

Correlation Studies between Self-Efficacy and Art Creation on Visual Impairment Group: A Meta-Analysis

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ABSTRACT

This study aimed to analyze the relationship between self-efficacy and art creation and whether there was a publication bias in the meta-analysis of research publications. This study explored Scopus and Science Direct databases on research relevant to the limitations of self-efficacy, art creation, visual impairment, and correlation studies in publications between 2014-2022. The data found 117 articles, but ten articles were relevant to correlational studies. The data were analyzed by using the Effect Size test and then used JASP to answer the hypothesis. The Random Effects model analysis showed there was a significant positive relationship between self-efficacy and art creation for visual impairment ($z=1.712$; $p<0.005$). The results of the Rank Correlation show Kendall's value of 0.244, which indicates the magnitude of the correlation coefficient between effect size and variance. The p-value of 0.381 is more significant than 0.05, which suggests the publication sample data is not publication biased. The study results regarding the perception of visual impairment on the ability to use technology and creative experience using audio correlate with adaptive preparation in the global era. This contributes to the results of research on the actualization needs of visual impairments.

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1. INTRODUCTION

The visual impairment group can understand the surrounding environment coherently with various stimuli. The limitations of sensory modalities do not limit access to the outside world. Visual perception has a significant negative impact on dealing with anxiety on self-efficacy. Efforts to strengthen the ability of the visually impaired can be made by performing visual arts activities as self-

confidence to show their competence. Artistic expressions for the blind have a psychological and social impact on everyday life (Sandahl, 2018).

Self-efficacy studies have been described by Bandura's theory as a change in behavior towards events so that cognitive processes affect the level of competence. Self-confidence can complete tasks based on one's belief to complete the challenges faced (Gartika et al., 2021; van Munster et al., 2022; Xie, Yuan, & Zhang, 2022). Completion of work can be a condition to have the desired competence. Self-efficacy involves cognitive involvement and integration of individual experiences in social persuasion according to each individual's physical state (Houwen et al., 2022; Huang et al., 2022; Kim, Chang, Yang, & Jeong, 2021; Papadopoulos, 2014; Shrestha, Alharbi, Wells, While, & Rahman, 2021). A person's perception of the ability to complete tasks in a particular domain sometimes has obstacles that require self-efficacy in the completion process. Self-knowledge has a positive impact on self-efficacy for a person to improve his abilities so that perception influences himself by what he experiences.

Meanwhile, according to Lievense et al. (2021); Shrestha et al. (2021); Weißenfels et al., 2021), self-efficacy can also be interpreted as a perception that an individual negotiates—interaction with other people and psychological state influence completing the task. Trust in the surrounding environment can strengthen self-assessment of the abilities possessed for these abilities (Ortiz-Peregrina et al., 2022; Rey-Galindo et al., 2020). Self-confidence is central in motivating an individual's self, thoughts, and actions. Self-efficacy helps individuals achieve future goals. Self-efficacy can be influenced by the dimensions of ability level, self-strength, and generality. The level dimension refers to problem-solving, strength refers to optimism in decision-making, and conception refers to the extent to which individuals believe in their abilities (Braksiek, 2022; Pate et al., 2022). Self-efficacy is in oneself to generate potential and modality in increasing individual trust in social issues.

Self-confidence in the visual impairment group with choices in encouraging creativity through handicrafts, the ability to play music, sing, and produce ceramic pottery. This shows that creativity arises in the individual emotionally and spontaneously, which shows the creator's existence. Invention is related to the process of creating something—the activity of making something about everyday artistic creations. Artwork is the basis of thoughts, beliefs, and images in the objects created (Borges et al., 2020; Tihic, Hadzic, & McKelvie, 2021). Self-efficacy toward artistic creation is defined as one's belief in one's ability to create works successfully. Confidence in creating jobs is more directed at perceiving, completing, and appreciating work. A work of art is a self-representation of the deepest ability as a person's self-expression to communicate and socialize.

