

Exploring the role of self-concept in predicting aggressive behaviour among Indonesian adults during the COVID-19 pandemic

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Abstract

Aggressive behaviour remains a pervasive global social problem with enduring and intergenerational consequences. Although self-concept has been widely examined as a predictor of aggression in child, juvenile, and young adult populations, research focusing on adults across a broad age range—particularly within multicultural Asian contexts—remains limited. Furthermore, no previous studies have applied a multivariate approach to examine this issue comprehensively. Therefore, the present study investigates both univariate and multivariate associations between self-concept and aggressive behaviour across a broad age range and gender categories among Indonesian adults. Using a cross-sectional design conducted during the COVID-19 pandemic, a period characterized by heightened psychosocial stress and increased interpersonal conflict, data were collected from 326 adults aged 19–76 years via an online survey employing two validated Indonesian instruments: the Berzonsky-Fitts Self-Concept Scale and the Buss Aggression Scale. The results revealed a significant negative association between self-concept and aggressive behaviour, indicating that higher self-concept is associated with lower levels of aggressive behaviour. Gender-specific analyses further demonstrated meaningful differences in the multidimensional correlations results. These findings confirm that self-concept is a salient predictor of aggressive behaviour in Indonesian adults. Enhancing self-concept may help mitigate aggression across diverse age and gender groups, particularly during periods of societal stress. The study provides important implications for developing targeted prevention and intervention strategies in health, educational, and community settings. Future research should incorporate broader biopsychosocial variables to deepen the understanding of aggressive behaviour in adulthood.

Introduction

The problems of aggressive behaviour, along with all their consequences, are still common and continue to increase in various countries around the world. In Indonesia, based on police records in 2022, the number of crime cases increased, with a crime occurring every 2 minutes and 2 seconds (Rahman, 2023). Many forms of crime, such as persecution, rape, theft, bullying, neglect, slander, and even murder, are still daily news in the mass media (Thompson, 2021; World Population Review, 2022). Exposure to violence and victimization can lead individuals to develop aggressive behavioural tendencies towards others in their future lives (Ozkol, Zucker, and Spinazzola, 2011), and such tendencies can be transmitted from one generation to the next. This could explain the persistent increase in the prevalence of aggressive behaviour worldwide. Furthermore, both interpersonal and intergroup aggression and conflict have also increased globally due to the COVID-19 pandemic (Krahé, 2020). Heightened community mistrust and subjective isolation due to social distancing during the COVID-19 pandemic led to an increase in psychological distress and increased susceptibility to disassembling social forces (Bierman and Schieman, 2020). Illness, elevated death rates, unemployment, mental anguish, and various associated challenges have eroded the well-being of individuals with varied psychosocial responses related to different cultural contexts. The COVID-19 pandemic, as a global crisis affecting all dimensions of life, posed numerous challenges, including health threats, social restrictions, and uncertainty about the future—all of which were difficult to navigate. In Indonesia, where strong communal values prevail, social

solidarity emerged as a collective survival strategy. Initiatives aimed at fostering solidarity arose as immediate responses to mitigate feelings of alienation and marginalization, reflecting reactions shaped by the crisis rather than established cultural norms (Rochwulaningsih et al., 2023).

Despite the challenges introduced by the COVID-19 pandemic, research on the global social problem of aggressive behaviour in adults remains essential due to its widespread and intergenerational consequences. Previous studies have examined factors associated with adult aggression, including its relationship with self-concept—the core of human personality that shapes an individual's life trajectory. Self-concept is not a single unified construct but consists of three interconnected components: self-image, self-esteem, and the ideal self (Ahad, Ara, & Shah, 2016; McLeod, 2008). Liu, Dalton, and Lee (2021) found that disruptions to social roles during the COVID-19 pandemic significantly influenced individuals' sense of identity and authenticity. Similarly, Chiam et al. (2022) revealed that physicians' self-concept shifted throughout the pandemic. Research conducted among young adults in Italy during the outbreak further underscored the importance of self-concept clarity, identifying it as a valuable psychological resource that promotes resilience and healthier emotional adjustment (Alessandri et al., 2021). Together, the findings above highlight the significance of studying self-concept, particularly in relation to aggressive behaviour among adults during the COVID-19 pandemic. This area remains insufficiently explored within the broader adult population, and, given the complexity of human behaviour, the dynamic relationship between self-concept and aggression presents a particularly compelling field of inquiry.

Numerous theories of self-concept have been proposed to explain aggressive behaviour in children and juveniles and to inform prevention and intervention strategies (Burde & Jensen, 1983; Ross et al., 1996; Carroll et al., 2007; Ahad, Ara, & Shah, 2016; Hamzy & Fattah, 2020). However, research examining the relationship between self-concept and aggressive behaviour in broader adult populations remains limited, particularly in Asia during the COVID-19 pandemic. Most existing studies have focused on young adults (Ball, 1998; van de Schoot & Wong, 2012; Jernsawag & Sughondhabirrom, 2014; Ajiboye & Adeleke, 2023; Ubago-Jiménez et al., 2023). Only one study has examined a broader adult age range, using a single instrument among adult prisoners in Germany (Steffgen et al., 2007). Within the Asian context, a related study was conducted before the pandemic among young Thai adults (Jernsawag & Sughondhabirrom, 2014). During the COVID-19 pandemic, only one comparable study was identified, focusing on young adults in Spain (Ubago-Jiménez et al., 2023). Further research is therefore needed to examine this relationship topic across broader adult age level groups and cultural contexts, in order to validate and extend previous findings.

Moreover, previous research addressing similar issues in adult populations has largely focused on self-esteem, which represents only one component of the broader self-concept construct. Notably, prior findings suggest that both high and low self-esteem may contribute to aggressive behaviour (Baumeister, Bushman, & Campbell, 2000; Ostrowsky, 2010). Accordingly, the present study sought to extend the line of inquiry by examining the relationship between self-concept and aggressive behaviour across a broad age range in a multicultural Indonesian context using different measurement instruments. The study focused on the general adult population of Indonesia within a multicultural context, as no previous research has examined adults from diverse age groups in such a setting in Asia during the COVID-19 pandemic.

