

The Effect of Mindfulness on Aggressive Behavior: A Meta-Analysis

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Abstract. Aggressive behavior is a concerning issue that requires attention because of its negative effects on victims. It can manifest in various forms and can be carried out by anyone, at any time. The reasons and conditions that contribute to this behavior are closely linked to an individual's level of mindfulness. Previous studies have shown that mindfulness can minimize this aggressive behavior. Therefore, this meta-analysis study aims to examine the effect of mindfulness on aggressive behavior. It involves 17 scientific studies with 6,722 respondents. The entire results showed a negative relationship between mindfulness and aggressive behavior. The study obtained an effect-sized result of $-.270$ with 95% CI $[-.336, -.205]$ and I^2 of 83.89%. This implies that mindfulness and aggression behavior have a small effect size due to other variables, factors, and mediators. These other variables and moderators need to be included in future studies to describe other factors more related to this behavior. Furthermore, similar studies need to be added to confirm the correlation between mindfulness and aggression behavior.

Keywords: aggression behavior, meta-analysis, mindfulness

Studi Metaanalisis Kesadaran Utuh dan Perilaku Agresi

Abstrak. Perilaku agresi saat ini perlu menjadi perhatian khusus, karena bisa menimbulkan banyak dampak negatifnya terutama bagi korban. Perilaku agresi dapat dilakukan oleh siapapun, kapan pun dan disebabkan oleh beragam alasan maupun kondisi kesadaran dalam diri individu tersebut. Beberapa penelitian terdahulu menunjukkan bahwa kesadaran utuh dapat meminimalisir munculnya perilaku agresi. Tujuan dari studi metaanalisis ini adalah untuk menguji seberapa besar efek kesadaran utuh terhadap perilaku agresi. Sebanyak 17 penelitian ilmiah dengan total responden sebanyak 6,722 ikut terlibat dalam studi metaanalisis ini. Seluruh hasil dari 17 penelitian tersebut menyatakan hubungan negatif antara kesadaran utuh dengan perilaku agresi. Penelitian ini memperoleh hasil *effect size* sebesar $-.270$ dengan 95% CI $[-.336, -.205]$ dan I^2 sebesar 83.89%. Hasil tersebut menunjukkan bahwa antara kesadaran utuh dan perilaku agresi memiliki *small effect size* yang bisa disebabkan oleh adanya variabel, faktor, dan mediator yang lain. Variabel dan moderator lain ini pada penelitian selanjutnya perlu dimasukkan untuk menggambarkan faktor-faktor lain yang sebenarnya lebih berhubungan dengan perilaku agresi. Penelitian-penelitian terdahulu yang sejenis juga butuh ditambahkan untuk mengkonfirmasi korelasi antara kesadaran utuh dengan perilaku agresi.

Kata Kunci: kesadaran utuh, metaanalisis, perilaku agresi

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This study focuses on the association between negative emotions and aggressive behavior. Aggression can be defined as physical or verbal behavior intended to hurt others and cause damage (Myers, 2015). It is highly conceivable for an individual to develop aggressive behaviors as they grow into adolescents. This behavior can be influenced by the passage of time, which reveals its intensity and different forms. Aggression that consistently appears will affect other behaviors until adulthood. According to Aghajari et al. (2017), its negative consequences are experienced by the victims and also the perpetrators. Based on psychological labels, this is divided into (1) Hostile Aggression, which arises from anger to hurt, and (2) Instrumental aggression, which is aimed at hurting to achieve other goals (Myers, 2015).

Aggressive behavior results in many negative impacts and will persist for the foreseeable future when not resolved promptly. The individual also has a large ego and a desire to dominate and affect others (Arriani, 2014). Furthermore, it can impede a student's learning concentration, resulting in poor academic performance, and tends to disrupt classroom situations in school by causing disturbances or provoking others (Arriani, 2014). Aggressive behaviors, especially in school environments, affect low involvement in academic activities, result in negative views from schools and teachers, as well as poor social relationships with classmates (Estévez et al., 2018).

Generally, the negative effects of aggressive behavior always experienced by the victims include anxiety, low self-esteem, low life satisfaction, psychological stress, and depression (Estévez et al., 2018). The impact on adult victims can be physical injuries, psychological trauma, and financial problems (Aghajari et al., 2017). However, these negative impacts can be experienced by the perpetrators. For example, in a school context, the perpetrators are despised by their peers (Aghajari et al., 2017).