Physical limitations can give a personality that has confidence in its potential like an ordinary person, personally and professionally. Sensitivity to sound and tactile becomes an alternative to optimize nerve function. The blind group tends to have special skills in self-development and spontaneity in dealing with daily activities. The artistic creativity of the visually impaired group is based on experience and availability of the objects around them. Art activities hone cognitive, affective, and psychomotor abilities where the level of imagination and conceptualization (Gartika et al., 2021; van Munster et al., 2022; Woodcock et al., 2022). Expressive self-activity in art is a psychological benefit because it provides space for interpreting work through experience and creation. The ability of the visual impairment group represents the ability of self-exploration through their sensory skills. The manufacturing process can be seen from the limited vision, sense of touch, sense of hearing, and other supporting abilities that make an object possible. Artwork expressing aesthetic value and psychological satisfaction creates a sense of confidence and pleasure in making things. The beauty of the work for the visual impairment group is seen in function, joy, and meaning.

The hope of the visual impairment group with awareness and confidence will help them have self-skills to socialize in society later. Several previous research results that examined self-efficacy and art creation showed that the practical implications of social interaction between school, family, and culture have a psychosocial impact on the visual impairments manifested in art creation. Internal motivation and social support have a significant role in fostering social participation that can solve social realities, including self-confidence in producing works of art (Winkel et al., 2021; Dietrich, Estradé, & Cruzado,

2021; Ortiz-Peregrina et al., 2022). Depersonalization of the visual impairment group provides opportunities to create different results. Opportunities to access multiple sources of information provide knowledge about the object of projective work. The creation of employment for the visual impairment group can also be intervened with informational materials in digital media, audio, braille, safe art materials, and tools to hone their tactile functions. The selection of natural materials with tactile techniques in the process is the right choice.

As explained by Vivoda (2019), Materials for creating art using natural media provide a sensation of emotional depth from the touch of a hand which is the strength and possibility for visual impairment to express art. Confidence in making works of art with natural media creates aesthetic experiences in the need for social interaction. Opinions about the results of self-efficacy on auditory sensitivity of art media explained by Pino (2021), Playing instruments through playing music provides sensitivity to intuition through the auditory. The sensitivity of the fingers produces the sensitivity of the sound source to the strings of musical instruments. The visual impairments are more sensitive to melodic elements generated from the auditory information heard. The results of these artistic activities have an impact on aesthetic experiences for visual impairment are more dominantly sensitive to the sense of hearing. Art treatment interventions through body movements have an impact on the needs of cognitive visual impairment. Fong, Tan et.al, (2020) concluded that Kinesthetic movements for visual impairments provide spontaneity to the body expressions of visual impairments. Self-efficacy from the flexibility of body movements in dance activities provides self-motivation to always do repetitive activities. The findings of previous studies point to the usefulness and advantages of using art in acting on the visually impaired to increase self-efficacy in life experiences.

This study aimed to analyze the relationship between self-efficacy and art creation for the visually impaired and whether there is publication bias in the meta-analysis of relevant research publications. The contribution of research analysis will provide insight for researchers and practitioners who work with visual impairments. The results of this analysis can be a practical contribution and become a reference for various studies that will be carried out.

2. METHODS

This study ~~uses~~ used a systematic review and meta-analysis guide (PRISMA) to conduct a systematic review according to the research topic (Elmisery, Rho, & Botvich, 2016). The stages analyzed by this research method were through the protocol steps, eligibility criteria, information sources, and research. The protocol stage focused on the results obtained for the study of the correlation between self-efficacy and art creation in the visually impaired group. The eligibility criteria in this study were the result of a study that evaluated the relationship between self-efficacy and art creation in the visual impairment group. Almost all studies are in English, with limitations in 2018-2022. The studies were limited to self-concept, self-therapy, low vision rehabilitation, self-concept assessment, general self-efficacy scale, and occupation therapy. Information sources and research was done through Scopus publication data, science direct, and the researcher. Review of study references reviewed with keyword search limitations;