Indonesia's diverse subcultural backgrounds and age variations may yield distinct patterns, particularly under pandemic conditions. In addition, this study employed a multivariate approach to examine the multidimensional associations between self-concept and aggressive behaviour, thereby addressing a gap in the literature, as no prior research has investigated this issue using multivariate methods. It was hypothesized that self-concept would serve as a significant negative predictor of aggressive behaviour in adults (Hypothesis 1), such that higher levels of self-concept would be associated with lower levels of aggression. Furthermore, gender differences were expected in the correlations between the multidimensional aspects of self-concept and aggressive behaviour (Hypothesis 2).

Literature review

Aggressive behaviour

Aggressive behaviour encompasses diverse interpretations and covers a broad spectrum of human conduct. Within society, aggressive behaviour frequently connotes conflict, violence, destruction, and confrontation. It constitutes a collection of cognitive processes, emotions, and actions that emerge when an individual's desires, aspirations, or objectives encounter obstacles. Essentially, it refers to coercion or assault. Aggressive behaviour is influenced by three main factors: biological (e.g., neurotransmitters, hormones, genetic, brain injuries, illness, malnutrition), psychological (e.g., personality types & defense mechanisms), and environmental (e.g., loud noises, hot air, bad intrauterine conditions, poor parenting, deviant peers, violent movies/games). The regulation of aggressive behaviour is governed by specific regions of the brain, namely, the amygdala and the prefrontal cortex (PFC). The amygdala serves as a principal hub for emotional processing, while the PFC functions as the locus for aggression regulation (Jhangiani and Tarry, 2022; Sadock et al., 2017).

Sears et al. (1991) categorize aggressive behaviour into three kinds, *videlicet*: pro-social aggression, which aims to comply with the law (e.g. man fights helping a raped lady); anti-social aggression, which violates the law or against social norms (e.g. rape, sadistic murder); and sanctioned aggression, that is not conform to social norms but still acceptable by moral standards (e.g. a guy fights others who want to kill him). The aggressive behaviour under examination in this research involves anti-social aggression, the negative behaviours aimed at living beings or inanimate objects that are broadly composed of various elements of aggression—physical, verbal, direct, indirect, active, and passive—not the positive forms that can protect themselves according to circumstances (Buss, 1961; Jhangiani and Tarry, 2022).

Self-concept

Self-concept refers to an individual's integrated perception of the self across several domains, including physical, psychological, social, moral-ethical, and family dimensions. These perceptions are shaped by their engagement with others. It refers to a collection of perceptions and reference points regarding oneself, *videlicet*, a composition of attributes, characteristics, qualities, capacities, deficiencies, values, limits, and relationships believed to describe individuals and are perceived as relevant to their identity (Sánchez and Roda, 2003). Self-concept is the nucleus of a human personality, providing direction to a

person's whole life, whereas another part of that personality is personality traits that are naturally consistent and unique (Ahad, Ara, and Shah, 2016; Nollan, 2021).

There are three components of self-concept, i.e., self-esteem, self-ideal, and self-image. Self-esteem reflects the degree to which individuals value themselves, while the self-ideal represents the aspirations individuals hold regarding the person they would like to become, and the self-image pertains to individuals' perceptions of how they view themselves. Self-image is built by a coherent perception of self-meaning for oneself in each situation and the perceptiveness of how God and others perceive them. The more congruent a person's self-image is with their ideal self, the more they will value themselves (McLeod, 2008; Nickerson, 2022). Furthermore, a self-concept can diminish and become fragmented when influenced by personal judgments that categorize characteristics as positive or negative. In contrast, acknowledging and accepting the natural fact that every human being has both positive and negative traits can elevate one's self-concept. Embracing the full spectrum of human qualities, both good and bad, within oneself and offering oneself unconditional love are key steps in the transformative process (Busch et al., 2021).

The association of self-concept and aggressive behaviour

According to Burns' (1982) theory, self-concept encompasses individuals' beliefs and evaluations about themselves, as well as behavioral tendencies shaped by these self-perceptions. Individuals with a high self-concept are generally better equipped to cope with challenges and regulate their emotions because they hold positive beliefs about their competence and self-worth. In contrast, those with a low self-concept often experience insecurity, poor self-acceptance, and negative emotions such as anger and resentment. These difficulties may lead to social withdrawal, contributing to psychological distress and social isolation (Samthirao, 2016). Kaplan's (1975) self-enhancement theory further suggests that delinquent behaviour among juveniles may function as a strategy to restore or enhance affective self-concept. For students who experience academic failure and its associated social consequences, as well as low academic self-concept, engaging in delinquent behaviour—without evaluating themselves according to conventional standards—may provide a sense of social self-enhancement and perceived control over adverse circumstances (Kaplan, 1978). Carroll et al. (2007) similarly reported associations between delinquent behaviour and self-concept among juveniles, accounting for both gender and age differences. In addition, research on juvenile females with Turner syndrome found that reductions in aggressive behaviour accompanied improvements in self-concept following estrogen replacement therapy (Ross et al., 1996). Overall, studies involving child and juvenile populations have consistently identified self-concept as a factor associated with aggressive behaviour (Burde & Jensen, 1983; Ross et al., 1996; Torregrosa, Ingles, & García-Fernández, 2011; Ahad, Ara, & Shah, 2016; Hamzy & Fattah, 2020).

Among adult populations, most existing research has focused on young adults in pre-pandemic contexts. Ball (1998) reported that young adult males who endorsed an aggressive interpersonal style demonstrated significantly lower overall self-concept compared to those with an assertive style. Similarly, a study of 873 young adults by van de Schoot and Wong (2012) found a significant association between self-concept and delinquent behaviour, with notable gender differences. Jernsawag and Sughondhabirrom (2014), in a sample of 101 undergraduate students in Bangkok, observed lower self-concept and weaker problem-

solving abilities alongside higher levels of aggressive behaviour. Likewise, Ajiboye and Adeleke (2023), using a single self-report questionnaire among 720 university students in Nigeria, reported a significantly negative association between self-concept and aggressiveness. Only one prior study has examined a broad age range: Steffgen et al. (2007) used a single self-report instrument—the 12-item Self-Concept Clarity Scale—to assess 247 adult prisoners in Germany. Collectively, these findings are consistent with earlier research conducted in child and juvenile populations.