The prevalence of bullying and even murder cases in Indonesia showed that aggressive behavior is a significant issue requiring special attention. According to Badan Pusat Statistik (2019), there were 1,024 cases of crimes against life or murder in 2018. In the same year, 39,567 cases or incidents of crimes against the body, including severe and minor bullying and domestic violence.

Aggressive behavior can be viewed from several theoretical perspectives. According to the social learning theory, it results from observing models that are maintained because of reinforcement (Lan et al., 2010). Individuals will imitate and engage in the aggressive behavior performed by their role models, such as parents, friends, figures, and others. Furthermore, the reinforcement acquired can be in the form of approval or recognition of their social environment, negligence, tolerance, and lack of supervision from parents or others.

The behavior theory describes the outcomes for individuals exposed to many examples of aggression in the school, home, or fantasy world, such as television, computer, and video games. Individuals will develop basic knowledge about the behavior and imitate it from the examples observed. Repeatedly rewarding aggressive behavior with positive outcomes will cause individuals to have the same response to similar situations. In addition to the explanation of the behavioral theory, the formation of aggressive behavior can be viewed from the cognitive perspective (Goodnight et al., 2017).

The cognitive theory explains that aggressive behavior is based on various cognitive constructs, such as interpersonal knowledge and attitudes. It views aggressive behavior as a result of knowledge structures and life experiences, which significantly influences an individual's understanding and response to social situations. Therefore, this behavior can be triggered by an individual's thoughts and beliefs without considering role models or examples (Gilbert et al., 2013).

According to social cognitive theory, the basis for the development of aggressive behavior includes interpersonal knowledge, attitudes, and mental representations. There are three factors that form aggressive behavior. The first is the presence of scripts or knowledge structures embedded in an individual's mind that requires aggressive behavior when social problems arise, such as humiliation, mocking,

etc. Second, the presence of normative beliefs that consider aggressive behavior beneficial, for example, hitting and kicking others, will make the individual win a dispute. Third, the presence of maladaptive cognition shows personality dysfunction, a bad self-perception experience, and others. Consequently, individuals lack self-confidence, self-control instability, and explosive emotions (Gilbert et al., 2013).

Various factors, such as gender roles, can also cause aggressive behavior. Generally, men show more aggressive behavior than women, even since childhood. It is also caused by a lack of self-control and impulsivity, which can be observed in a baby's temperamental attitude. The hormone testosterone also greatly affects aggressive behavior in adolescence, which is quite normal due to changes and developments. However, in a situation where adolescents cannot control themselves, it will become a problem and trigger aggressive behavior. Other factors that can lead to aggressive behavior are heritable genetics, impulsivity, and antisocial behavior (Warburton & Anderson, 2015).

Schick and Cierpka (2016) explained that several risk and protective factors at the emotional, cognitive, and behavioral levels greatly affect this behavior. For example, intelligence below average is correlated with an increase in aggressive behavior, while above average can be one protective factor. Individuals with low intelligence will have difficulty identifying emotions based on facial

expressions and will often behave inappropriately in certain situations. Furthermore, poor academic performance negatively impacts self-esteem and increases the possibility of aggressive and criminal behavior. Those with difficult temperaments are also at high risk for having behavioral disorders such as unstable emotional reactions, impulsivity, anxiety, sleep, and attention disorders, as well as a low tolerance for unpleasant situations.

Aggressive behavior is also caused by main factors that originate from the environment. First, there is provocation from the surrounding environment. Second, it originates from the weapon stimulation that can be seen in the virtual and real worlds. Third, the individual is in a hostile setting, which can be a source of stress and facilitate the emergence of violence. Fourth, social media, films, and games that display violence and violent scenes are also easily modeled by children and adolescents and then imitated in real life (Warburton & Anderson, 2015).

Personality and character, such as an angry and easily provoked nature, can also play a role in the emergence of aggressive behavior. Psychopathy, narcissism, and Machiavellianism are non-emotional personality styles that may also exhibit high hostility, a lack of empathy, and a limited emotional reaction. According to Warburton and Anderson (2015), it is likely for an individual with low agreeableness and high neuroticism to cause aggressive and violent behavior.

