Anthony et al. Technophobia and personality subtypes in a sample of South African university students. *Computers in Human Behavior* (2000). DOI: 10.1016/s0747-5632(99)00050-3.
46. E. Sun et al. Older and fearing new technologies? The relationship between older adults' technophobia and subjective age. *Aging & Mental Health* (2024). DOI:10.1080/13607863. 2023.2241017.
47. S. Wang et al. Association between social integration and risk of dementia: A systematic review and meta-analysis of longitudinal studies. *Journal of the American Geriatrics Society* (2023). DOI:10.1111/jgs.18094.
48. D. Beer. Power through the algorithm? Participatory web cultures and the technological unconscious. *New media & society* (2009). DOI: 10.1177/ 1461444809336551.
49. X. Sun et al. Internet use and need for digital health technology among the elderly: a cross-sectional survey in China. *BMC public health* (2020). DOI:10.1186/s12889-020-09448-0.
50. Z. Song et al. China's prefectural digital divide: Spatial analysis and multivariate determinants of ICT diffusion. *International journal of information management* (2020). DOI:10.1016/j.ijinfomgt. 2020.102072.
51. D. Rüegger et al. Leveraging the potential of personality traits for digital health interventions: a literature review on digital markers for conscientiousness and neuroticism. *MCIS 2017 Proceedings* (2017). DOI:10.3929/ethz-b-000218434.
52. Q. Zhang et al. On Language ability and its enhancement. *Linguistic Sciences* (2013). DOI:10. 7509/j linsei. 201310.028763.
53. B. Smith et al. New technologies, new disparities: the intersection of electronic health and digital health

- literacy. *International journal of cardiology* (2019). DOI: 10.1016/j.ijcard.2019.05.066.
54. S. R. Paige et al. Proposing a transactional model of eHealth literacy: concept analysis. *Journal of medical Internet research* (2018). DOI:10.2196/10175.
55. R. Schwarzer et al. The assessment of optimistic self-beliefs: comparison of the German, Spanish, and Chinese versions of the general self-efficacy scale. *Applied psychology* (1997). DOI: 10.1111/j.1464-0597.1997.tb01096.x.
56. E. W. Jordan et al. The behavioral antecedents of computer fear. *The Journal of Data Education* (1982). DOI:10.1080/00220310.1982.1
57. Tencent Research Institute(10 September 2021). How does the new digital environment impact the life of the elderly? Accessed:11 September 2022. <https://www.tisi.org/19587>.
58. L. Wang et al. Willingness or preference on the attitude of the disabled elderly using smart senior care products. *Journal of Northwest University (Philosophy and Social Sciences Edition)* (2021). DOI:10.16152/j.cnki.Xdxbsk.2021-05-010.
59. G. Wilson et al. Understanding older adults' use of social technology and the factors influencing use. *Ageing & Society* (2023). DOI:10.1017/s0144686x21000490.
60. S. Hu. Research on Optimal Allocation of Medical Resources in the Internet Medical Environment PhD (Dissertation, Graduate School of the Chinese Academy of Social Sciences). *PhD*, 2022. <https://link.cnki.net/doi/10.27642/d.cnki.gskyy.2022.000012>. DOI:10.27642/d.cnki.gskyy.2022.000012.
61. G. H. Cui et al. The relationship among social capital, eHealth literacy and health behaviours in Chinese elderly people: a cross-sectional study. *BMC Public Health* (2021). DOI: 10.1186/s12889-020-10037-4.
62. Q. Li et al. Research on the key factors of mobile medical technology acceptance for the elderly. *China Health Industry* (2017). DOI:10.16659/j.cnki.1672-5654.2017.35.161.
63. Y. Li et al. Application of life and social skills training in elderly patients with bipolar disorder in remission. *Chinese Journal of General Practice* (2022). DOI:10.16766/j.cnki.issn.1674-4152.002689.
64. X. Li et al. The relationship between health literacy empowerment and quality of life in disabled elderly and their spouses based on the theory of "dyadic coping". *Chinese Journal of Nursing* (2022). DOI:10.3761/j.issn.0254-1769.2022.08.014.
65. P. Chen et al. Latent profile analysis and its influencing factors for benefit finding in elderly patients with chronic diseases in the community. *Chinese Nursing Research* (2022). DOI:10.12102/j.issn.1009-6493.2022.23.033.
66. H. Huang et al. Community-dwelling elder's acceptance of gerontechnology and its influencing factors: a qualitative descriptive study. *Nursing Journal Of Chinese Peoples Liberation Army* (2021). DOI:10.3969/j.issn.1008-9993.2021.10.002.
67. F. Xiao et al. The disease cognition level and influencing factors of first-degree relatives of patients with

gastric cancer. *Journal of Nursing Science* (2022). DOI:10.3870/j.issn.1001- 4152.2022.12.026.



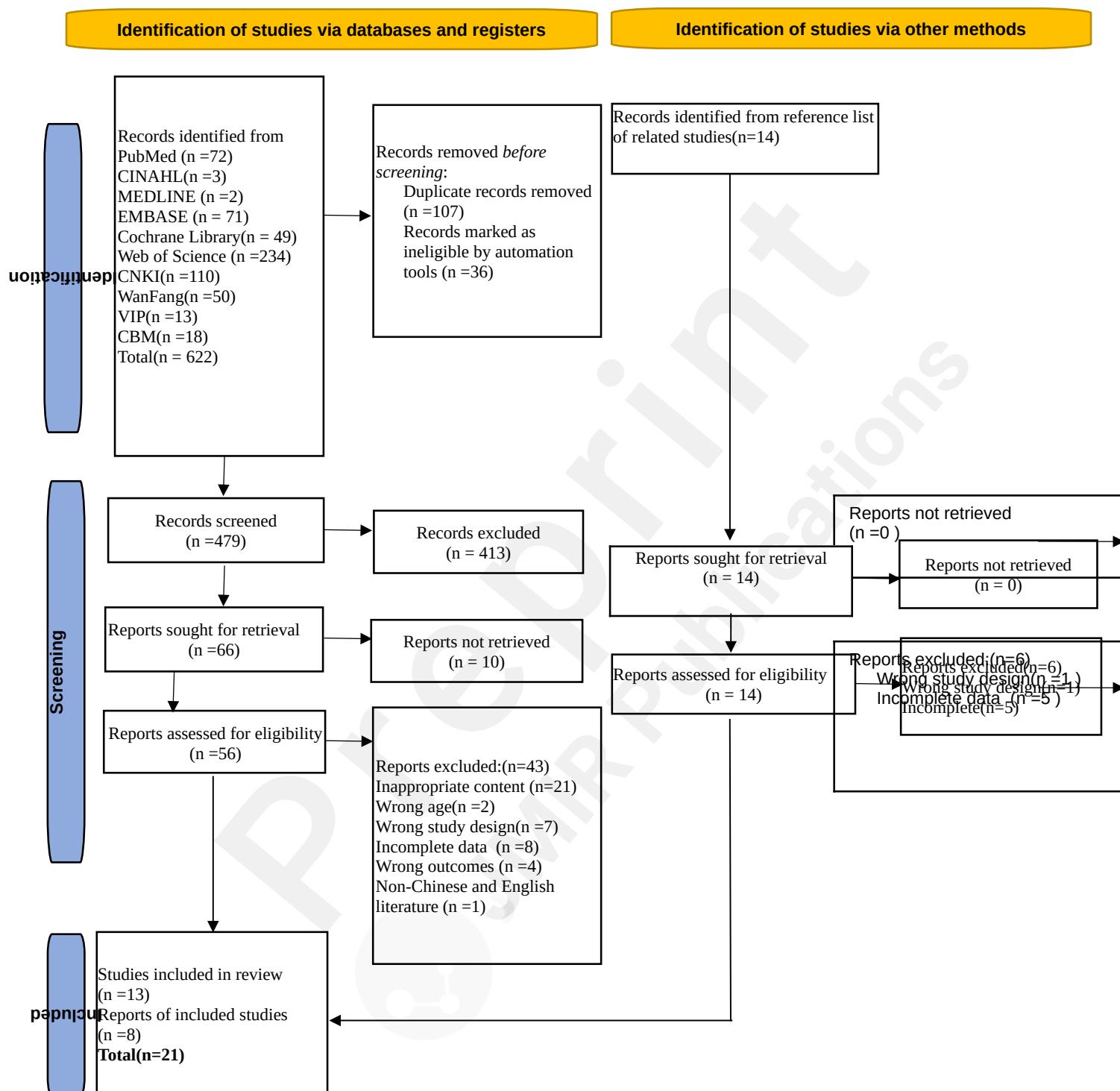
Figure 1. Selection process of included studies