Neurobiological evidence further supports this association. Serotonin has been identified as a key regulator of affective self-concept and social status. Higher serotonin levels are linked to elevated affective self-concept, social dominance, calmness, and controlled behaviour, whereas lower serotonin levels are associated with diminished self-concept, lower social status, irritability, impulsivity, and aggressive behaviour (Sylwester, 1997). These findings imply a neurobiological mechanism underlying the relationship between self-concept and aggressive behaviour. Evidence from the COVID-19 pandemic also indicates shifts in both constructs. Chiam et al. (2022) reported distortions and declines in physicians' self-concepts based on social media reflections collected in 2020, while Krahé (2020) documented an increased prevalence of aggressive behaviour during the same period. To date, only one pandemic-era study closely aligned with the present research topic has been identified. Ubago-Jiménez et al. (2023), in a study of Spanish young adults, found that self-concept and emotional intelligence predicted violent behaviour among young adults in Spain. However, no studies conducted during the pandemic have examined this issue among Asian adults across a broad age range.

Taken together, the existing literature provides the foundation for the present study's hypotheses, which examine the univariate and multivariate associations between self-concept and aggressive behaviour across different age groups and gender categories among Indonesian adults. This study seeks to address the limited research on this topic within adult populations in Asian contexts—particularly during the COVID-19 pandemic and across a broad age range—by employing two validated measurement instruments. Furthermore, it fills a notable gap in the literature, as no prior research has applied a multivariate approach to explore the multidimensional relationships between self-concept and aggressive behaviour. Figure 1 presents the conceptual framework guiding this investigation and clarifies the proposed associations.

Data and methods

Participants

Data were collected through an observational analytic study with a cross-sectional design using an online survey administered to adults aged 19 years and older. Participants were recruited through uncontrolled quota sampling, a non-probability approach based on the distribution of adults across Indonesia's two major islands and selected minor islands. For the major islands—Java in the west and Sulawesi in the east—participants were sampled from all provinces in proportion to their respective population sizes. The required sample size was estimated using the formula $n = z\alpha^2 \times P \times Q/d^2$, given that $z\alpha = 1.96$, $P = 0.05$, $Q = (1-P)$, and $d = 0.05$, yielding a minimum sample size of 73 adults. However, to ensure stable and

reliable statistical analyses, a sample size of more than 200 participants was recommended (Chandra, 2008; Ghozali, 2018).

Indonesia, the world's fourth most populous country, is the largest nation in Southeast Asia and the largest archipelago globally. Its population is dispersed across islands separated by seas and characterized by extensive cultural diversity. The country comprises approximately 17,500 islands and 1,340 ethnic groups, with more than 580 languages and dialects spoken. Approximately 60% of the population lives and works on the major island of Java (Embassy of the Republic of Indonesia, 2017; Mohamad, 2022).

Instruments

The online self-report questionnaire consisted of two widely used Indonesian instruments that have been validated in Indonesian adult populations from diverse subcultural backgrounds and have demonstrated acceptable validity and internal consistency (Hamzy et al., 2023; Hamzy & Chen, 2024). In the present study, the psychometric properties of both scales were re-evaluated, and all retained items again showed acceptable validity (item-total correlation $> .30$) and sufficient to good internal consistency (Ghozali, 2018).

Self-Concept. The Berzonsky-Fitts Self-Concept Scale comprises 13 items and demonstrated validity coefficients ranging from .652 to .797, with an overall Cronbach's alpha of .714. The scale includes five subdimensions based on Berzonsky and Fitts' theoretical framework (Rahmat, 2002): physical self ($\alpha = .662$), psychological self ($\alpha = .676$), social self ($\alpha = .610$), family self ($\alpha = .730$), and moral-ethical self ($\alpha = .668$). All subscales exceeded the acceptable reliability threshold of $\alpha \geq .60$ (Ghozali, 2018). Items were rated on a four-point Likert scale from Strongly Agree (4) to Strongly Disagree (1) for favorable items (5 items), and reverse-coded for unfavorable items (8 items).

Aggressive Behaviour. The Buss Aggression Scale consists of 28 items, all of which were valid (validity indices = .414 – .905) with an overall Cronbach's alpha of .773. The scale assesses eight aggression dimensions based on Buss's (1961) taxonomy: direct active physical (DAP; $\alpha = .677$), direct passive physical (DPP; $\alpha = .772$), indirect active physical (IAP; $\alpha = .714$), indirect passive physical (IPP; $\alpha = .781$), direct active verbal (DAV; $\alpha = .762$), direct passive verbal (DPV; $\alpha = .737$), indirect active verbal (IAV; $\alpha = .740$), and indirect passive verbal (IPV; $\alpha = .776$). Items were rated on a four-point Likert scale from Always (4) to Never (1). Scale A (11 items) assessed behaviours in the past three months, and Scale B (17 items) assessed behaviours in the past month. All items were positively worded.

Procedures

Data collection was conducted using an online survey administered through Google Forms, allowing participants to complete the questionnaire on their mobile phones at their convenience. The survey link was disseminated via WhatsApp, both through group messages and individual invitations. Before distribution, an introductory message was sent to emphasize the purpose and legitimacy of the study. The widespread use of WhatsApp in urban, suburban, and rural areas of Indonesia, supported by social network assistance from community leaders, professional organizations, colleagues, and others,

facilitated effective dissemination across provinces and islands. The study received approval from the local Institutional Review Board in Indonesia, and informed consent was obtained from all participants. All procedures adhered to the principles of the Declaration of Helsinki.

To reduce the risk of common method bias, the survey was structured into several sections to minimize any perceived link between the predictor and outcome variables. The study also incorporated a five-item screening survey with rating-scale interpretations and recommendations. This feature was intended to enhance participant engagement during the COVID-19 pandemic by addressing their curiosity about their immediate health status and to filter out prospective participants with severe symptoms that could distort responses. Participants were assured of anonymity, confidentiality, the absence of right or wrong answers, and their right to withdraw at any time.

Data analysis

Before engaging in data analysis, data preparation, including data cleaning and coding processes, was completed. Out of the 340 samples collected, only 336 people fully completed the study and met the inclusion criteria. Some participants were excluded because they were 18 years old (two participants) or were not willing to participate (two participants). Data were analysed using version 25 of SPSS Statistics to examine whether the variables met the assumptions of normality, linearity, independence of observations, and absence of significant outliers, as well as to test the two hypotheses (Ghozali, 2018; Laerd Statistics, n.d.). After analysing the data, it was found that only 326 samples complied with all assumptions for the variable analysis, and 10 significant outliers needed to be deleted. Deleting these outliers is a viable option because they account for less than 5% of all samples (Tabachnick and Fidell, 2001).