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TITLE-ABS-KEY ("low vision" "self-efficacy") AND ( LIMIT-TO ( PUBSTAGE , "final" ) ) AND ( LIMIT-TO ( PUBYEAR , 2022 ) OR LIMIT-TO ( PUBYEAR , 2021 ) OR LIMIT-TO ( PUBYEAR , 2020 ) OR LIMIT-TO ( PUBYEAR , 2019 ) OR LIMIT-TO ( PUBYEAR , 2018 ) OR LIMIT-TO ( PUBYEAR , 2017 ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) )
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(data source from the Author, 2022)

Study selection by identifying references extracted to Excel database to facilitate handling and deletion of duplicate articles. The researcher examined the abstracts of the found studies by using a search strategy to identify studies that might fit the criteria for self-efficacy and art creation in the visually impaired group. Self-efficacy is a cognitive construct that can be changed and may be a target

for interventions to improve psychomotor outcomes for visual impairments. Relevant data can be downloaded by using a data unlock application (Lent et al., 2018; Sailer & Homner, 2020). The risk of bias was analyzed to determine the effect size (Z) value and the standard error effect size (SEz), and then analyze the data with the help of JASP software. Calculate the Effect Size and Standard Error Effect Size values using the following calculations:

$$z = 0.5 \ln \frac{1+r}{1-r}$$

Equation 1. Effect Size

$$V_z = \frac{1}{n-3}$$

$$SE_z = \sqrt{V_z}$$

Equation 2. Standard Error Effect Size

Data interpretation of Effect Size test results by using JASP was analyzed to obtain data regarding the presence or absence of publication bias. The results of publication data related to the relationship between self-efficacy and artistic creation in visual impairment were included in the categories of $r = 0.1$ (low), $r = 0.3$ (medium), $r = 0.5$ (high)[23], [23] 24]. Data synthesis strategy of the findings was presented in the form of a narrative. Information about the research sample, effect size, standard error effect size, heterogeneity test of the study, and publication bias test that has been measured is presented in the table. Meta-analysis was carried out by calculating heterogeneity using random effect size to estimate the average of the variables that affect art creation in the visual impairment group. The publication bias test is carried out based on the output rank correlation and regression method, where there is no publication bias if the p-value is more than 0.05. The results of the funnel plot described in the egger test also show a p-value of more than 0.05, so it means there is no publication bias. The results of the forest plot show how much influence self-efficacy and art creation have on the visually impaired group based on the criteria of $r = 0.1$ (low), $r = 0.3$ (medium), and $r = 0.5$ (high). The meta-analysis can use the R (version 3.5.1) measure effect was calculated as the standardized mean difference (Zhang et al., 2022). The effect calculation results from the flow chart for the various phases of the systematic review and meta-analysis according to the conceptual model are as follows

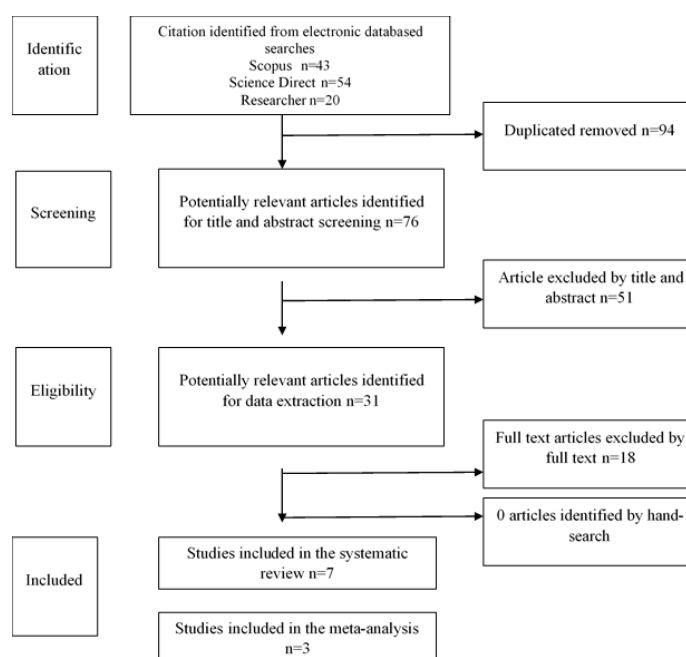


Figure 1. Flow diagram showing the study selection process

Assessment of results was publication bias by first examining the graphs for discrepancies and then evaluating them with a regression test. If the regression test revealed publication bias ($p < 0.1$), we applied the trim-and-fill method to correct the diagram flow.