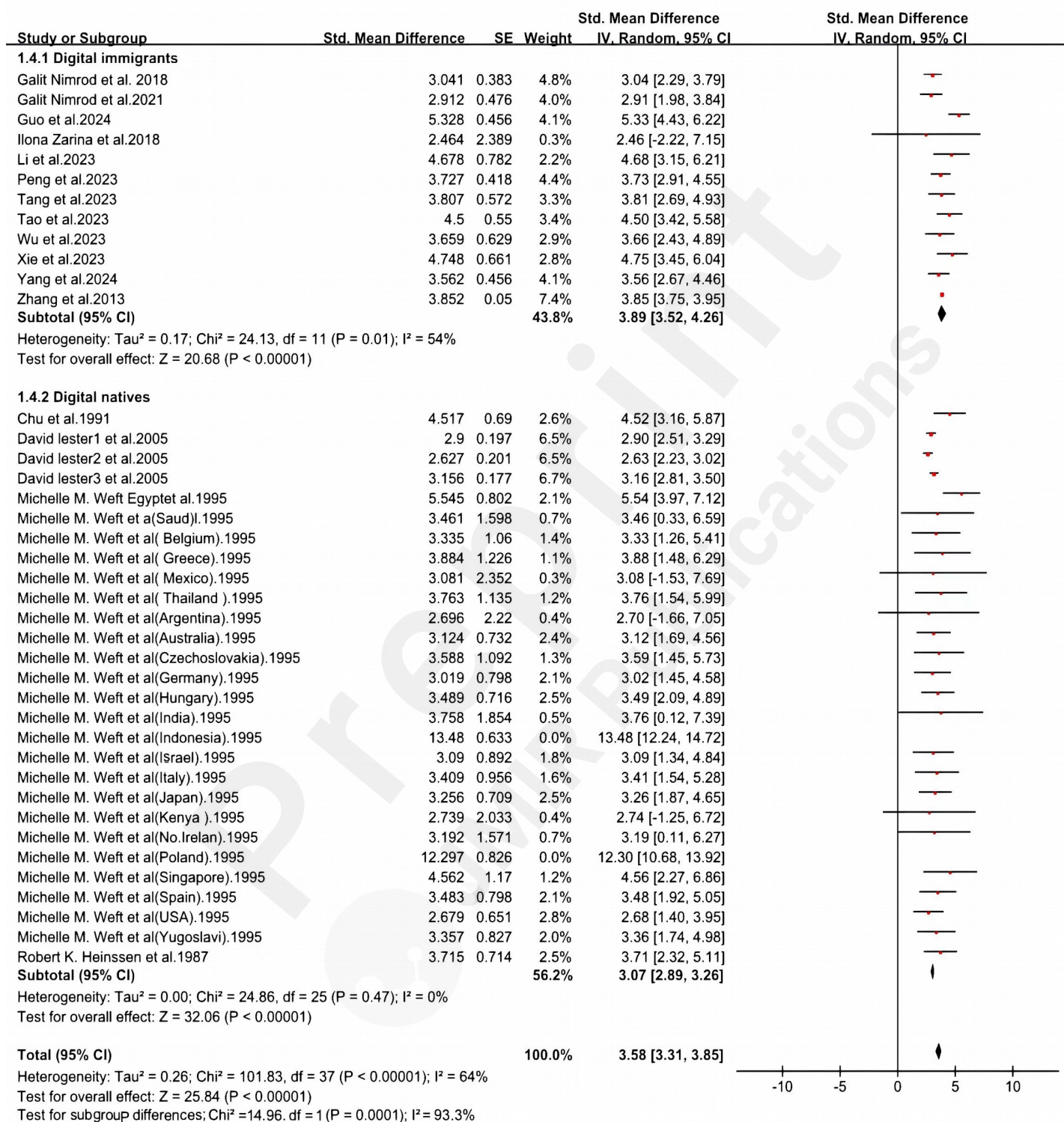
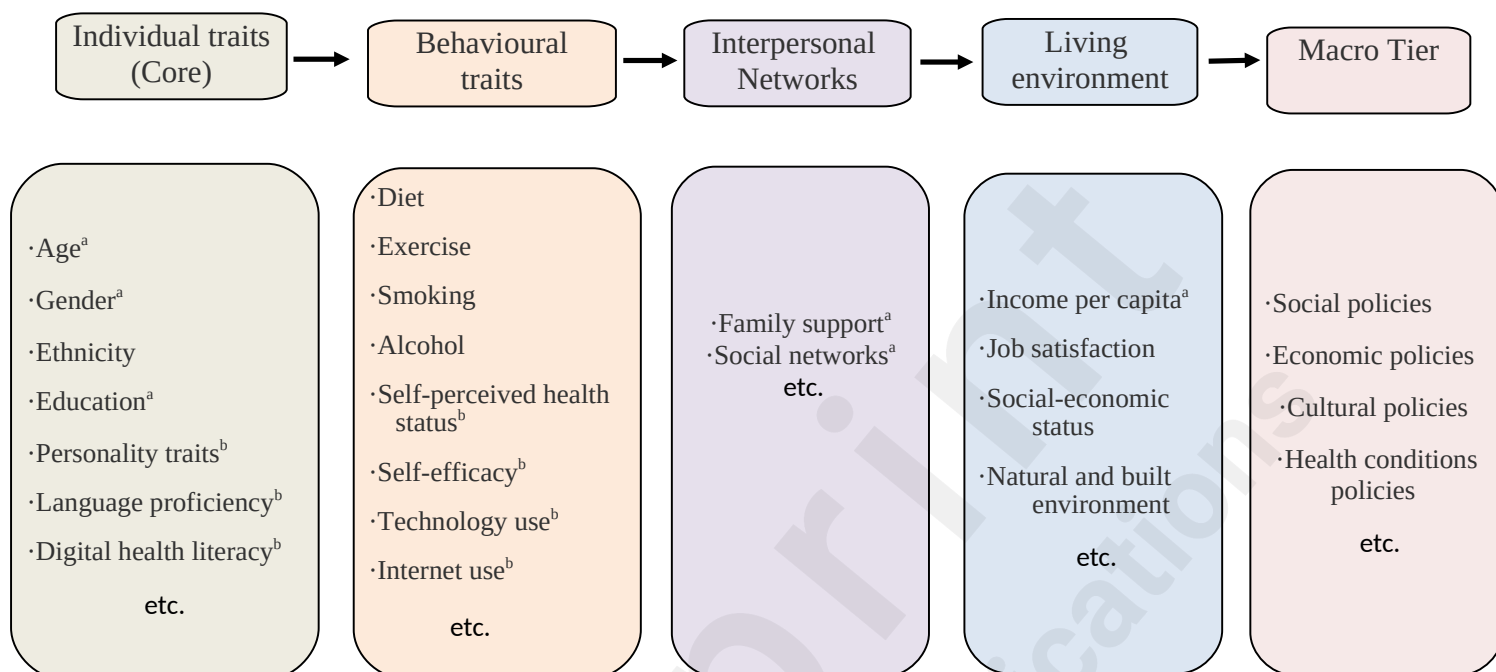
Figure 2. Subgroup analysis of overall technophobia level

Figure 3. Model of factors influencing technophobia levels

NOTE: Main findings of this systematic review embedded in COLLINS' health ecology model. The five tiers were adopted from the original conceptual model, and the findings were embedded to the model. ^adenotes the influencing factors identified from this review that fitted to the model; ^bdenotes updated factors identified from this review.

Studies	Country	Study population	Sample size	Type of study	Assessment tools	Influencing factors	Literature quality
Peng et al., 2023	China	Elderly individuals	606	Cross-sectional study	Technophobia Scale ^a	Age, gender, education, monthly income per capita, self-efficacy, social networks, technology use and Internet use	High
Wu et al., 2023	China	Elderly individuals	318	Cross-sectional study	Technophobia Scale ^a	Gender, education, digital health literacy and family support	High
Xie et al., 2023	China	Elderly individuals	213	Cross-sectional study	Technophobia Scale ^a	Age, education and digital health literacy	High
Li et al., 2023	China	Elderly individuals	153	Cross-sectional study	Technophobia Scale ^a	Monthly income per capita, family support, social networks and residency	High
Tao et al., 2023	China	Elderly individuals	151	Cross-sectional study	Technophobia Scale ^a	/	High
Zhang, 2013	China	Elderly individuals	313	Cross-sectional study	Self-developed scale	Age, education and Self-perceived health condition	Middle
Lester et al., 2005	America	Students	644	Cross-sectional study	SCAS	Age, gender and Internet use	Middle
Zarina et al., 2018	Latvia	Middle-aged and older adults	62	Cross-sectional study	CARS-C	/	Middle
Weil & Rosen, 1995	23 Countries ^d	Students	3392	Cross-sectional study	CARS-C	Age, gender and technology use	Middle
Chu et al., 1991	America	Students	132	Cross-sectional study	CARS	Computer courses, cognitive approach, technology use and language proficiency	Middle
Heinssen Jr et al., 1987	America	Students	270	Cross-sectional study	CARS	Personality traits, technology use and language proficiency	Middle
Nimrod, 2021	Israel	Elderly individuals	407	Cross-sectional study	Technophobia Scale ^b	Internet use	Middle
Nimrod, 2018	Israel	Elderly individuals	537	Cross-sectional study	Technophobia Scale ^b	Education, self-perceived health condition, life satisfaction and Internet use	Middle
Tang et al., 2023	China	Elderly individuals	291	Cross-sectional study	Technophobia Scale ^a	Age, education, monthly income per capita, digital health literacy and family support	High
Yang et al., 2024	China	Elderly individuals	503	Cross-sectional study	Technophobia Scale ^a	Age, gender, education, monthly income per capita,	High

						digital health literacy, self-perceived health condition, self-perceived ageing and internet use	
Guo et al., 2024	China	Elderly individuals	320	Cross-sectional study	Technophobia Scale ^a	/	High
Sun & Ye, 2024	China	Elderly individuals	602	Cross-sectional study	Technophobia Scale ^a	/	High
Di Giacomo et al., 2019	Italy	Adults ^c	117	Cross-sectional study	SCAS	Self-efficacy and technology use	Middle
Di Gicomoe et al., 2020	Italy	Adults ^c	117	Cross-sectional study	SCAS	Self-efficacy and technology use	Middle
Korobiliet al., 2010	Greece	Students	240	Cross-sectional study	CARS	Language proficiency, self-efficacy and Internet use	Middle
Anthony et al., 2000	South Africa	Students	176	Cross-sectional study	CARS-C	Age, personality traits, technology use	Middle

NOTE: ^a refers to Technophobia Scale developed by Khasawneh et al., Chinese translation by Su Erhong et al.;^b refers to Technophobia Scale developed by Sinkovics et al.;^c refers to persons 50 years of age or old;^d refers to American, Yugoslavia, Thailand, Spain, Singapore, Saudi Arabia, Poland, No. Ireland, Mexico, Kenya, Japan, Italy, Israel, Indonesia, India, Hungary, Greece, Germany, Egypt, Czechoslovakia, Belgium, Australia, Argentina.

Table 2. Scores for each dimension of technophobia levels among older adults

Dimension	Total score	Bilateral Test		Heterogeneity test		Effect Model	Mean score	Bilateral Test		Heterogeneity test		Effect Model
	MD,95%CI	Z	P	I ²	P		MD,95%CI	Z	P	I ²	P	
Technology Tension	16.38 95%[14.44,18.33]	16.54	□0.00001	99%	□0.00001	Random	2.89 95%CI[2.69,3.09]	28.49	□0.00001	96%	□0.00001	Random
Technology Fear	15.50 95%CI[12.3218.69]	9.54	□0.00001	100%	□0.00001	Random	3.02 95%CI[2.53,3.50]	12.13	□0.00001	100%	□0.00001	Random
Privacy and Security concerns	9.89 95%[8.68,11.10]	15.98	□0.00001	98%	□0.00001	Random	3.29 95%CI[2.94,3.64]	18.36	□0.00001	98%	□0.00001	Random
Three dimensions of Technophobia	39.90 95%CI[35.87,43.95]	19.38	□0.00001	99%	□0.00001	Random	3.07 95%CI[2.69,3.44]	15.91	□0.00001	99%	□0.00001	Random

Table 3. Factors associated with the level of technophobia
<https://preprints.jmir.org/preprint/76686>