In this study, Harman's single-factor test was conducted to assess potential statistical bias. The single-factor solution accounted for only 37.49% of the variance, indicating that common method bias was not present. To further address and control for common method bias, partial correlation procedures using age and gender as marker variables were applied (Carroll, 2023; Podsakoff, 2003). Analyses of datasets split by gender and age groups demonstrated that all subgroup results in both the simple linear regression and canonical correlation models remained statistically significant, suggesting that method variance was adequately controlled.

The first analysis employed a simple linear regression model using continuous data to examine the association between self-concept and aggressive behaviour in adults (Hypothesis 1). All numerical data were converted into categorical data only for obtaining additional explanatory information in the variables analysis section, which means the categorical data of the aggressive behaviour and self-concept variables were not used for statistical correlation analysis but rather for providing a descriptive summary of the study results. The categorical data for the age variable were classified as 19–40, 41–65, and above 65, with coding from 0 to 2. For the gender variable, a score of 0 was assigned for females, and a score of 1 was assigned for males. For the self-concept variable, the category scores were classified as 13–25, 26–

39, and 40–52, with coding from 1 to 3. Similarly, for the aggressive behaviour variable, the categories were 28–55, 56–84, and 85–112, with coding from 1 to 3.

For the second analysis, a canonical correlation model was conducted using continuous variables to examine the correlations between the two multidimensional variable sets (Hypothesis 2), with gender included as a dummy variable (0 = female, 1 = male), after confirming that the assumption of multivariate normality was met (Levine, 1977; Tibco, n.d.). The total item scores for each variable dimension were coded based on the abbreviation names of the dimensions or subscales for both variable sets as follows: DAP (total score from items 2A, 1B, 6B, 10B), DPP (score from item 3B), IAP (total score from items 1A, 3A, 9A, 10A, 2B), IPP (score from item 5A), DAV (total score from items 7A, 7B, 8B, 9B, 11B, 12B, 13B, 14B, 15B, 16B, 17B), DPV (score from item 8A), IAV (total score from items 6A, 4B, 5B), IPV (total score from items 4A, 11A), physical (total score from items 5, 7), psychological (score from item 4), social (total score from items 2, 6, 8), family (total score from items 9, 10, 11, 12, 13), and moral_ethics (total score from items 1, 3).

Results

Descriptive statistics and assumptions

The 326 participants, comprising 126 males (38.7%) and 200 females (61.3%), ranged in age from 19 to 76 years, with a mean age (SD) of 38.9 (13.1) years. This group included 175 young adults aged 19–40 years (53.7%), with a mean age (SD) of 28.7 (7.1) years; 145 Middle-aged adults aged 41–65 years (44.5%), with a mean age (SD) of 50.0 (6.1) years; and six later-year-old adults aged > 65 years (1.8%), with a mean age (SD) of 69.7 (4.1) years. A majority of participants were raised and lived in urban environments (65%). Self-concept scores varied from 29 to 52, with a mean score (SD) of 41.2 (4.9). The values of skewness and kurtosis were –0.284 and –0.191, respectively, indicating a normal distribution of the self-concept variable. The scores for aggressive behaviour varied from 28 to 56, with a mean score (SD) of 36.7 (6.7), and the values of skewness and kurtosis were 1.271 and 2.092, respectively. This indicated that the data for the aggressive behaviour variable were not normally distributed because the skewness value was greater than 1. The histogram showed substantial positive skewness, even though the kurtosis was within the normal range, with a value of 3 or less (Ghozali, 2018).

Using GraphPad Prism 10.1.2 software, three univariate outliers were identified in the aggressive behaviour variable. Additionally, seven significant multivariate outliers were detected based on the robust Mahalanobis distance, removing those that fell within a 5% level of significance. After removing significant outliers from both univariate and bivariate variables, a logarithmic transformation was applied to both variables to further process the data (Ghozali, 2018; Osborne, 2002). This transformation resulted in a normal distribution of the residuals, as confirmed by the Kolmogorov–Smirnov test, which yielded a *p*-value of .058, indicating that the null hypothesis of normality could not be rejected. In addition, there was a linear correlation between both variables and the independence of the observations based on the Durbin-Watson statistic value of 1.957, which was within the normal range of 1.5 to 2.5. Thus, the assumptions of

the residuals' normality, linearity, independence of observations, and absence of significant outliers before running a simple linear regression analysis were met (Laerd Statistics, n.d.).

The statistical analysis results based on gender also revealed that the residuals were normally distributed, with *p-values* of .20 for females and .07 for males according to the Kolmogorov–Smirnov test. Their Durbin-Watson values were within normal limits, at 1.852 for females and 2.087 for males. Similar statistical findings were observed based on age, with *p-values* of .200 for young adults, .086 for middle-aged adults, and .200 for older adults, indicating a normal distribution of the residuals. The Durbin-Watson values were 1.721 for young adults, 2.097 for middle-aged adults, and 2.258 for older adults, indicating residual independence. Thus, all assumptions of the simple linear regression analysis based on age and gender groups were also fulfilled (Laerd Statistics, n.d.).

For significance assumption testing in canonical correlation analysis, multivariate normality is typically needed; however, it does not require strict normality assumptions, and the data do not need to be perfectly normal. To assess multivariate normality graphically in this study, a plot of the squared Mahalanobis distances against the quantiles of the chi-square distribution with 13 degrees of freedom (corresponding to the number of 13 variables in the dataset) was created. The resulting graph showed that the points tended to align along a straight line, suggesting that the data followed a multivariate normal distribution (Iweka and Anthonia, 2018).

Variable analysis of the linear regression model

The study was conducted using simple linear regression analysis to elucidate the relationship between two variables, with the *p-value* set at $\leq .05$.

Table 1. Summary of linear regression analysis for self-concept and aggressive behaviour in Indonesian adults.

[Table 1 here]

According to Table 1, the results revealed a statistically significant negative association between self-concept and aggressive behaviour among the adult population in Indonesia ($r = -.390, p < .001$), thereby supporting Hypothesis 1. This finding indicated a moderate negative correlation between self-concept and aggressive behaviour based on Cohen's standard (Cohen, 1992), with self-concept influencing aggressive behaviour by 15.2%, while the rest were influenced by other variables ($r\text{-squared} = .152$).

Table 2. Descriptive summary for self-concept and aggressive behaviour, and *p-value* of simple linear regression tests based on all participants, gender, and age in Indonesian adults.