3. FINDINGS AND DISCUSSION

The study results and discussion description uses a systematic method with studies of previous research results. Using correlational studies to screen articles on self-efficacy and art creation in the visually impaired group contained ten published articles. Testing the data meta-analysis was carried out by classifying the correlation studies between self-efficacy and artistic skills and then analyzing the number of subjects used and the correlation results from each study. The output results showing the correlation results are measured by the effect size and the standard error effect size. Based on data from 10 journals that have been analyzed and calculated, it shows the large effect size data between self-efficacy and artistic skills in visual impairment. Correlation (r) and the number of research subjects (N). Next, calculate the effect size value, variance, and standard error effect size. The calculation results can be described as follows:

Table 1. Result of calculation of effect size and standard error of effect size

No	Name Study	r	N	Z	Vz	SEz
1	Zhengli Xie, et al. 2022	0.420	481	0.3023	0.0020920	0.045739
2	Justin A Haegele, et al. 2018	0.290	147	0.1793	0.0069444	0.083333
3	Sumina Shrestha, et al. 2021	0.440	41	0.3256	0.0263158	0.162221
4	Michael Braksiek, 2022	0.530	362	0.4524	0.0027855	0.052778
5	Carolyn A Young, 2021	-0.540	5965	-0.2521	0.0001677	0.012951
6	Konstantinos Papadopoulos, 2014	0.147	84	0.0804	0.0123457	0.111111
7	John A Rey Galindo, et al. 2020	0.787	18	1.3628	0.0666667	0.258199
8	Susanne Houwen, et al, 2022	0.970	90	11.3006	0.0114943	0.107211
9	Thomas J Covey et al., 2022	0.118	249	0.0632	0.0040650	0.063758
10	Melinda Y Chang, et al, 2021	0.960	16	8.4118	0.0769231	0.277350

source from the Author, 2022

The researcher conducted hypothesis testing and publication bias test on the data obtained. Meta-analysis was carried out with the help of JASP applications. The hypotheses in this study are as follows:

Table 2. hypothesis data result

	Hypothesis	Publication Bias Test
H_0 : true effect size = 0	There is no relationship between self-efficacy and art creation in the visually impaired group	Publication sample data indicated publication bias
H_1 : actual effect size \neq 0	There is a relationship between self-efficacy and art creation in the visually impaired group	Publication sample data does not indicate publication bias

source from the Author, 2022

Based on the results of the data test based on the JASP output, the following results were obtained:

3.1 Heterogeneity Test

Table 3. Fixed and Random Effects

	Q	df	p
Omnibus test of Model Coefficients	2.932	1	0.087
Test of Residual Heterogeneity	12564.070	9	< .001

source from the Author, 2022

The results of the heterogeneity test analysis showed that the ten effect sizes of the analyzed studies were heterogeneous ($Q=125664.070$, $p<0.001$). Thus, the random effects model is suitable for estimating the mean effect size of the ten analyzed studies. The analysis results also indicate the potential to investigate moderator variables influencing the relationship between self-efficacy and art creation in the visually impaired group.

3.2 Hypothesis Test

Table 3. Effect measuring model test

	Estimate	Standard Error	z	p	95% Confidence Interval	
					Lower	Upper
intercept	2.220	1.297	1.712	0.087	-0.321	4.761

source from the Author, 2022

The analysis using the Random Effect model showed a significant positive correlation between self-efficacy and art creation in the visually impaired group ($z=1.297$, $p=0.005$), with a lower limit of -0.321 and an upper limit of 4.761. This means that H_0 is rejected because the actual effect size is not equal to 0. In other words, there is a relationship between self-efficacy and art creation in the visually impaired group.