Based on the above explanation, the emotions that can trigger aggressive behavior are negative feelings such as anger. Every individual is expected to have the ability to minimize negative feelings to reduce aggressive behavior. According to Chethiyar and Rukumangadan (2020), *mindfulness* or whole awareness can reduce negative feelings, indicating its significant impact on reducing the triggers of aggressive behavior and negative feelings. Mindfulness can be defined as the awareness level and the presence of whole attention in the present moment, along with an openness to all present conditions (Kelley & Lambert, 2012). According to Shorey et al. (2015), quality attention allows the individual to be more open to experiences, feelings, thoughts, and behaviors. Individuals who practice mindfulness will also not consider rejection, ridicule, threats, and others; as a result, their self-esteem will not feel endangered and their wrath will not quickly erupt (Kelley & Lambert, 2012).

The relationship between mindfulness and aggression behavior needs to be re-examined to obtain a more general and convincing result. Therefore, a meta-analysis study can help show the level of relationship between mindfulness and aggression behavior. This study aims to examine the extent of the effect of mindfulness on aggressive behavior. The results are expected to support other studies in examining the appropriateness of mindful interventions to

control or reduce individuals' level of aggressiveness.

Method

Previous study search

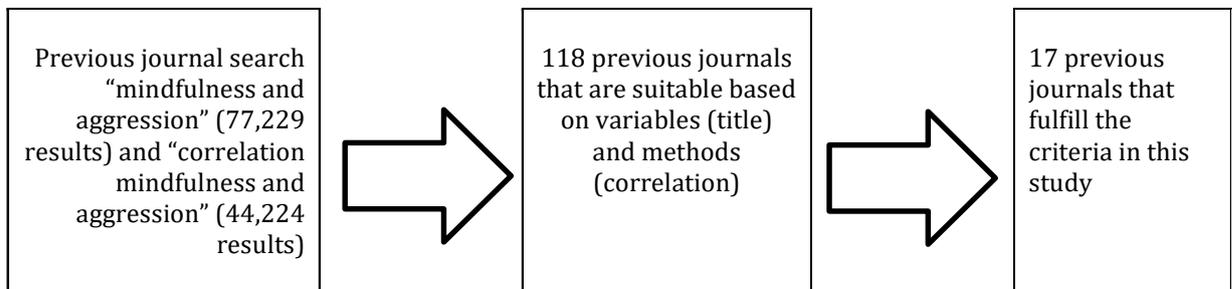
In general, this meta-analysis study refers to the Prisma-E 2012 Checklist, which uses mindfulness and aggression behavior as variables. It uses a total of 18 scientific journals that focus on discussing the relationship between mindfulness and aggression behavior. Furthermore, the search and selection of the study used several data-based journals such as ScienceDirect, Google Scholar, Springerlink, PubMed, JSTOR, and DOAJ, as well as Oxford Academic and Sagepub Journals.

The study carried out a selection or screening of the statistical (r) discovered journals by examining the title, abstract, methods, participants (N), and results. This was done to ensure that the journals found corroborate with the criteria required in the meta-analysis study. The process was carried out from October to November 2020 with a limit on the search year from 2010 to 2020. Additional data searches were conducted in December 2022 using some keywords, such as "mindfulness and aggression" and "correlation mindfulness and aggression". Figure 1 shows the scheme for searching for previous journals.

After the screening, only journals with relevant variables and results were selected. Based on the search, 18 journals were obtained and determined to meet the study criteria.

Figure 1

Journal Search Scheme related to the Correlation of Mindfulness and Aggression behavior



Statistical data analysis

A meta-analysis method that processes the correlation results presented by previous studies was adopted. According to Mikolajewicz and Komarova (2019), meta-analysis is a statistical analysis of primary study data focused on the same question to produce a quantitative estimate of the phenomena being studied. Shelby and Vaske

(2008) also explained that it is a quantitative technique using certain measures, such as effect size, to show the strength of the relationship between variables. The effect size is a term given for a set of indices that measure the magnitude of the treatment effect or a variable (Elsayir, 2012).

The data obtained from previous studies were processed using the Jamovi statistical

application version 1.6.6 (The Jamovi Project, 2020). They include the researcher's name, the year of publication, the correlation coefficient (r) between mindfulness and aggression behavior, and the number of samples or respondents involved (N). When looking at the results of statistical analysis, it is important to consider the inconsistency value (I^2), the estimated value, and egger bias.

The inconsistency value (I^2) determines the use of random or fixed. The random effects model is used when the value (I^2) is greater than 75%. In a meta-analysis study that tests the variable correlation, to determine the correlation between variables, it is necessary to see the amount of effect size value, which is known that $r \leq .1$ (*small effect size*), $r = .3 - .5$ (*medium effect size*), and $r \geq .5$ (*large effect size*) (Cooper et al, 2019). Moreover, study bias can also be determined through the egger bias value.