[Table 2 here]

Table 2 shows that 210 participants (64.4%) demonstrated high self-concepts, while 116 (35.6%) exhibited moderate self-concepts. In terms of aggressive behaviour, 324 participants (99.4%) were classified as having low levels, and only two participants (0.6%) displayed moderate levels. All participants with high

self-concepts exhibited low levels of aggressive behaviour, and none demonstrated moderate aggression. Among those with moderate self-concepts, 114 participants (35%) displayed low aggression, while two participants (0.6%) showed moderate aggression. No participants were classified as having low self-concept or high levels of aggressive behaviour.

Table 2 also indicated a nearly identical pattern in terms of the percentage for both males ($p = .005$) and females ($p < .001$) ($\alpha \text{ level} \leq .05$). However, in Table 1, the results of the linear regression analysis revealed that the correlation coefficient in females ($r = -.475$) was greater than that in males ($r = -.250$). This means that there was a stronger correlation in the female group than in the male group. According to Cohen (1992), a correlation value of $.30 \leq r < .50$ denotes a moderate correlation, while $r < .30$ denotes a small correlation. Therefore, the female group exhibited a moderate correlation between the two variables, while the male group exhibited a weak correlation. The results also indicated that the percentage of male participants with a high self-concept (72.2%) was 2.7 times greater than the percentage with a moderate self-concept (27%), whereas the percentage of female participants with a high self-concept (59.5%) was 1.5 times greater than the percentage with a moderate self-concept (40%). Additionally, the percentage of moderate aggressive behaviour in males was 1.6 times greater (0.8%) than that in females (0.5%), while the percentage of low aggressive behaviour in females was slightly greater (99.5%) than that in males (99.2%). The findings revealed that there was a statistically significant relationship between self-concept and aggressive behaviour in both male and female adults.

In addition, Table 2 indicates a similar pattern for young and middle-aged adults, with both groups showing statistically significant associations ($p < .001$). In contrast, the later-year adult group did not reach statistical significance ($p = .800$). As shown in Table 1, the correlation coefficients were $-.384$ for young adults, $-.366$ for middle-aged adults, and $.134$ for later-year adults. These values indicate moderate negative correlations in the young and middle-aged groups and a weak correlation in the later-year group. Moreover, Table 2 also shows that middle-aged adults had the highest percentage of high self-concepts (75.9%), followed by later-aged adults (66.7%) and young adults (54.8%). For moderate self-concept, young adults had the highest percentage (45.2%), followed by later-year adults (33.3%) and middle-year adults (24.1%). However, there were no significant differences between the young adult group and the middle-aged adult group in terms of the total score for moderate aggressive behaviour.

Figure 2. The graph of the associations between self-concept and aggressive behaviour based on gender in Indonesian adults

[Figure 2 here]

Figure 2 illustrates two downward linear trends, with the female regression line extending further than the male line due to the larger female sample size. The dotted line representing females also shows a steeper slope compared to the continuous line for males. Both lines indicate a significant negative linear relationship between self-concept and aggressive behaviour in the adult population.

Figure 3. The graph of the associations between self-concept and aggressive behaviour based on age groups in Indonesian adults

[Figure 3 here]

Figure 3 presents three intersecting linear trends. One line displays an upward pattern, while the other two show downward trends. The dotted line representing later-year adults indicates a nonsignificant positive linear relationship between the two variables. In contrast, the continuous lines for young and middle-aged adults demonstrate significant negative linear relationships. The regression line for young adults is the longest, followed by those for middle-aged and older adults. The young adult group also exhibits the steepest slope, followed by the middle-year group, whereas the later-year group shows the shallowest slope. Additionally, the graph indicates that minimum self-concept scores were lowest among young adults, higher among middle-year adults, and highest among later-year adults..

Variable analysis of the canonical correlation model

Canonical correlation analysis was performed to explore the multidimensional correlations between self-concept and aggressive behaviour, using gender as a dummy variable with the *p-value* was set at $\leq .05$. This canonical correlation analysis result revealed six canonical vectors, however, only the first and second vectors were found to be statistically significant, with a Wilks's lambda of .562, $F(48, 1539.23) = 3.983, p < .001$, and .846, $F(35, 1319.1) = 1.529, p = .026$, respectively. The corresponding canonical correlations for these two pairs were .579 and .310, as shown in Table 3.

Table 3. Summary fit of canonical correlations, redundancy indices, and canonical loadings for the variable sets of self-concept and aggressive behaviour in Indonesian adults, run with a gender variable

[Table 3 here]

By simultaneously entering the independent variable set (the five dimensions of self-concept) and gender—coded as a dummy variable (0 = female, 1 = male)—into the analysis, canonical vector pair 1 (χ_1 and η_1) corresponded to the female group, whereas canonical vector pair 2 (χ_2 and η_2) corresponded to the male group. These results can be further interpreted within the framework of canonical correlation analysis (Levine, 1977). For the set of aggressive behaviour variables explained by the self-concept variable set, it showed that the redundancy index for females was .118 (see Table 3), indicating that there was an overlap or interrelationship of 11.8% between the aggressive behaviour variable set and the self-concept variable set in females. In contrast, for males, the redundancy index was .016, suggesting a smaller overlap of only 1.6% (Dattalo, 2014).

Figure 4. The canonical correlation analysis model for the variable sets of self-concept and aggressive behaviour in Indonesian adults runs with a gender variable

[Figure 4 here]

Figure 4 presents the canonical correlation model, with canonical vector pair 1 (females) depicted with solid arrows and canonical vector pair 2 (males) illustrated with dotted arrows. In the female canonical vector set (χ_1), the strongest contributors were psychological self (−.890), physical self (−.706), and social self (−.624), followed by family self (−.435), while moral-ethics self showed a relatively weak contribution

($-.264$). Substantively, these results indicate that, among females, the physical, psychological, social, and family self-dimensions were the strongest predictors of aggression types DAV, DPV, IAV, DAP, and IAP, with canonical loadings $\geq .40$. In contrast, within the male canonical vector set (χ^2), only the moral-ethics self reached the .40 loading threshold (Dattalo, 2014; Levine, 1977), with the highest loading value ($-.433$). This dimension predicted the aggression types IAP, DAV, and IPV in the male group. Overall, the canonical correlation analysis reveals clear structural gender differences in the relationships between multidimensional self-concept and aggressive behaviour, thereby supporting Hypothesis 2.