Influencing factors	K	N	Effect size and 95%CI			Bilateral Test		Heterogeneity test		Effect Mode
			Summary r	Lower limit	Upper limit	Z	P	I ²	P	
Age	6	1997	0.139	0.050	0.226	3.05	0.002	66%	0.02	Random
Education	7	2781	-0.149	-0.188	-0.110	7.85	□0.00001	1%	0.42	Fixed
Gender	3	1186	0.188	0.090	0.282	3.88	0.0001	64%	0.06	Random
Monthly income per capita	3	1050	-0.110	-0.168	-0.050	3.48	0.0005	0%	0.52	Fixed
Digital health literacy	3	1034	-0.414	-0.462	-0.354	13.94	□0.00001	0%	0.66	Fixed
Family support	4	1368	-0.178	-0.245	-0.110	4.87	□0.00001	34%	0.22	Fixed
Social networks	2	759	-0.537	-0.647	-0.405	6.75	□0.00001	74%	0.05	Random
Self-perceived health condition	3	1353	-0.159	-0.207	-0.110	5.88	□0.00001	0%	0.37	Fixed
Self-efficacy	5	1269	-0.446	-0.572	-0.300	5.53	□0.00001	87%	□0.00001	Random
Personality traits	2	446	0.235	0.139	0.319	4.98	□0.00001	0%	0.37	Fixed
Technology use intention	4	1347	-0.178	-0.236	-0.129	6.66	□0.00001	0%	0.58	Fixed
Technology experience	4	3946	-0.319	-0.388	-0.235	7.61	□0.00001	0%	0.45	Fixed
Frequency of technology use	5	1583	-0.236	-0.282	-0.188	9.54	□0.00001	0%	0.42	Fixed
Attitude towards the Internet	2	640	-0.273	-0.470	-0.050	2.41	0.02	83%	0.02	Random
Total online activity hours	3	1522	-0.178	-0.226	-0.129	7.06	□0.00001	29%	0.23	Fixed
Number of online activities	2	615	-0.371	-0.438	-0.300	9.55	□0.00001	40%	0.19	Fixed
Online activity programme categories	3	1451	-0.139	-0.188	-0.090	5.25	□0.00001	0%	0.80	Fixed
Language proficiency	3	619	-0.226	-0.345	-0.110	3.59	0.0003	58%	0.09	Random

Supplementary Material

eAppendix 1. Search strategy

eAppendix 2. Correlation formula transformation

eAppendix 3. Quality assessment of the included studies

eAppendix 4. Forest plot of mean and total scores for entries in each dimension of technophobia levels among older adults

eAppendix 5. Forest plot of influencing factors of technophobia

eAppendix 6. Publication bias funnel plot of technophobia

eAppendix 7. PRISMA Checklist

eAppendix 1. Search strategy

Summary of search results

Database		Before deduplication	After deduplication
English Database	PubMed	72	515
	CINAHL	3	
	Medline	2	
	Embase	71	
	Cochrane	49	
	Web of Science	234	
Chinese Database	CNKI	110	
	WangFang	50	
	VIP	13	
	CBM	18	
Total		622	

Search terms and results for each database

Pubmed search on 30/4/2024:

#	Searches	Results
1	"technophobia"[Title/Abstract] OR ("cyber"[All Fields] AND "phobia"[Title/Abstract]) OR "fear of technology"[Title/Abstract] OR "fear of computers"[Title/Abstract]	72

CINAHL search on 30/4/2024:

#	Searches	Results
1	TI technophobia OR TI fear of technology OR TI cyber phobia OR TI	25

	fear of computers	
2	AB technophobia OR AB fear of technology OR AB cyber phobia OR AB fear of computers	166
3	(AB technophobia OR AB fear of technology OR AB cyber phobia OR AB fear of computers) AND (S1 OR S2)	166
4	TI risk factors OR TI Factor, Risk OR TI Factors, Risk OR TI Risk Factor	41,626
5	AB risk factors OR AB Factor, Risk OR AB Factors, Risk OR AB Risk Factor	146,208
6	AB risk factors OR AB Factor, Risk OR AB Factors, Risk OR AB Risk Factor) AND (S4 OR S5)	146,208
7	((AB risk factors OR AB Factor, Risk OR AB Factors, Risk OR AB Risk Factor) AND (S4 OR S5)) AND (S3 AND S6)	3

Medline search on 30/4/2024:

#	Searches	Results
1	AB risk factors OR AB Factor, Risk OR AB Factors, Risk OR AB Risk Factor	118,316
2	TI risk factors OR TI Factor, Risk OR TI Factors, Risk OR TI Risk Factor	23,883
3	TI technophobia OR TI fear of technology OR TI cyber phobia OR TI fear of computers	6
4	AB technophobia OR AB fear of technology OR AB cyber phobia OR AB fear of computers	42
5	(AB technophobia OR AB fear of technology OR AB cyber phobia OR AB fear of computers) AND (S1 OR S2)	2
6	((AB technophobia OR AB fear of technology OR AB cyber phobia OR AB fear of computers) AND (S1 OR S2)) AND (S3 OR S4)	2
7	((((AB technophobia OR AB fear of technology OR AB cyber phobia OR AB fear of computers) AND (S1 OR S2)) AND (S3 OR S4)) AND (S5 AND S6)	2

Embase search on 30/4/2024:

#	Searches	Results
1	technophobia	51
2	'fear of technology':ab,ti OR 'cyber phobia':ab,ti OR 'fear of computers':ab,ti	20
3	#1 OR #2	71

Web of Science search on 30/4/2024:

#	Searches	Results
1	TS=(technophobia OR fear of technology OR cyber phobia OR fear of computers)	4082
2	TS=(Risk Factors OR Factor, Risk OR Factors, Risk OR Risk Factor)	1626950

3	#2 AND #1	234
---	-----------	-----

Cochrane search on 30/4/2024:

#	Searches	Results
1	(Technophobia OR fear of technology OR cyber phobia OR fear of computers):ab,ti,kw	398
2	(Risk Factors OR Factor, Risk OR Factors, Risk OR Risk Factor):ab,ti,kw	124898
3	#1 AND #2	49

China national knowledge infrastructure (CNKI) 搜索 search 30/4/2024:

#	Searches	Results
1	技术恐惧 + 技术恐惧 + 技术恐惧 + 技术恐惧 + 技术恐惧 + 技术恐惧 + 技术恐惧	110
2	技术恐惧 + 技术恐惧 + 技术恐惧 + 技术恐惧	

WANFANG MED ONLINE 搜索 search 30/4/2024:

#	Searches	Results
1	技术恐惧:(技术恐惧 OR 技术恐惧 OR 技术恐惧 OR 技术恐惧 OR 技术恐惧 OR 技术恐惧 OR 技术恐惧) and 技术恐惧:(技术恐惧 OR 技术恐惧 OR 技术恐惧 OR 技术恐惧)	50

VIP Database for Chinese Technical Periodicals (VIP) 搜索 search 30/4/2024:

#	Searches	Results
1	(((((技术恐惧=技术恐惧 OR 技术恐惧=技术恐惧) OR 技术恐惧=技术恐惧) OR 技术恐惧=技术恐惧) OR 技术恐惧=技术恐惧) OR 技术恐惧=技术恐惧) AND (((技术恐惧=技术恐惧 OR 技术恐惧=技术恐惧) OR 技术恐惧=技术恐惧) OR 技术恐惧=技术恐惧))	13

CBM 搜索 search 30/4/2024:

#	Searches	Results
1	"技术恐惧"[主题:词] OR "技术恐惧"[主题:词] OR "技术恐惧"[主题:词] OR "技术恐惧"[主题:词] OR "技术恐惧"[主题:词] OR "技术恐惧"[主题:词] OR "技术恐惧"[主题:词]	31
2	"技术恐惧"[主题:词] OR "技术恐惧"[主题:词] OR "技术恐惧"[主题:词] OR "技术恐惧"[主题:词]	554872

3	(#1) AND (#2)	18
---	---------------	----

eAppendix 2. Correlation formula transformation

2-1

- 1 $r = 2 \sin[\pi \times \beta / 6]$
- 2 $r = \beta + 0.05k$ (where $k=1$ if β is non-negative and 0 if β is negative)
- 3 $r = \sqrt{F / (F + df)}$ or $r = t / \sqrt{t^2 + df}$

2-2

- 1 Fisher's $Z = 0.5 \times \ln[(1+r)/(1-r)]$
- 2 $VZ = 1 / (n-3)$
- 3 $SE = \sqrt{VZ}$
- 4 Summary $r = (e^{2Z} - 1) / (e^{2Z} + 1)$ (Z = summary Fisher 'Z')

eAppendix 3.Quality assessment of the included studies(N=21)

Studies	Whether the source of the information is clear	Whether the inclusion and exclusion criteria for both the exposed and non-exposed groups (cases and controls) are explicitly listed or referenced from previous publications.	Whether a time period for identifying patients is given	whether the study subjects are continuous	Whether the evaluator's subjective factors mask other aspects of the study subjects	Describes any assessment performed to ensure quality	The reasons for excluding any patient from analysis are explained	How are measures to evaluate and/or control confounding factors described	If possible, explain how the lost data is handled in the analysis	The patient response rate and the completeness of data collection were summarized	If follow-up is available, identify the expected percentage of patients with incomplete data or follow-up outcomes	Literature quality
Peng et al.2023	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Unclear	9 High
Wu et al.2023	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Unclear	9 High
Xie et al.2023	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Unclear	9 High
Li et al.2023	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Unclear	9 High
Tao et al.2023	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Unclear	9 High
Zhang et al.2013	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Unclear	10 High
David lester et al.2005	Yes	No	No	Yes	Yes	No	No	Yes	No	No	Unclear	4 Middle
Ilona Zarina et al.2018	Yes	No	No	Yes	Yes	Yes	No	Yes	No	No	Unclear	5 Middle

MichelleM. Weft et al.1995	Yes	No	No	Yes	Yes	Yes	No	Yes	No	No	Unclear	5	Middle
Chu et al.1991	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	No	Unclear	6	Middle
RobertK.Heinssen et al.1987	Yes	No	No	Yes	Yes	Yes	No	Yes	No	No	Unclear	5	Middle

Quality assessment of the included studies(N=21)(continues)

Studies	Whether the source of the information is clear	Whether the inclusion and exclusion criteria for both the exposed and non-exposed groups (cases and controls) are explicitly listed or referenced from previous publications.	Whether a time period for identifying patients is given	Whether the study subjects are continuous	Whether the evaluator's subjective factors mask other aspects of the study subjects	Describes any assessment performed to ensure quality	The reasons for excluding any patient from analysis are explained	How are measures to evaluate and/or control confounding factors described	If possible, explain how the lost data is handled in the analysis	The patient response rate and the completeness of data collection were summarized	If follow-up is available, identify the expected percentage of patients with incomplete data or follow-up outcomes		Literature quality
Galit Nimrod et al.2021	Yes	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Unclear	7	Middle
Galit Nimrod et al. 2018	Yes	No	No	Yes	Yes	Yes	No	Yes	No	Yes	Unclear	6	Middle
Tang et al.2023	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Unclear	8	High

Yang et al.2024	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Unclear	8	High
Guo et al.2024	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Unclear	8	High
Sun et al.2023	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Unclear	8	High
DiGiacomoet al.2019	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	No	Unclear	6	Middl e
DiGiacomo et al.2020	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	No	Unclear	6	Middl e
S. Korobili et al.2010	Yes	No	No	Yes	Yes	No	No	Yes	No	No	Unclear	4	Middl e
L.M. Anthony et al.2000	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Unclear	7	Middl e

eAppendix4.Forest plot of mean and total scores for entries in each dimension of technophobia levels among older adults