3.3 Publication Bias Test

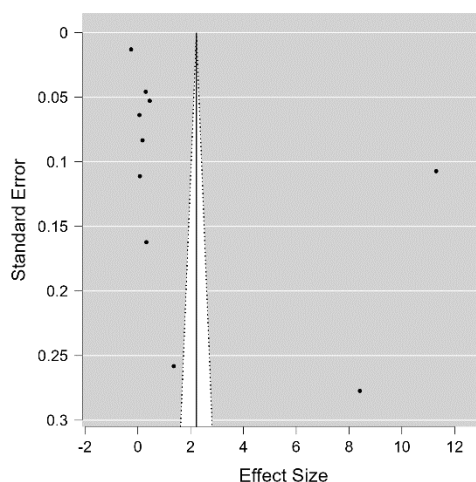
The publication bias test was carried out to see from the publication data that had been used in the study the sample of this study was representative of the population. The publication bias test can be confirmed by looking at the values in the Rank Correlation and Regression Method outputs.

Table 4. Rank correlation test for Funnel plot asymmetry

	Kendall's τ	p
Rank test	0.244	0.381

data source from the Author, 2022

Based on table 4. regarding to the rank correlation, it can be seen that Kendall's value is 0.244, which shows the correlation coefficient between effect size and variance is not equal to 0. The p-value of 0.381 is greater than the value of 0.05, which indicates that H_0 is rejected. In other words, there is no biased publication.



source from the Author, 2022

The results of the funnel plot are difficult to conclude whether or not the publication bias is symmetrical, so an Egger test is needed to test whether the funnel plot is balanced or not so that it can prove that there is no publication bias.

Table 5. Regression test for Funnel plot asymmetry

	z	p
sei	1.326	0.185

source from the Author, 2022

Table 5 shows that the z-value, the magnitude of the regression coefficient, is 1.326, while the p-value of 0.185 is more significant than 0.05, which indicates that H0 is rejected in other words, there is no indication of publication bias.

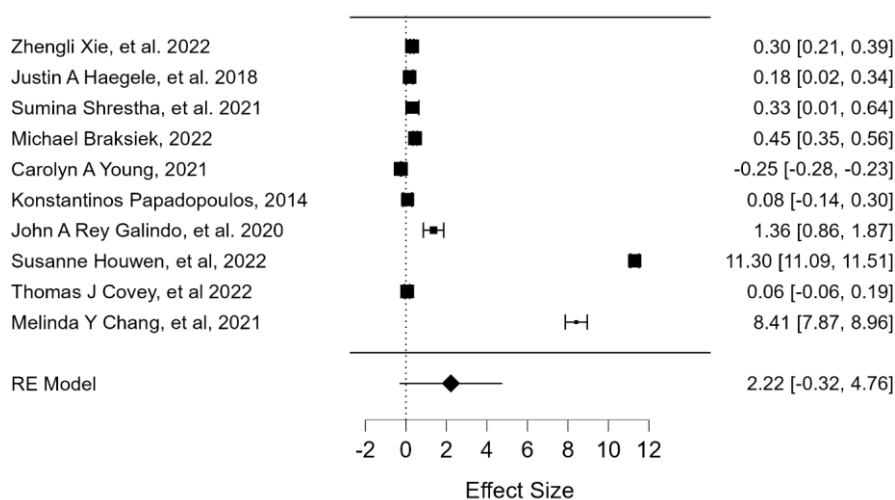


Figure 2. Forest Plot

Based on the forest plot, it can be observed that the analyzed studies vary in magnitude between -0.25 to 11.20. Furthermore, the summary effect value of 2.22 can be obtained. This value explains that the average influence of self-efficacy on art created for the visually impaired group is 4% which belongs to the category. *r = 0.1 (low), r = 0.3 (medium), r = 0.5 (high) (Baron-Cohen, Leslie, & Frith, 1986).