Discussion

All participants

All participants with high self-concepts displayed low levels of aggressive behaviour, whereas a few individuals with moderate self-concepts showed moderate levels of aggression. This pattern may reflect the fact that individuals with higher self-concepts tend to possess stronger coping abilities and greater self-direction. They are generally more attentive to their surroundings and demonstrate stronger social skills, enabling effective verbal and nonverbal communication and appropriate emotional expression. Such social competence supports successful interpersonal interactions and reduces the likelihood of misunderstandings that could otherwise escalate into frustration, anger, hostility, or physical and verbal aggression. Conversely, individuals with lower self-concepts often experience insecurity and diminished self-acceptance. They may withdraw from their social environment, increasing their susceptibility to misunderstandings in daily interactions. These misunderstandings can contribute to heightened frustration and a greater propensity for aggressive behaviour (Samthirao, 2016; Kewalramani & Singh, 2017). The present study, conducted among Indonesian adults during the challenging period of the COVID-19 pandemic, identified a significant negative association between self-concept and aggressive behaviour. This finding was consistent with pre-pandemic research across adult, juvenile, and child populations (Burde and Jensen, 1983; Ross et al., 1996; Steffgen et al., 2007; Ball, 1998; Jernsawag & Sughondhabirom, 2014 ; Ahad, Ara, and Shah, 2016; Hamzy and Fattah, 2020; Ajiboye and Adeleke, 2023).

Moreover, the findings showed that 35% of participants with a moderate self-concept exhibited low levels of aggressive behaviour. This pattern may suggest that additional psychosocial and biological factors contribute to the development of aggression. For example, Maharani (2017) reported that self-control accounted for 74% of aggressive behaviour among Indonesian college students. The regulation of aggressive impulses is neurologically associated with the prefrontal cortex and the amygdala (Jhangiani & Tarry, 2022). Furthermore, the cultivation of spiritual values and exposure to positive role models during childhood—such as parents and teachers who consistently demonstrate mature rather than immature defense mechanisms—may foster strong self-regulation and self-control in adulthood, thereby reducing aggressive tendencies (McCullough & Willoughby, 2009; Coste, 2010). One example of a mature defense mechanism is altruism, which can inhibit aggressive behaviour even in the face of provocation or exposure to violence (Rious & Cunningham, 2018).

Age groups

Regarding age groups, the simple linear regression analyses for young and middle-aged adults revealed significant negative relationships between self-concept and aggressive behaviour. However, the association was stronger among young adults, as indicated by the steeper regression line in this group (Figure 3). This difference may reflect the additional role of self-control and self-regulation in shaping aggressive behaviour. Middle-aged adults generally exhibit higher levels of self-control, maturity, and emotional regulation, which contribute to greater agreeableness and emotional stability (Vigil-Colet et al., 2015). In contrast, Morsünbül (2015) found that aggressive behaviour in young adults is closely linked to low self-control. Consequently, the influence of self-concept on aggression may be more pronounced in young adults than in middle-aged adults due to these differences in self-control and emotional regulation.

Conversely, the later-year adult group showed a nonsignificant positive linear correlation between self-concept and aggressive behaviour. This result was likely due to the tiny sample size in this group (six participants). Although the minimum self-concept score in this group was higher than in the other age groups (Figure 3), later-year adults may experience irritability, emotional fluctuations, and frequent anger as a result of declining biological functions and associated physical, psychological, and social changes (Maramis & Maramis, 2016). These factors may help explain the positive correlation observed between the two variables in this age group.

The findings showed that minimum self-concept scores were lowest among young adults, higher among middle-aged adults, and highest among older adults (Figure 3). Additionally, the middle-aged adult group had the largest proportion of individuals with high self-concepts, followed by the later-year adult group, with the young adult group showing the lowest proportion (Table 2). However, the later-year adult group's sample size—only six participants—may not adequately represent the broader population in that age range. These results align with previous research demonstrating that self-concept changes across the lifespan. A U.S. study found that affective self-concept is high in childhood, declines during adolescence, gradually increases throughout adulthood, and then decreases in older age (Robins & Trzesniewski, 2005). In contrast, a study conducted in Japan reported that affective self-concept does not decline in later life, possibly due to cultural factors such as strong respect for older adults and the seniority-based social system (Ogihara & Kusumi, 2020). The present study identified no significant differences between young and middle-aged adults in total scores of moderate aggressive behaviour. However, this may be attributable to the limited sample size within that behavioural category and therefore may not accurately reflect true differences between the age groups.

Gender groups

Based on the variable analyses from the linear regression and canonical correlation models, as well as the Harman single-factor test, both split datasets yielded statistically significant results for the male and female groups. The split-half procedure, together with consistent significance across datasets and a single-factor solution explaining less than 50% of the total variance (37.49%), supports the reliability and validity of the research findings (Carroll, 2023; Podsakoff, 2003). The association between self-concept and aggressive behaviour was also stronger among females than males. In the linear regression model (Table 1), this association was moderate for females and small for males. By contrast, the canonical

correlation model (Table 3) indicated a high correlation for females and a moderate correlation for males. These differences reflect the analytical properties of canonical correlation analysis, which maximizes the association between linear combinations of variable sets (Iweka & Anthonia, 2018; Levine, 1977).

Linear regression model

The study also showed a steeper regression slope for females than for males (see Figure 2). This difference may reflect inherent sex-based variations in aggressive behaviour. Males typically exhibit higher levels of aggression, partly due to elevated testosterone, a key male sex hormone associated with increased aggression in both humans and animals (Munsey, 2006; JhaSngiani & Tarry, 2022). Consequently, testosterone may exert a stronger influence on aggressive behaviour than on self-concept, which could help explain the weaker association observed among males.

This study also found that a higher proportion of males (72.2%) than females (59.5%) reported a high self-concept, whereas a greater proportion of females (40.5%) than males (27.8%) reported a moderate self-concept (Table 2). These findings indicate that male participants, on average, possessed higher self-concept levels than female participants. This pattern is consistent with prior research showing that males generally report more positive and fewer negative emotions than females (Simon, 2014), which is associated with a more positive self-concept. Cultural factors in Indonesia may further explain these differences. Males often occupy higher positions within the family structure, reflecting the cultural belief that men or fathers serve as the heads of households (Dewi, 2019; Wulandari & Arvianti, 2016). Moreover, traditional gender roles remain prevalent, with males typically working outside the home and females assuming domestic and caregiving responsibilities—even when females also hold paid employment (Wulandari & Arvianti, 2016). Such elevated social positioning may contribute to the development of a stronger self-concept among males. Supporting this interpretation, prior research has shown that social class and social position significantly influence self-concept (Easterbrook, Kuppens, & Manstead, 2020).