Figure 1. Mean scores of items in the technology tension dimension

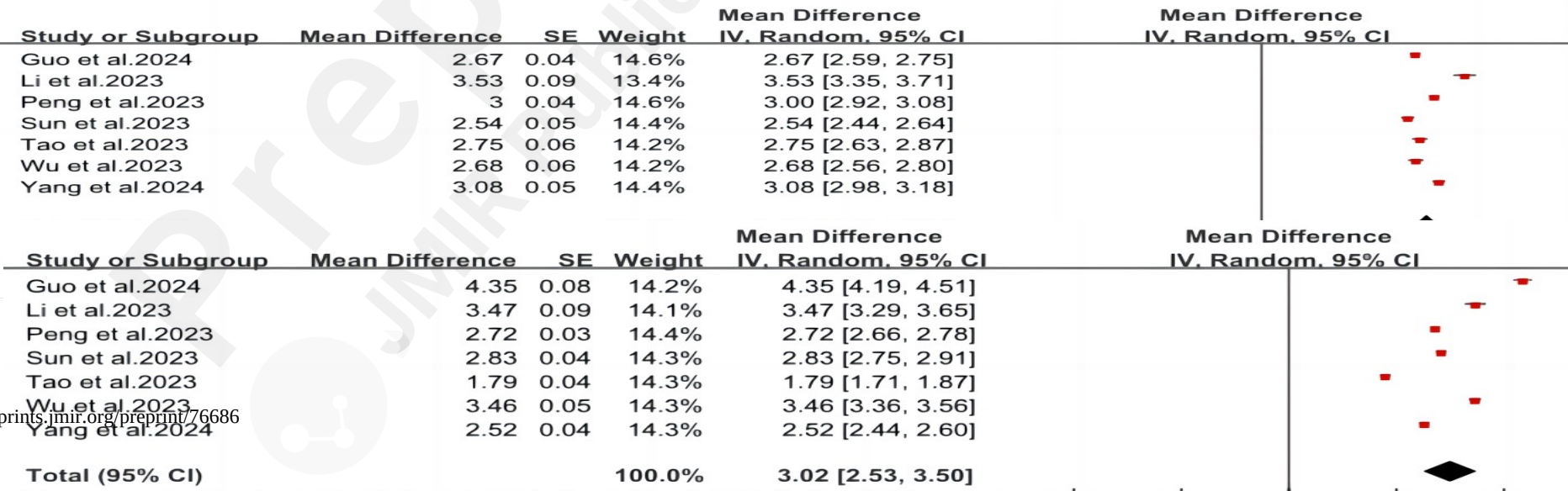


Figure 2. Mean scores of items in the technology fear dimension

Figure 3. Mean scores of items in the privacy and security concerns dimension

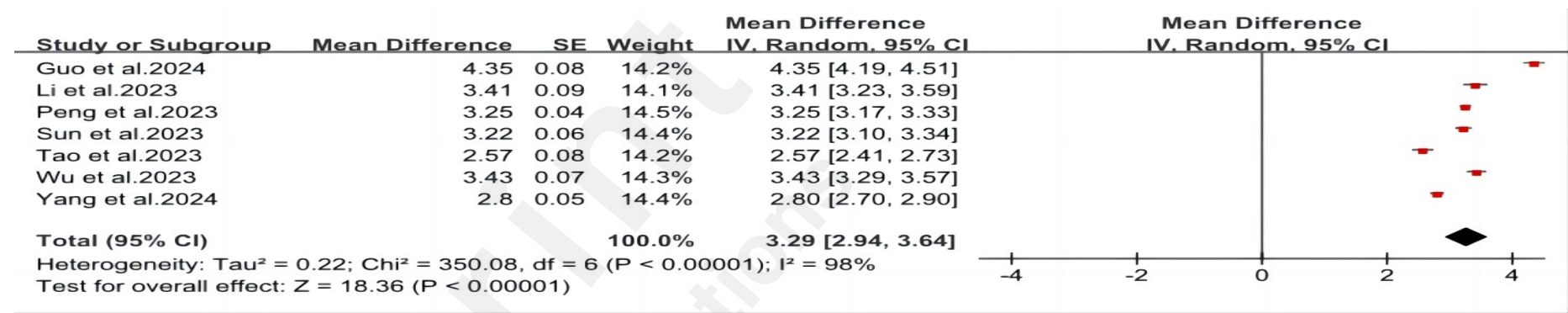


Figure 4. Mean scores of items in the three dimensions of technophobia

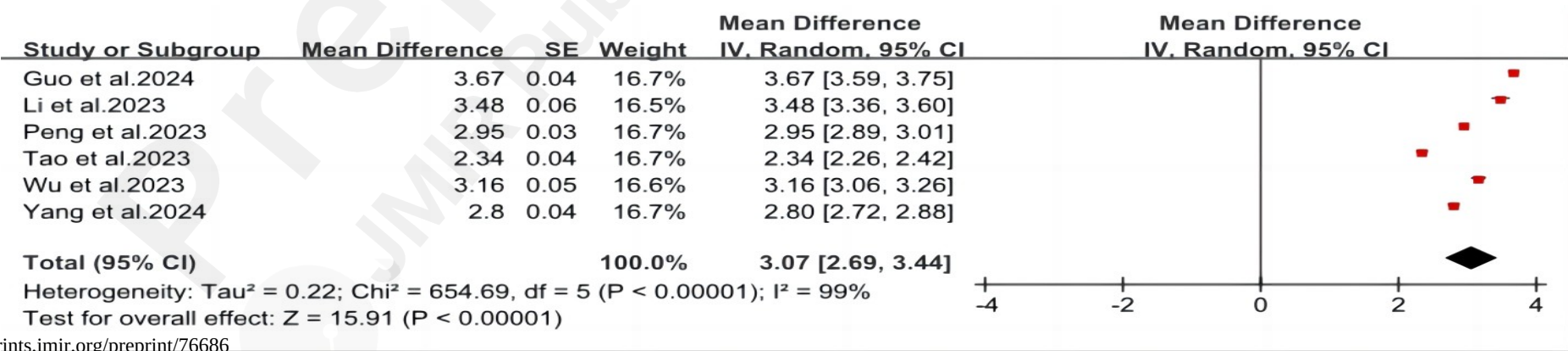


Figure 5. Total scores of items in the technology tension dimension

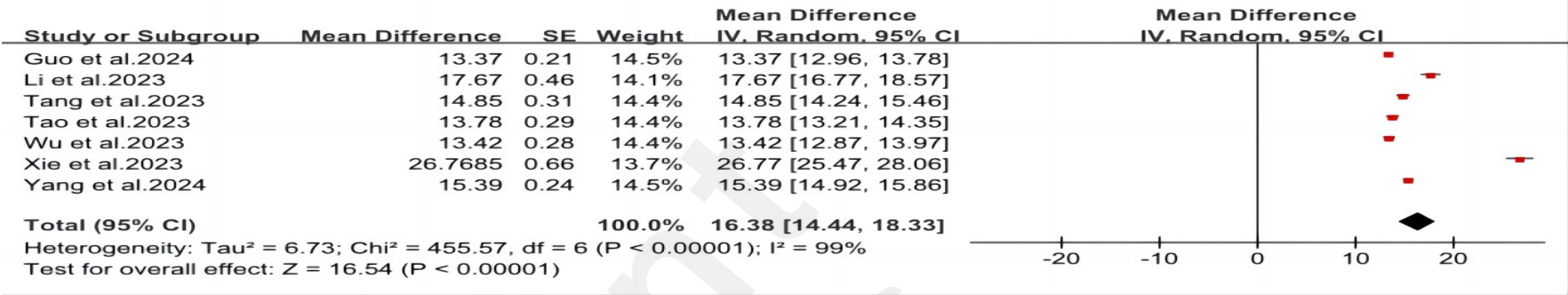


Figure 6. Total scores of items in the technology fear dimension

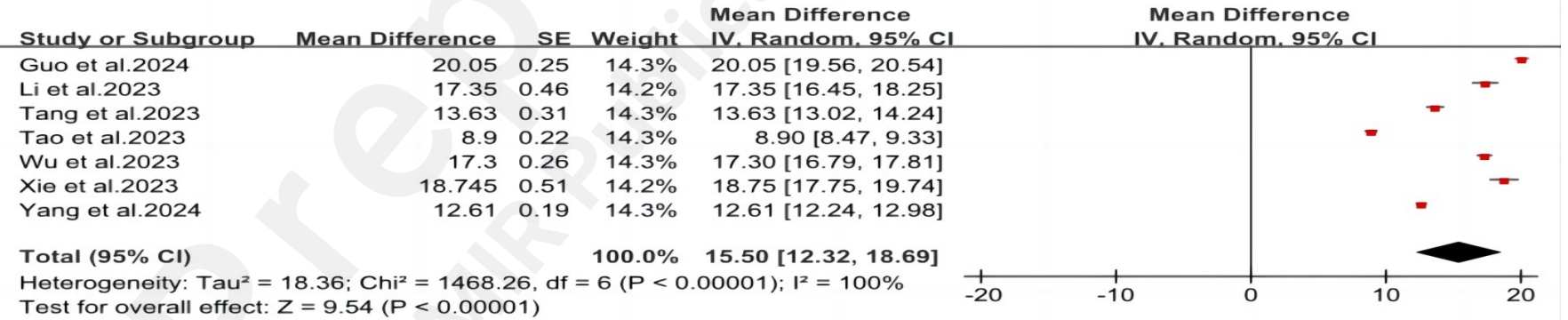


Figure 7. Total scores of items in the privacy and security concerns dimension

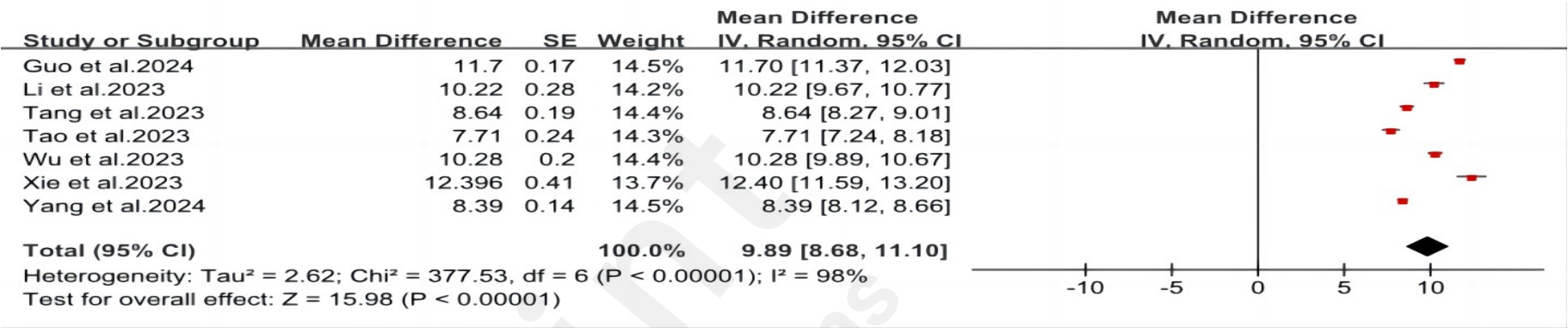
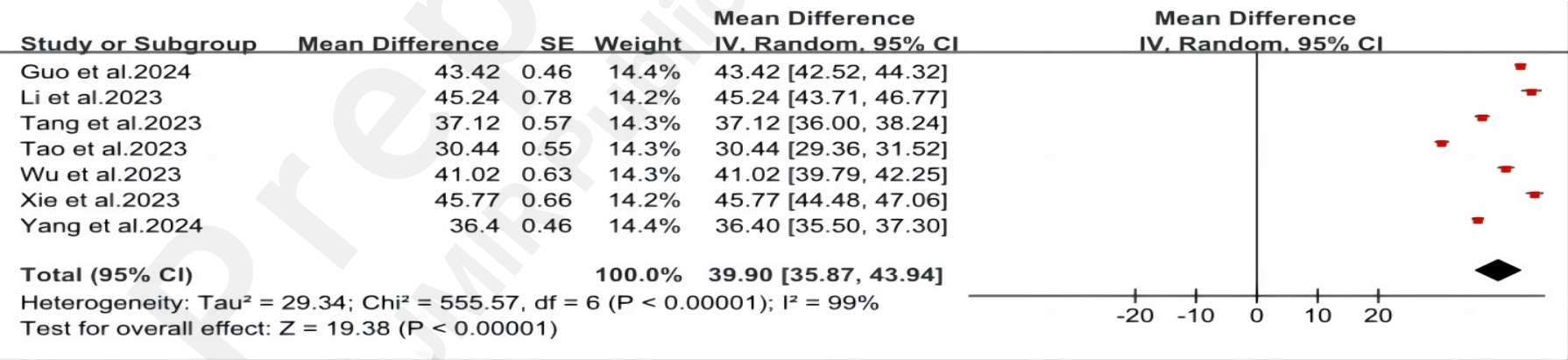