Results

This meta-analysis study aims to examine the correlation between mindfulness and aggressive behavior. Based on the presentation in Table 1, the entire studies show a negative relationship between mindfulness and aggressive behavior. This indicates that the higher the mindfulness of an individual, the lower the occurrence of aggressive behavior.

Furthermore, the statistical analysis shows an inconsistency value (I^2) of 83.89%, indicating that there is a large variation in previous studies. The random effect model was used because the inconsistency value (I^2) is greater than 75%. In the random effects model, the effect size is known to be $-.270$ with 95% CI $[-.336, -.205]$, which indicates that there is a small effect size of mindfulness towards the aggressive behavior of an individual. Additionally, this study shows no bias in previous results, as evident in the egger bias value of $.177$ ($p > .05$).

The subjects in this study are 6,722 people from various countries, ages, genders, and occupations. Based on Table 1, the correlation value ranging from moderate to large at $r = -.597$ (95% CI $[-1.03, -.35]$) is a study by Chethiyar and Rukumangadan (2020). The smallest effect size is shown by Kim et al. (2022) with g value = $-.13$ (95% CI $[-.24, -.02]$), and the largest effect size is $g = -.69$ (95% CI $[-1.03, -.35]$) by Chethiyar and Rukumangadan (2020), as shown in Figure 2. All studies show negative effect sizes, indicating that mindfulness and aggressive behavior are inversely correlated. In Figure 3, most of the data is close to the middle line, except for three studies that are spread or significantly different from others. This indicates that 3 of the 12 studies have quite different results.

Table 1*Previous Study*

<i>Study</i>	<i>Mindfulness Measurement Tool</i>	<i>Aggression Measurement Tool</i>	<i>r</i>	<i>N</i>	<i>95% CI</i>
<i>Gao et al., (2016)</i>	MAAS	AQ	-.520	512	[-.66, -.49]
<i>Mariamdaran Chethiyar & Rukumangadan (2020)</i>	MAAS	AQ	-.597	36	[-1.03, -.35]
<i>Kelley & Lambert (2012)</i>	MAAS	AQ	-.360	272	[-.50, -.26]
<i>Yu et al., (2020)</i>	MAAS	AQ	-.260	385	[-.37, -.17]
<i>Garofalo et al., (2019)</i>	FFMQ	AQ	-.260	397	[-.36, -.17]
<i>Velotti et al., (2016)</i>	FFMQ	AQ	-.365	83	[-.60, -.17]
<i>Peters et al., (2015)</i>	FFMQ	AQ	-.160	823	[-.23, -.09]
<i>Shorey et al., (2015)</i>	MAAS	PAI	-.250	137	[-.42, -.09]
<i>Gallagher et al., (2010)</i>	MAAS	CTS	-.203	167	[-.36, -.05]
<i>Shorey et al., (2015)</i>	MAAS	PAI	-.250	309	[-.44, -.07]
<i>Stephens et al., (2020)</i>	MAAS	CAX	-.140	829	[-.21, -.07]
<i>Stephens et al., (2018)</i>	MAAS	DBQ	-.220	309	[-.34, -.11]
<i>Fresnic & Borders (2017)</i>	FMI	EAS	-.220	201	[-.36, -.08]
<i>Bronchain et al., (2019)</i>	FFMQ	-	-.280	1,572	[-.34, -.24]
<i>Kim et al., (2022)</i>	MAAS	AQ	-.130	313	[-.24, -.02]
<i>Yusainy et al., (2019)</i>	MAAS	CRTT	-.310	131	[-.20, .14]
<i>Thohar (2018)</i>	TMS	AS	-.369	115	[-.57, -.20]

Description. MAAS = Mindfulness Attention and Awareness Scale; FFMQ = Five Facet Mindfulness Questionnaire; FMI = Freiburg Mindfulness Inventory; AQ = Aggression Questionnaire; PAI = Personality Assessment Inventory; CAX = Cycling Anger Expression Inventory; DBQ = Driving Behaviour Questionnaire; EAS = The Explicit Aggression Scale; CTS = Conflict Tactics Scale; CRTT = Competitive Reaction Time Task; AS = Aggression Scale; TMS = Toronto Mindfulness Scale; - = Not listed.