Canonical correlation model

The findings revealed clear gender differences in the self-concept dimensions predicting aggressive behaviour (see Table 3 and Figure 4). Among females, the physical, psychological, social, and family self were the strongest predictors of multiple forms of aggression, including direct active verbal (DAV; e.g., using offensive language), direct passive verbal (DPV; e.g., refusing to speak), indirect active verbal (IAV; e.g., provoking disputes or spreading false information), direct active physical (DAP; e.g., hitting or pushing), and indirect active physical aggression (IAP; e.g., damaging another person's belongings). In contrast, among males, the moral-ethical self primarily predicted IAP, DAV, and indirect passive verbal aggression (IPV; e.g., withholding help or refraining from exercising suffrage) (Buss, 1961), indicating gender-specific patterns in the self-concept dimensions underlying aggression.

The physical self refers to evaluations of one's body, clothing, possessions, and health (Rahkmat, 2002). Females tend to place greater emphasis on physical appearance than males (Quittkat et al., 2019), reflected in the higher loading values for the physical self. The psychological self involves evaluations of emotions, thoughts, personality traits, and perceived competence (Burns, 1982; Rahkmat, 2002). Evidence

indicates that females generally experience and process emotions more intensely than males (Kumar, 2023). Consistently, females showed higher canonical loading values for the psychological self, with the highest value ($-.89$) indicating its strongest contribution to the canonical function. Prior research linking the psychological self with aggression (Fonagy et al., 1993) further supports the observed association between self-concept and aggression among adult females.

Females also showed higher loading values for verbal than physical aggression, particularly indirect verbal aggression (IAV). This pattern aligns with findings that female aggression more often manifests through indirect verbal strategies to minimize potential harm (Denson et al., 2018). The higher loading value of the social self among females may reflect a stronger social orientation. The social self—evaluating adherence to social norms and interpersonal relationships—appears more salient for females, who typically place greater importance on social ties and are more likely to seek support under stress (Kumar, 2023). In contrast, males tend to experience greater social isolation across the lifespan (Umberson et al., 2022).

Among males, the moral-ethical self showed the highest canonical loading value, indicating its strongest contribution to the canonical function, whereas its contribution was weaker among females. This difference may reflect gender variation in moral orientation. According to Kohlberg's theory of moral development, males are more likely to adopt a justice-oriented framework, which is positioned at the highest stage of moral reasoning. Conversely, females commonly lean towards compassion-oriented standards, which correspond to the lower stage in human moral development (Andre and Velasquez, 2015). Females' tendency to prioritize care, nurturing, and relational harmony may facilitate alignment between their moral standards and daily behaviour, thereby reducing frustration and, consequently, aggressive responses. Conversely, males may experience greater difficulty or frustration in striving to meet abstract justice-based moral ideals, which could more strongly influence their overall self-concept and increase susceptibility to aggression. This interpretation is consistent with Dollard et al.'s (1939) frustration–aggression hypothesis, which posits that aggression often arises from frustration (Jhangiani & Tarry, 2022).

Limitations and implications

In the present study, no participants exhibited high levels of aggressive behaviour or low self-concept, and only a small proportion demonstrated moderate aggressive behaviour. This pattern may reflect both the constraints of the COVID-19 pandemic and the quota sampling method based on voluntary participation, which may have attracted individuals with stronger prosocial tendencies and lower aggression (Vsevolodovna, Andreevich, & Thurmer, 2020). Supporting this interpretation, Leonard D. Eron and L. Rowell Huesmann (1984) reported a stable negative relationship between aggression and prosocial behaviour in a 22-year longitudinal study. Furthermore, the rise of social solidarity in Indonesia during the COVID-19 pandemic (Rochwulaningsih et al., 2023) may have further encouraged voluntary participation. However, the use of simple linear regression with numerical data for both the independent and dependent variables helped to mitigate this potential bias.

A further limitation of this study is its restricted scope of variables, as it examined only the relationship between self-concept and types of aggression with age and gender as demographic controls, while excluding other potentially influential psychosocial factors such as spirituality, personality traits, environmental conditions, relationship dynamics, social roles, health status, and life events. The unique social and psychological conditions of the COVID-19 pandemic may also have introduced additional stressors not captured in the research model. Another limitation is the unequal distribution of gender and age groups. Future research should incorporate a broader range of variables and employ larger, more balanced samples—particularly including more male participants and later-year adults—to enable more robust analyses.

Despite its limitations, this study provides meaningful implications for sociology, psychology, community psychiatry, and education. By identifying self-concept as an important factor in addressing aggressive behaviour, the findings offer insights for the development of prevention and intervention programmes. These insights may extend beyond Indonesia to other societies with similar cultural contexts. Practically, policymakers, institutions, and professionals should consider initiatives that strengthen self-concept from childhood to adulthood across families, educational settings, workplaces, and communities to help prevent aggression, promote well-being, and support social harmony.

Conclusions and Recommendations

Conclusions

In conclusion, there is a significant negative association between self-concept and aggressive behaviour in the general adult population of Indonesia within a multicultural context ($p < .001$). This confirms self-concept as a negative predictor of aggressive behaviour in adults, suggesting that improving self-concept can decrease the prevalence of aggressive behaviour across various age-adult and gender groups in diverse societal contexts. This finding, observed during the challenging period of the COVID-19 pandemic, remains consistent with pre-pandemic research conducted among adult, juvenile, and child populations. In addition, it reveals that the correlations between the two variables are stronger among young adults and females than among middle-aged adults and males, suggesting that age and gender may influence this relationship.

Furthermore, there is a variance in the structure and level of statistical significance of the multidimensional relationships between self-concept aspects and aggressive behaviour types based on gender. The findings reveal that in females, physical self, psychological self, social self, and family self are the best predictors of direct verbal aggression (both active and passive), as well as indirect active verbal aggression and active physical aggression (both direct and indirect). Conversely, in males, moral-ethics self emerges as a predictor of indirect active physical aggression, direct active verbal aggression, and indirect passive verbal aggression. The significance level of multidimensional relationships between both variable sets is greater for females ($p < .001$) than for males ($p < .05$). Moreover, during the COVID-19 pandemic in Indonesia, the portion of the aggressive behaviour variable set explained by the self-concept variable set is 11.8% in females and only 1.6% in males, indicating a stronger predictive ability in females

than males. Future studies after the COVID-19 pandemic are needed to obtain larger and more balanced sample sizes and to integrate self-concept and aggressive behaviour with a broader range of factors, such as spirituality, mental health, personality traits, and environmental factors, to obtain a more comprehensive understanding of aggressive behavioural problems in adults by applying distinct methods and population approaches.