Figure 8. Total scores of items in the three dimensions of technophobia



eAppendix 5.Forest plot of influencing factors of technophobia

Figure 1. Age and technophobia

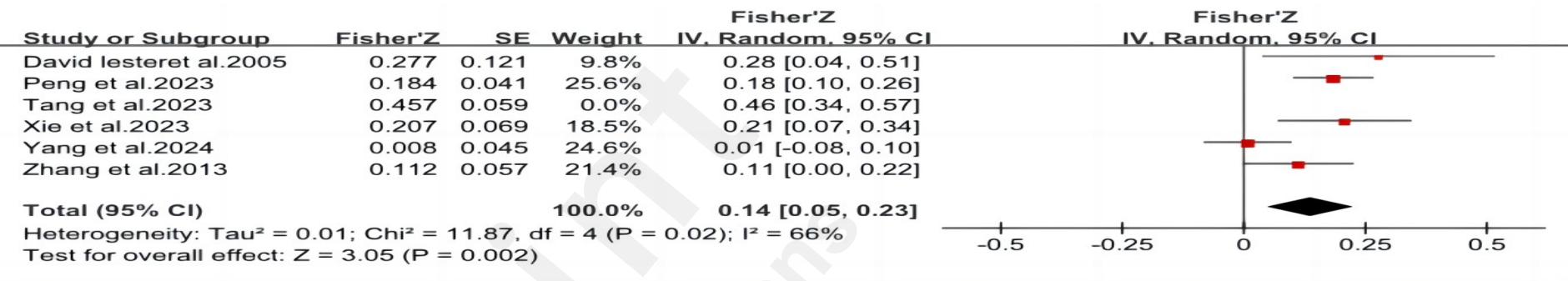


Figure 2. Education and technophobia

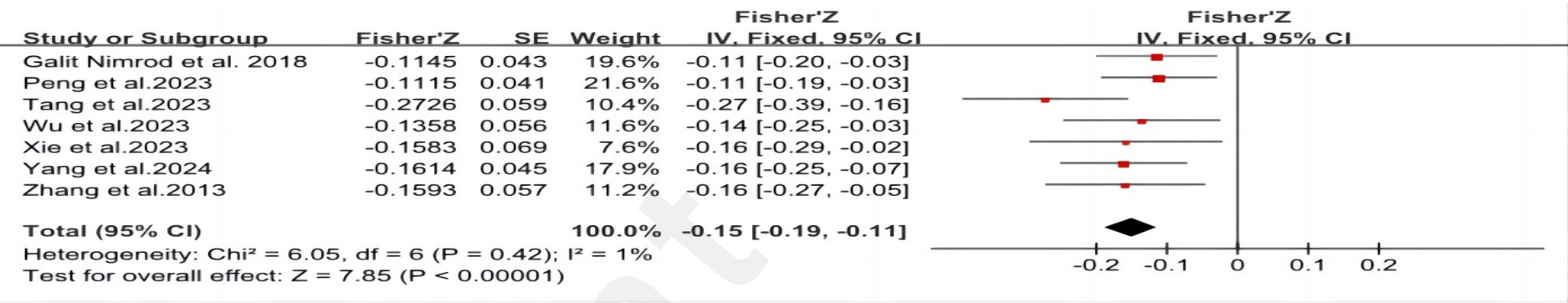


Figure 3. Gender and technophobia

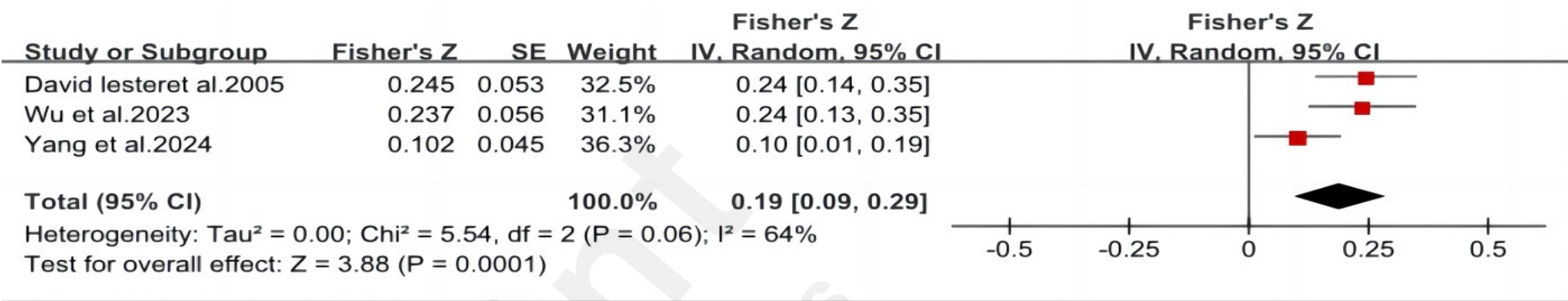


Figure 4. Monthly income per capita and technophobia

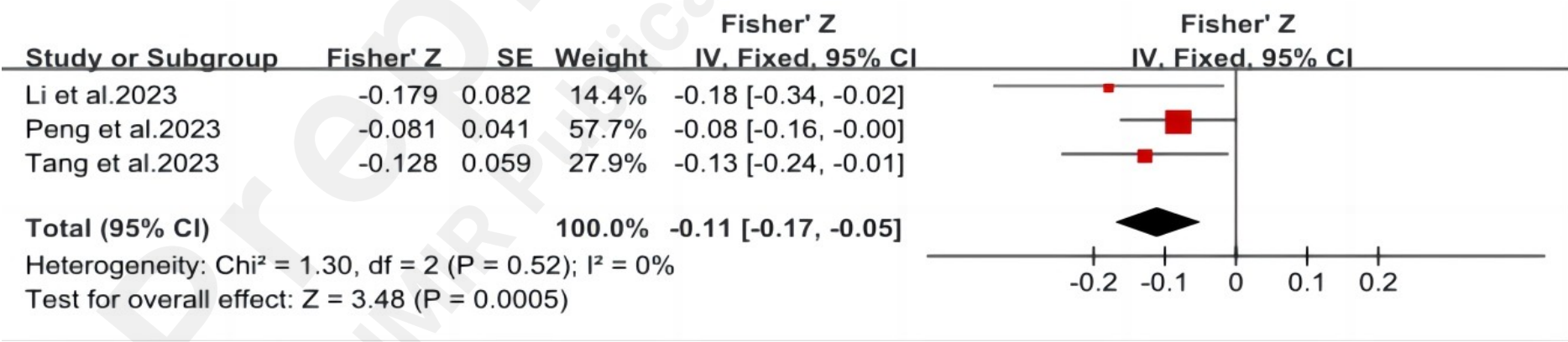


Figure5. Digital health literacy and technophobia

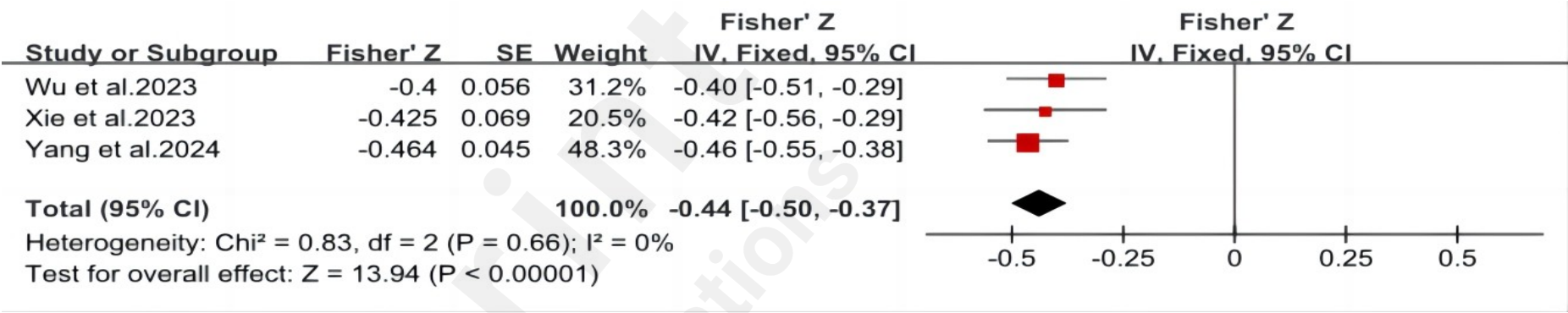


Figure 6. Family support and technophobia

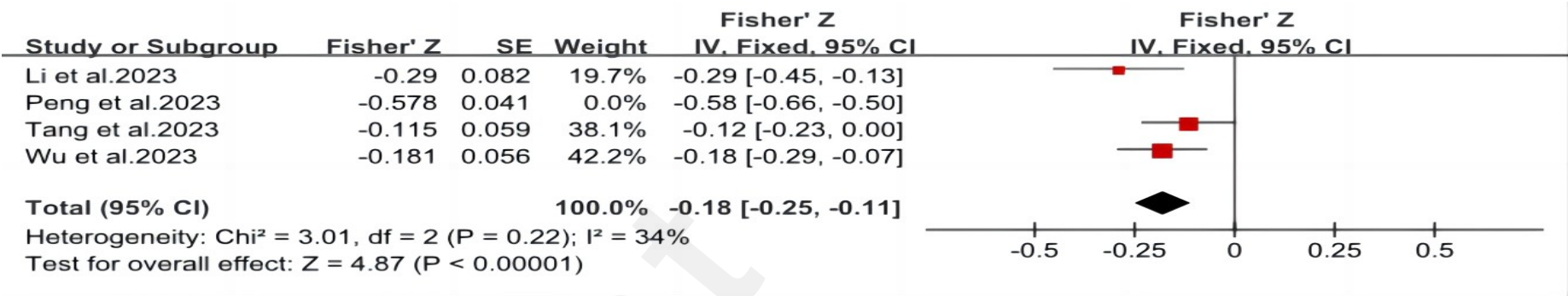


Figure7. Social networks and technophobia

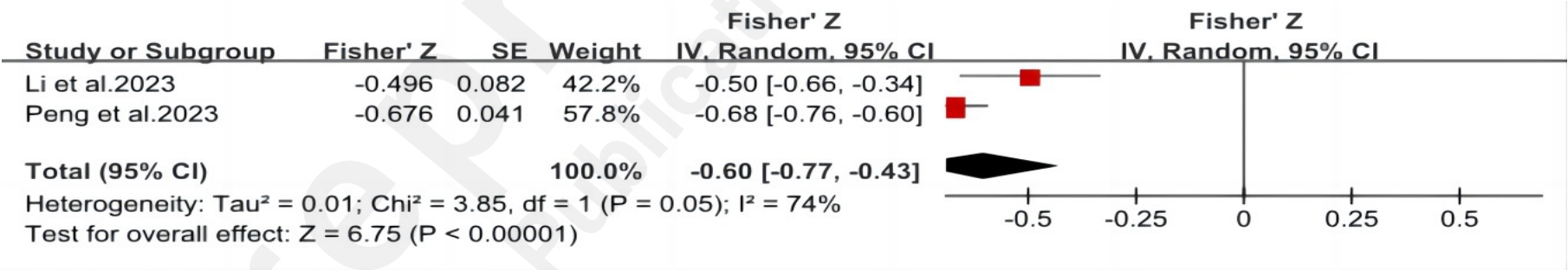


Figure8. Self-perceived health condition and technophobia

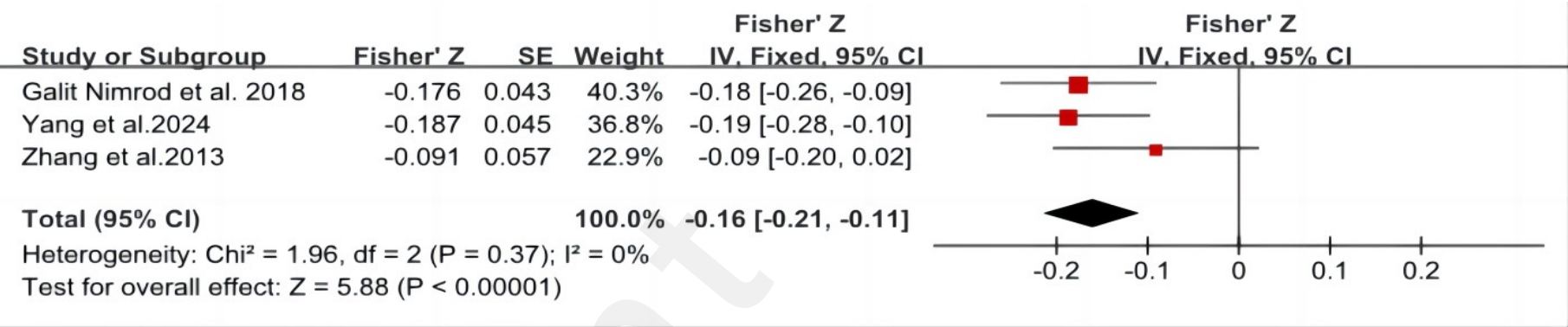


Figure 9. Self-efficacy and technophobia

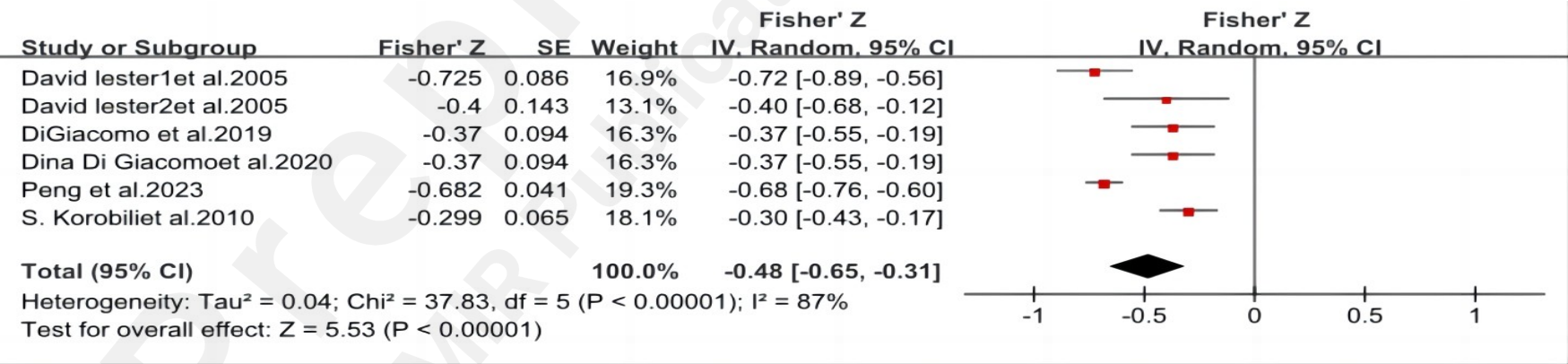


Figure 10. Personality traits and technophobia

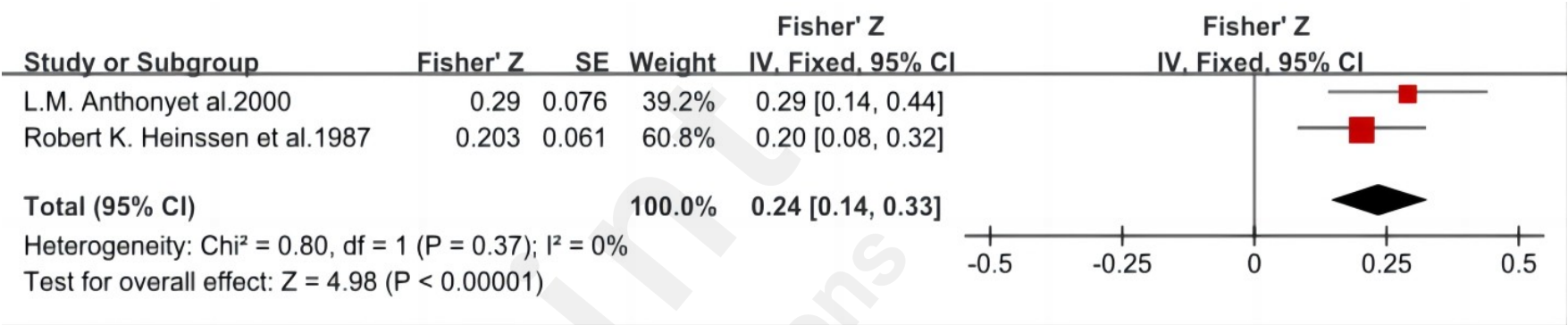


Figure 11. Technology use intention and technophobia

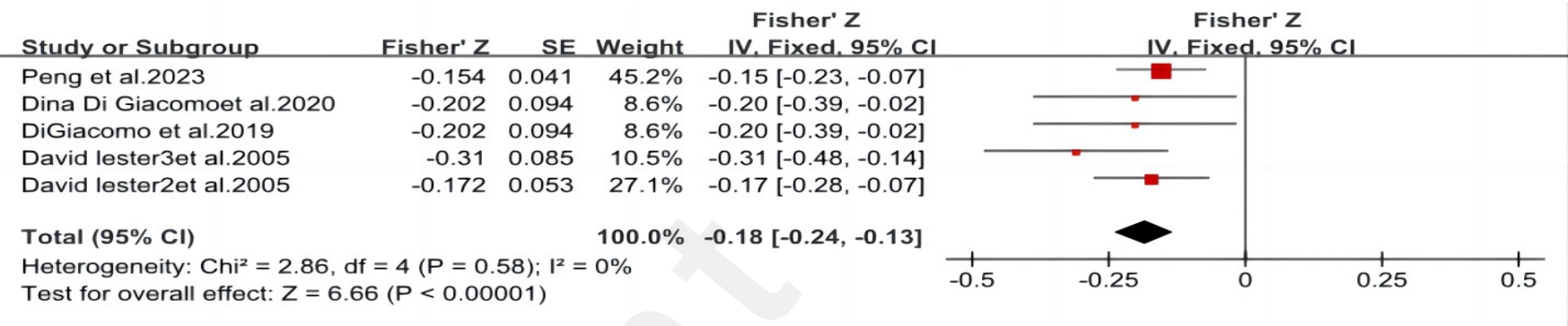


Figure 12. Technologies experience and technophobia

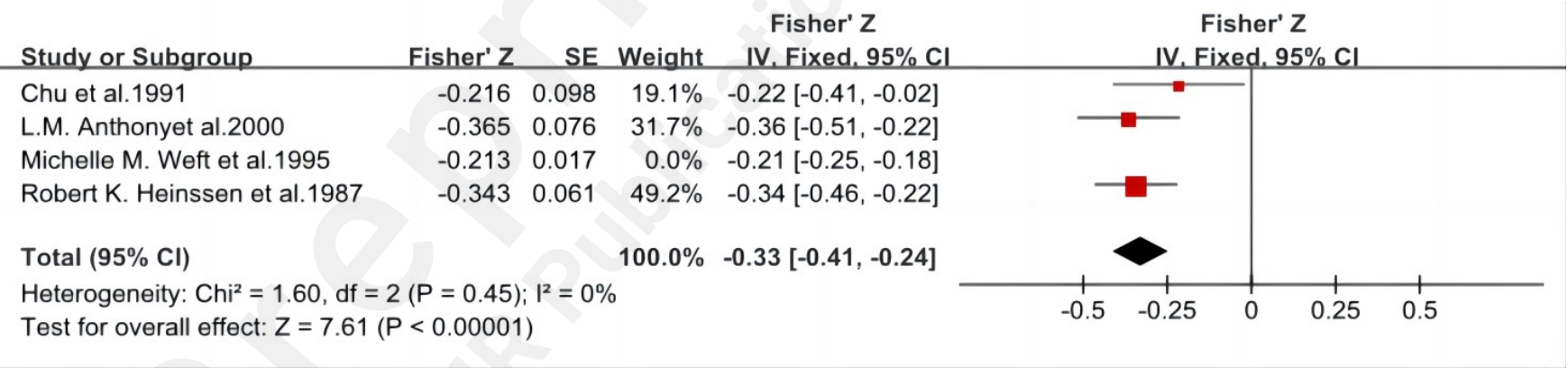


Figure 13. Frequency of technology use and technophobia

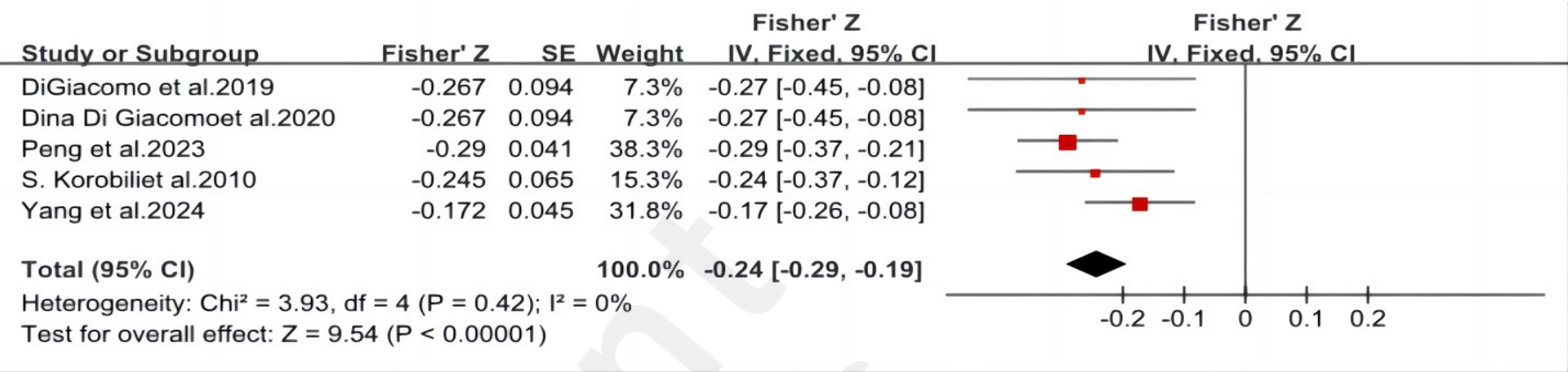