Figure 2

Forest Plot

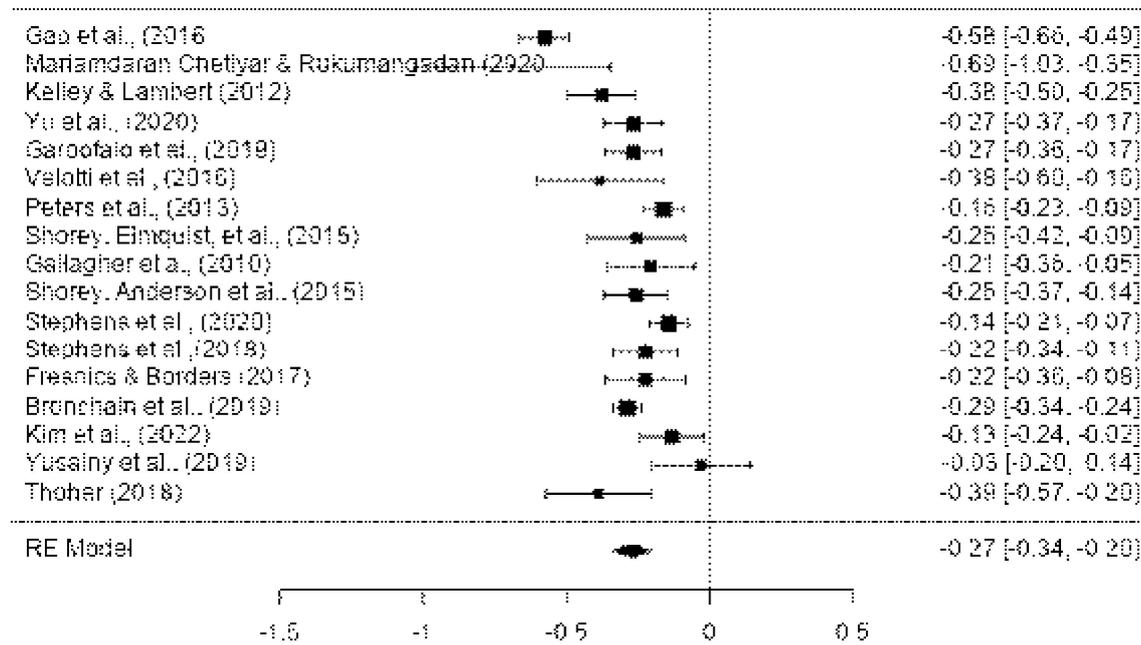
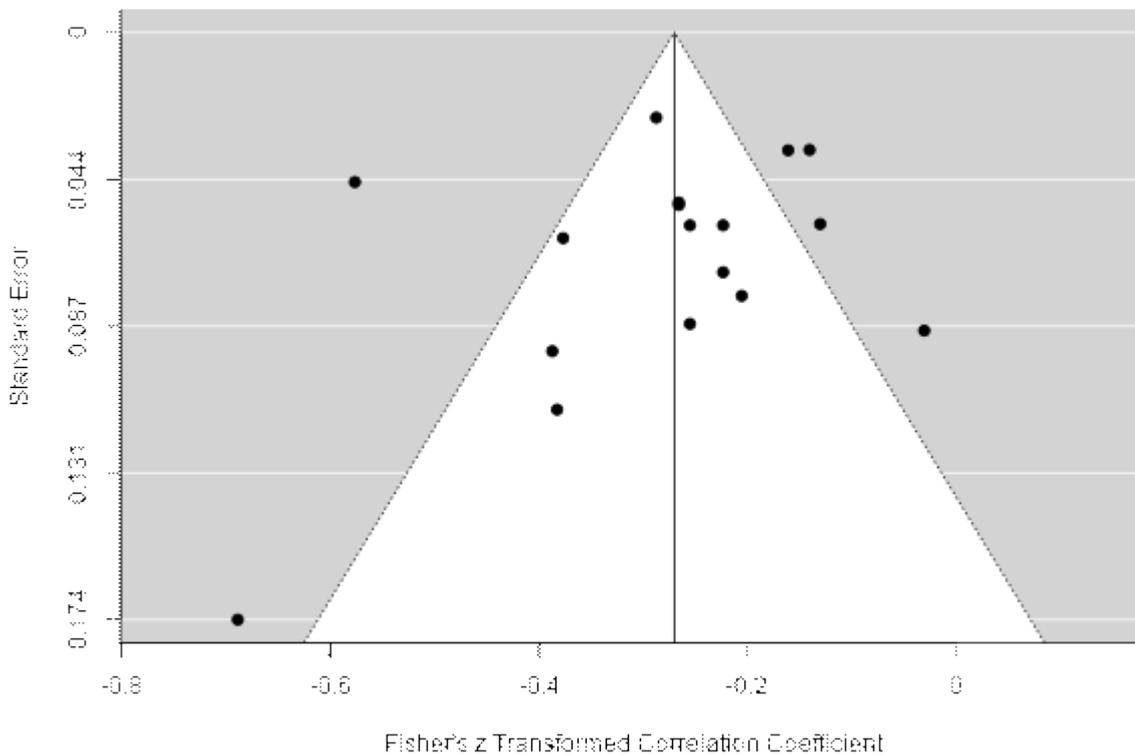