For the visually impaired group, little information can be used to express works of art. The information gap involves the environment being engaged with activities of daily living, experiences from the environment, and social interactions (Huang et al., 2022; Schott, Haibach-Beach, Knöpfle, & Neuberger, 2021; Tihic et al., 2021; Woodcock et al., 2022). Audio and tactile virtues can be enhanced to increase independence and competence. The family and peer environment support indicates social support to provide confidence in completing an assignment (van Munster et al., 2022). External factors can foster sensitivity from the senses as basic knowledge of visual impairments through the presence of information in their environment. The support and participation of the environment provides easy access to knowledge as a meaningful experience.

Visual limitations cause tactile metacognitive sensitivity to help with artistic activities. Natural materials related to creative activities, such as clay, bamboo, cloth, wood, rubber, and paper, can produce aesthetic crafts (Braksiek, 2022; Haegele, Kirk, & Zhu, 2018; Lueck, Dutton, & Chokron, 2019). The correlation between tactile metacognitive abilities and the imagination of works embodied in aesthetic objects. Aesthetic things are meaningful in simple shapes, lines, colours, and patterns (Nur Fajrie et al., 2020).

The influence of the environment, awareness, attitude, self-efficacy, social attitudes, self-confidence, and physical barriers affect the mental health and independence of activities of the visually impaired group. Artwork is an effort to build mental health, increase self-efficacy and create a supportive environment as a source of creating meaningful creations (Covey et al., 2022; Huang et al., 2022; Papadopoulou, 2014; Proulx et al., 2020). Interaction and feedback are the driving factors for developing works by the perception and representation of the work of the visually impaired group.

In the digital era, the use of technology with the central assistance of audio helps the visually impairments to obtain information on the process of creating art. Video tutorials through various platforms help practice artwork independently. The type of information and work produced can also be adjusted to the interests and pleasures of each individual (An & Joo, 2016; Liang et al., 2022; Proulx et al., 2020; Schott et al., 2021). Feeling happy about what is obtained through information on social media encourages people with disabilities to feel confident that they can produce works that match their interests. The results of this review study conclude that there is a relationship between artistic activity and the social-emotional depth of visual impairment. The cathartic process of these artistic activities can foster self-efficacy in psychological problems of visual impairment.

Identification of cases in the study of findings from a systematic review regarding the importance of educational advancement for individuals with visual impairments has seen an increase in educational and mentoring factors. Various parties that handle educational services can explore talents and interests as an alternative to problems with visual impairments (Lund & Cmar, 2019). Educational factors make a real contribution but are not specifically related to what programs are carried out in providing practical service actions. As done by Szubielska et al. (2019), The social relevance of measuring sensitivity to objects is by familiarizing the recognition of rising images to improve the innate abilities of visual impairments.

The relationship between the development of visually impaired individuals positively influences physical activity participation and self-efficacy beliefs, which aligns with previous studies conducted among individuals without impairments. These findings have underlined the need for further exploration of the motivational constructs associated with physical activity involvement among individuals with visual impairments to better understand what impact specific factors can and can be leveraged to promote physical activity involvement of this group (Haegele et al., 2018). The study of self-efficacy experienced by visual impairments can be linked to intra-aesthetic and extra-aesthetic aspects in the discussion of aesthetic approaches. Aesthetic explanations provide clues to the existence of an aesthetic subject dealing with an aesthetic object so as to produce an aesthetic value. The connection between aesthetic sensitivity and self-efficacy is the motivation and interest experienced by visual impairments to self-actualize in the next environment.

4. CONCLUSION

The potential moderator variable in this study has been related to self-efficacy and artistic creation in visual impairments. The data findings have been categorized into ten studies that address publication themes. Factors that have influenced social interaction, technology, psychology, and the ability to create art. The type of work produced is in the form of handicrafts made from natural materials, with a central stimulus in the form of audio and tactile touches. Various studies have found no publication bias where traditional and modern factors bridge the work done, even though the work is simple. The research findings obtained have become a guideline for several researchers who studied studies of visual impairments in encouraging self-actualization in social institutions for disabilities. Realization of the agenda for visual impairments can be disseminated in social institutions and used as routine educational and mentoring activities

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