Figure 14. Attitude towards the Internet and technophobia

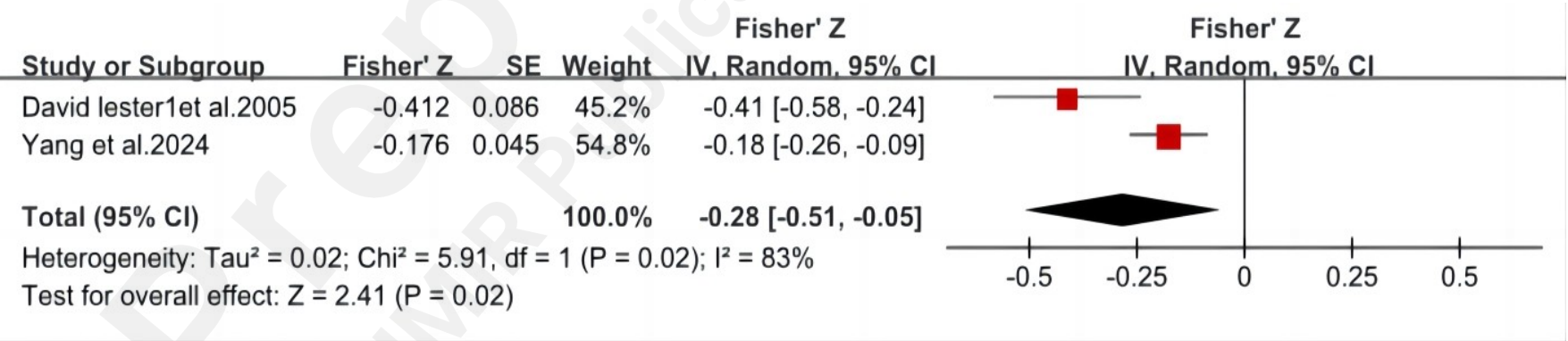


Figure 15. Total online activity hours and technophobia

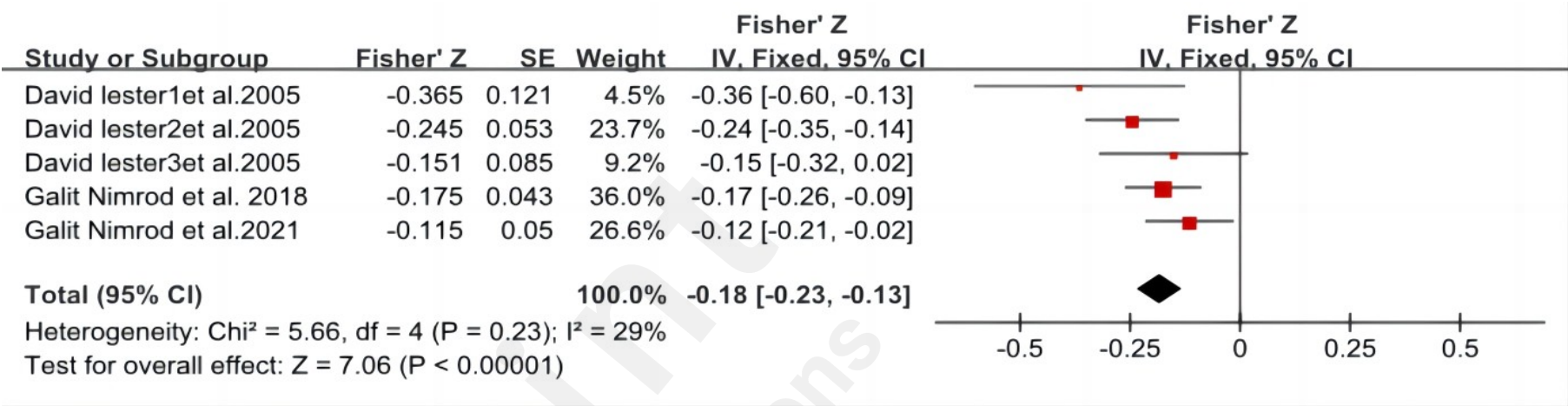


Figure 16. Number of online activities and technophobia

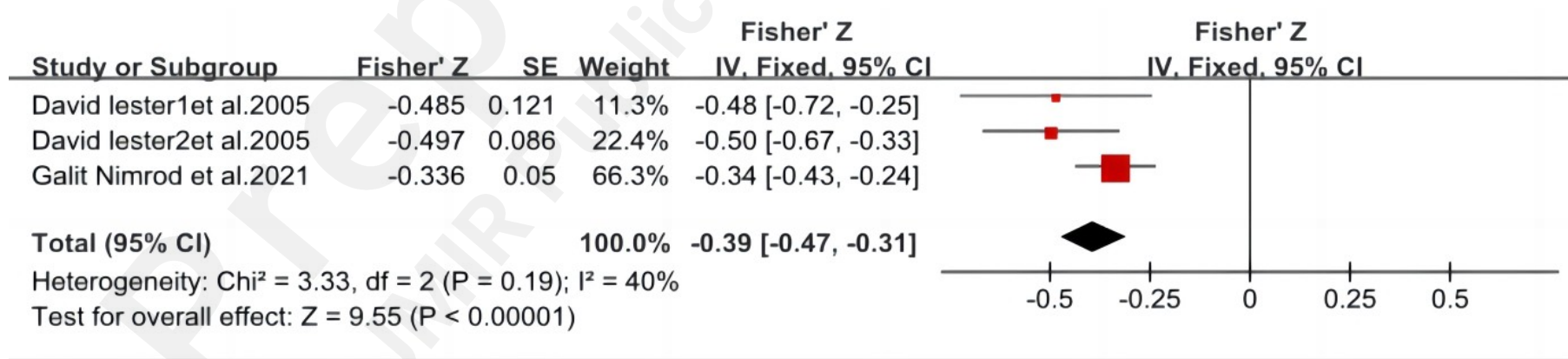


Figure 17. Online activity programme categories and technophobia

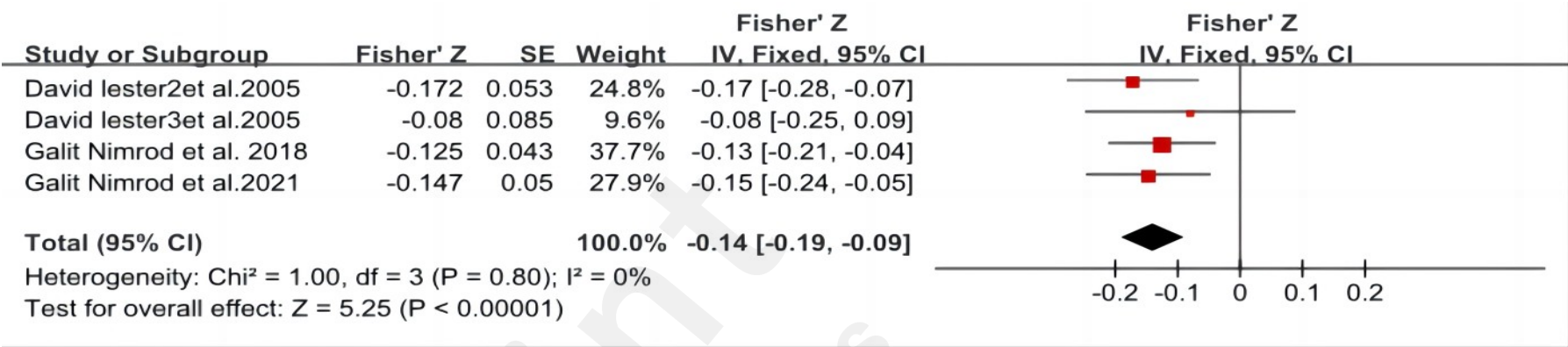
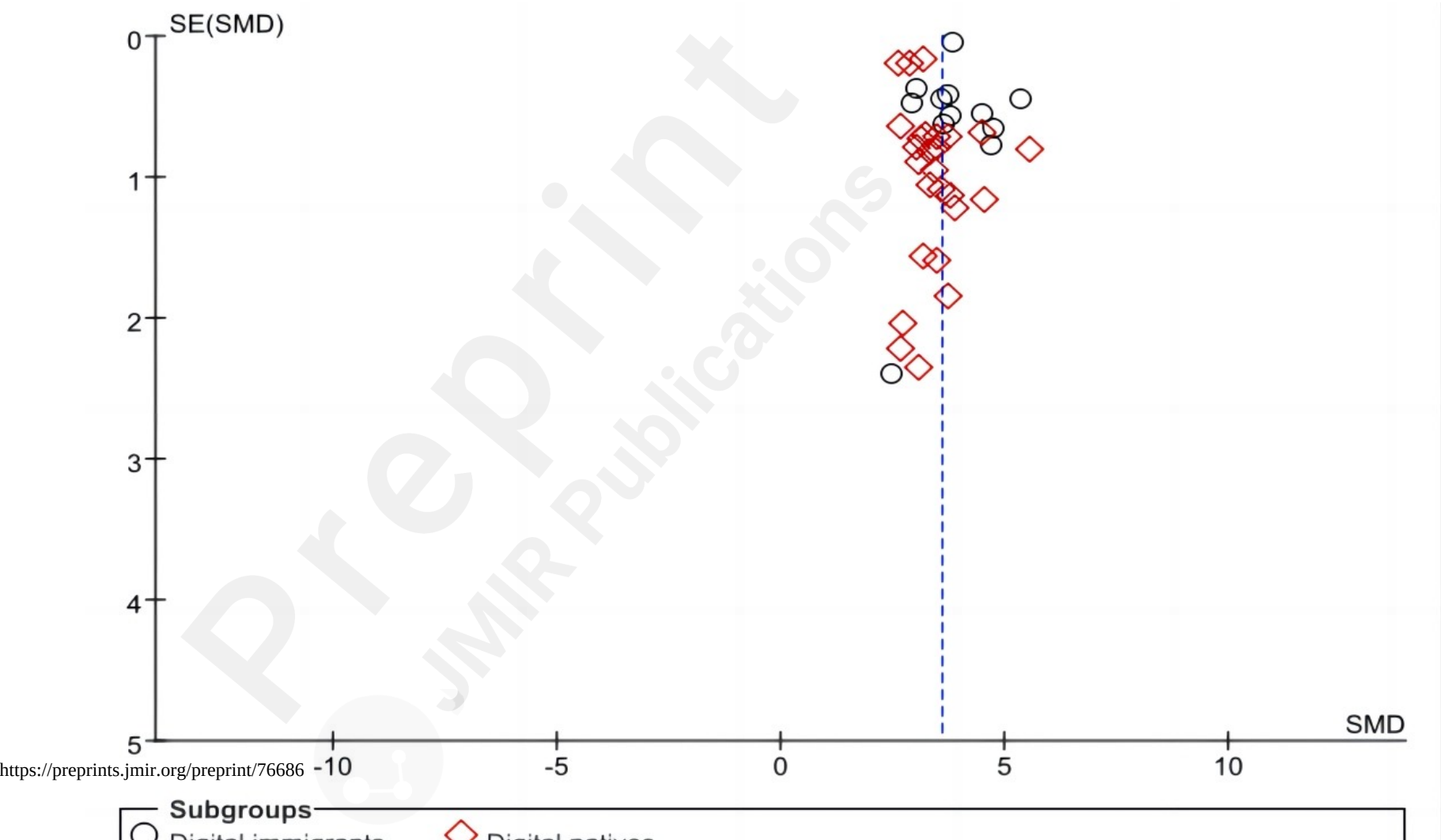


Figure 18. Language proficiency and technophobia

eAppendix 6. Publication bias funnel plot of technophobia





Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	3-6
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	6
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	7
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	6
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	7,Supplementary Material eAppendix 1
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	7
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	7
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	8
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	8
Study risk of bias assessment https://preprints.jmir.org/preprint/76686	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	7-8

Section and Topic	Item #	Checklist item	Location where item is reported