Figure 3

Funnel Plot



Generally, the most commonly used tool to measure DV or aggressive behavior is the Aggression Questionnaire (AQ). However, there are differences in measurement due to the more specific tools used by some previous studies to suit the participant criteria. Nevertheless, the main goal and measurement results both describe the aggressive behavior level. The tool commonly used to measure mindfulness level is the Mindfulness Attention and Awareness Scale (MAAS) or the Five Facet Mindfulness Questionnaire (FFMQ).

Discussion

The result of the meta-analysis statistical test between mindfulness and aggression behavior showed a small effect size, indicating that mindfulness does not fully determine the occurrence of aggressive behavior in an individual. Individuals' aggressive behavior is thought to be influenced more by other circumstances with a greater impact. The varying tools used in previous studies to measure mindfulness and aggression can also affect the effect size of the correlation in this meta-analysis study.

According to Chethiyar and Rukumangadan (2020), the occurrence of aggressive behavior is determined by the individual's mindfulness level and self-control, which also plays a significant role. This shows that self-control is one of the mediators that affect the relationship between mindfulness and aggressive behavior. A person's capacity

for self-control comes into play when they are able to manage and control their feelings, particularly when confronted with events that could provoke rage.

Garofalo et al. (2019) showed that the tendencies of aggressive behavior are not only associated with low mindfulness but also a lack of emotional regulation. This indicates that mindfulness is not related to aggression alone, but the ability to manage and regulate emotions also plays a role in preventing and even reducing this behavior.

In addition to self-control and emotional regulation, the level of religion can also influence the prevalence of aggressive conduct. According to Shepperd et al. (2015), a higher religiosity level results in lower aggressive behavior. The main factors behind the relationship between religiosity and aggressive behavior are: (1) most religions teach about self-control, such as avoiding or rejecting temptation and postponing desires or satisfaction that can lead to aggressive behavior, and (2) almost all religions emphasize beliefs and tolerant behavior such as forgiving, loving others and so on (Shepperd et al., 2015). This enables people with great religion to manage their aggressive behavior.

Other factors that can affect aggressive behavior include (1) biological factors, such as low brain function and hormone effects, (2) family factors, such as examples of behavior and values given by parents (3) environmental factors, such as habits, demands, and role models

from the surrounding community or society (Jamal et al., 2018), (4) parenting factors, such as the way parents treat children, (5) entertainment media factors, such as the influence of film scenes and games with themes of violence, murder, and torture (Kumari & Kumar, 2018), and (6) school factors, such as rules, punishments, workload, teacher attention, relationships with peers (Sadeghi et al., 2014).

Based on the discussion above, it can be concluded that several other factors cause the low level of relationship between mindfulness and aggressive behavior. Several other variables from previous studies have a stronger correlation. For example, the role of self-control, emotional regulation, and religiosity can determine individuals' emergence and level of aggressive behavior.

The limitation of this study includes: First, the number of previous studies examined is less, which can affect the effect size. Second, this study does not involve other moderators or variables for analysis. These limitations can affect statistical analysis and generalization.

Conclusion

This meta-analysis study aims to investigate the effect of mindfulness on aggressive behavior. All 17 previous studies indicate a negative correlation and a tendency towards a small to medium effect size. Based on these results, it can be concluded that mindfulness has an inverse relationship with

aggressive behavior. Furthermore, many other factors are related to the emergence of aggressive behavior compared to mindfulness.

Suggestion

It is recommended to add similar previous studies to confirm the correlation between mindfulness and aggression behavior for future investigations. Moreover, other variables and moderators can be added to describe factors more related to aggressive behavior. Regarding data analysis, adding other factors, such as subject characteristics, is suggested to increase the interpretation of meta-analysis results.

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Received 27 May 2021
Revised 4 January 2023
Accepted 4 January 2023