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	8-9
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	7-8
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	8-9,Supplementary Material eAppendix 2
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	N/A
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	8-9
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	8-9
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	8-9
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	8-9
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	8-9
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	9,Figure1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	9,Figure1
Study characteristics	17	Cite each included study and present its characteristics.	9-10,Table1
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	13,Supplementary Material eAppendix 6
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	10-13,Figure2,Table2-3,Supplementary Material eAppendix 4-5
Results of syntheses https://preprints.jmir.org/preprint/76686	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	10-13,Table2-3
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing	10-13,Supplementary Material eAppendix 4-5

Section and Topic	Item #	Checklist item	Location where item is reported
		groups, describe the direction of the effect.	
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	N/A
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	9
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	N/A
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	10-13
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	14-20
	23b	Discuss any limitations of the evidence included in the review.	14-20
	23c	Discuss any limitations of the review processes used.	20
	23d	Discuss implications of the results for practice, policy, and future research.	14-20
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	6
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	6
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	6
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	21
Competing interests	26	Declare any competing interests of review authors.	21,-12
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	N/A

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

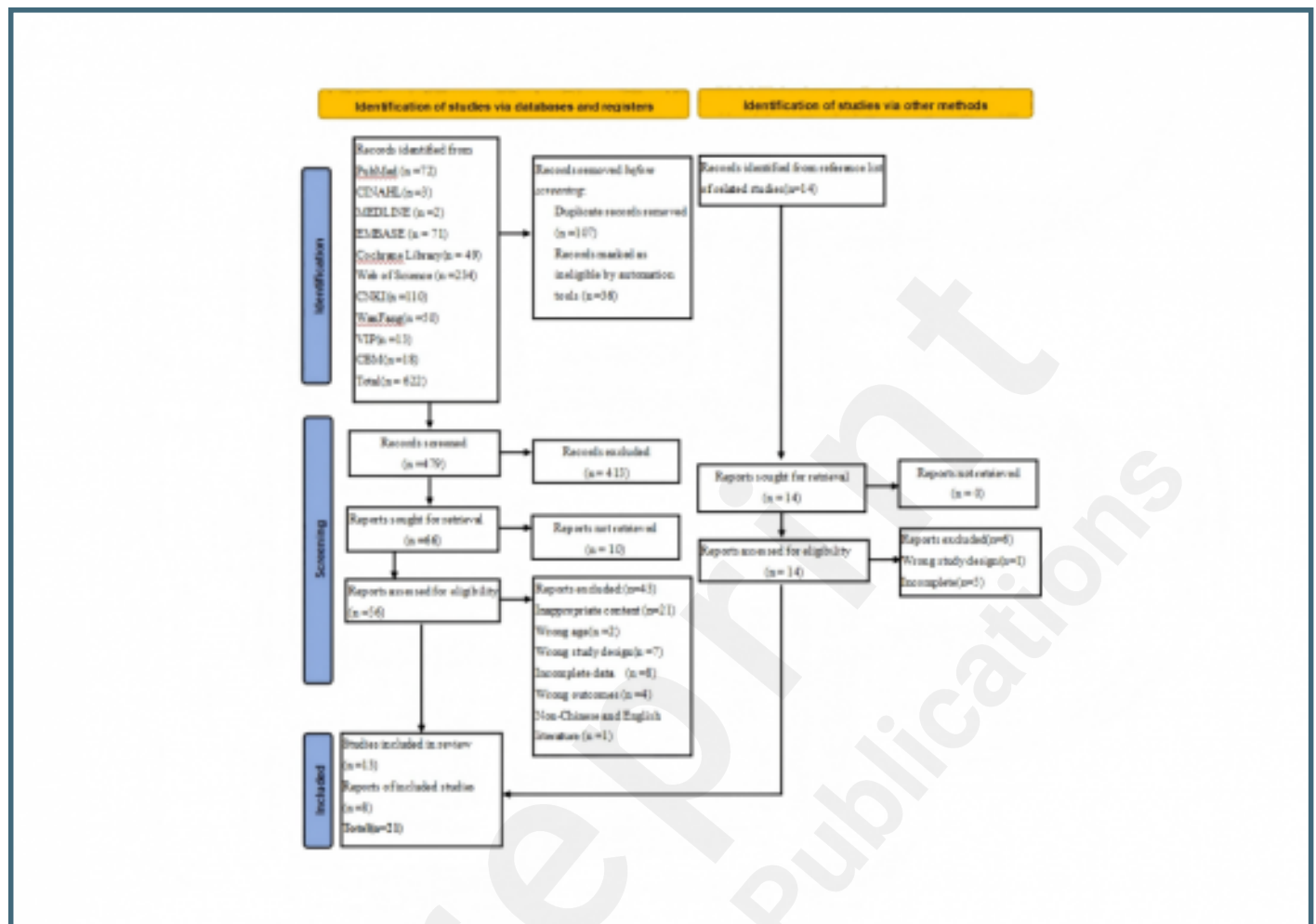
Supplementary Files

Untitled.

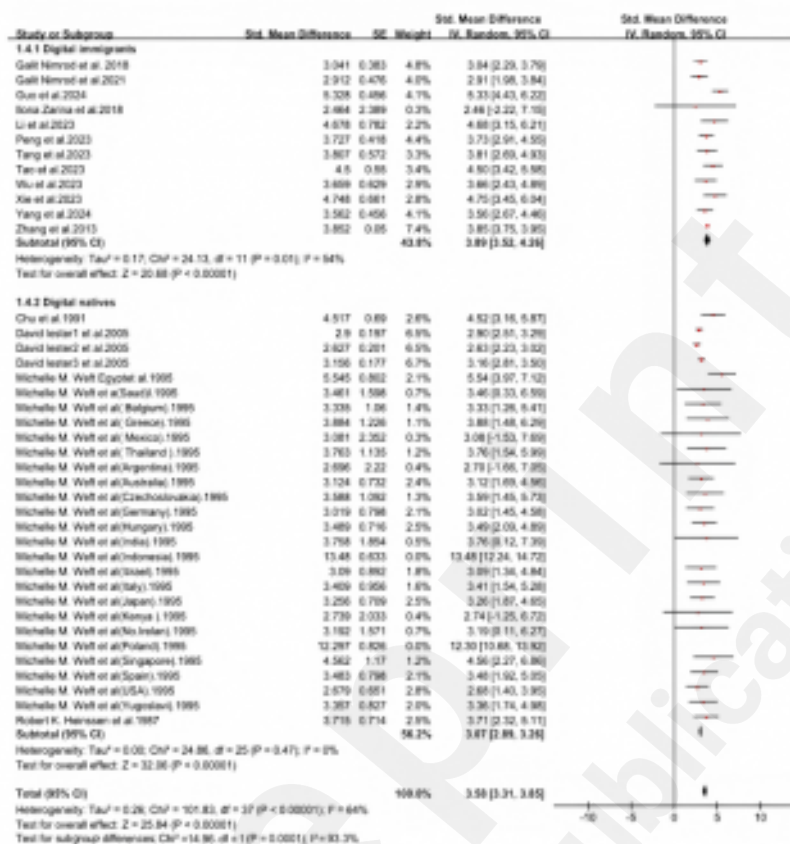
URL: <http://asset.jmir.pub/assets/82857ad75ae0d811f051dbc754b2aa71.doc>

Figures

Selection Process of Included Studies.



Subgroup Analysis of Overall Technophobia Level.



Model of Factors Influencing Technophobia Levels.