Recommendations

These research findings support several recommendations, particularly in the context of addressing and managing aggressive behaviour among adults in Indonesia:

1. **Targeted intervention programmes:** Given the negative relationship between self-concept and aggressive behaviour in adults, intervention programmes aimed at reducing aggression should incorporate strategies to enhance individuals' self-concept from infancy to adulthood. These programmes could include psychoeducational interventions, counseling, and self-concept-building activities tailored to specific needs and characteristics, such as young adults and females. Collaboration and integration with health care and community welfare centers, such as antenatal and postnatal care facilities, as well as mental health centers and rehabilitation services, to provide training related to parenting and personality for parents and individuals, is also essential.
2. **Holistic approaches and strategies:** Considering the relatively low portion of aggressive behaviour variance explained by self-concept in males compared to females, there may be underlying factors contributing to aggressive behaviour in males that are not fully captured by self-concept alone. Holistic approaches should be implemented to identify, address, and manage all factors, including biological factors, mental conditions, cultural expectations, and peer influences that contribute to aggression among males in the Indonesian context. Involving collaboration between psychologists, psychiatrists, educators, policymakers, and community leaders can develop comprehensive strategies for aggressive behaviour prevention and management.
3. **Gender-specific approaches:** Recognizing the variance in the relationship between self-concept and aggressive behaviour based on gender differences is crucial. Interventions should be tailored to address the unique predictors of aggressive behaviour in males and females. For example, interventions for females may focus on enhancing various dimensions of self-concept, such as physical, psychological, social, and family self, to prevent direct verbal aggression, indirect active verbal aggression, and active physical aggression. In contrast, interventions for males may prioritize aspects related to moral ethics to prevent indirect active physical aggression, direct active verbal aggression, and indirect passive verbal aggression.

By incorporating these recommendations into intervention programmes and policies, all stakeholders can work towards effectively addressing and reducing adults' aggressive behaviour in societies, achieving well-being, and fostering peace in nations.

Declarations

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Conflict of interest

The authors declare no conflicts of interest with respect to the authorship or publication of this article.

Data availability statement

Due to confidentiality concerns/ethical restrictions, the research data cannot be made publicly available. It is available upon reasonable request from the corresponding author.

Ethics approval

This study was approved by the research ethics committee in Indonesia, and all procedures were in line with the principles of the Declaration of Helsinki.

Consent to participate

Informed consent was obtained from all individual participants included in the study.

Author contributions

AH: conceptualization, data curation, formal analysis, methodology, project administration, validation, writing–original draft, writing–review and editing; CCC: conceptualization, data curation, investigation, project administration, supervision, writing–review and editing; CHL: conceptualization, software, supervision, writing–review and editing; YYC: conceptualization, methodology, resources, supervision, writing–review and editing. All authors contributed to the article and approved the submitted version.

Consent for publication

Not applicable.

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Tables

Table 1. Summary of linear regression analysis for self-concept and aggressive behaviour in Indonesian adults.

Statistic Results		<i>r</i>	<i>b</i>	<i>t</i>	<i>C.I.</i> 95%	
All Participants		– .390 ^{***}	– 0.564	– 7.631	– 0.710	– 0.419
Gender Group	Male	– .250 ^{**}	– 0.424	– 2.872	– 0.716	– 0.132
	Female	– .475 ^{***}	– 0.653	– 7.599	– 0.823	– 0.484
Age Group	Young Adults	– .384 ^{***}	– 0.563	– 5.478	– 0.765	– 0.360
	Middle-Year Adults	– .366 ^{***}	– 0.565	– 4.709	– 0.803	– 0.328
	Later-Year Adults	.134 [†]	0.197	0.271	– 1.823	2.218

Notes: The data are from the authors' calculations. [†] $p < .10$. ^{*} $p < .05$. ^{**} $p < .01$. ^{***} $p < .001$.

Table 2. Descriptive summary for self-concept and aggressive behaviour and *p-value* of simple linear regression tests based on all participants, gender, and age in Indonesian adults

Participants	Self-Concept	Aggressive behaviour						Total		<i>p-value</i>
		Low		Moderate		High				
		N	%	N	%	N	%	N	%	
All Participants	High	210	64.4	0	0	0	0	210	64.4	
	Moderate	114	35	2	0.6	0	0	116	35.6	< .001
	Low	0	0	0	0	0	0	0	0	
	Total	324	99.4	2	0.6	0	0	326	100	
Female	High	119	59.5	0	0	0	0	119	59.5	
Group	Moderate	80	40	1	0.5	0	0	81	40.5	< .001
	Low	0	0	0	0	0	0	0	0	
	Total	199	99.5	1	0.5	0	0	200	100	
Male	High	91	72.2	0	0	0	0	91	72.2	
Group	Moderate	34	27	1	0.8	0	0	35	27.8	< .01
	Low	0	0	0	0	0	0	0	0	
	Total	125	99.2	1	0.8	0	0	126	100	
Aged 19–40	High	96	54.8	0	0	0	0	96	54.8	
Years Old	Moderate	78	44.6	1	0.6	0	0	79	45.2	< .001
	Low	0	0	0	0	0	0	0	0	
	Total	174	99.4	1	0.6	0	0	175	100	
Aged 41–65	High	110	75.9	0	0	0	0	110	75.9	
Years Old	Moderate	34	23.4	1	0.7	0	0	35	24.1	< .001
	Low	0	0	0	0	0	0	0	0	
	Total	144	99.3	1	0.7	0	0	145	100	
Aged > 65	High	4	66.7	0	0	0	0	4	66.7	
Years Old	Moderate	2	33.3	0	0	0	0	2	33.3	.800
	Low	0	0	0	0	0	0	0	0	
	Total	6	100	0	0	0	0	6	100	

Note: The data are from the authors' calculations, p = result of simple linear regression test (α level $\leq .05$)

Table 3. Summary fit of canonical correlations, redundancy indices, and canonical loadings for the variable sets of self-concept and aggressive behaviour in Indonesian adults, run with a gender variable

Self-Concept	Canonical Loading		Aggressive Behaviour	Canonical Loading	
Variable Set (X)	χ 1	χ 2	Variable Set (Y)	η 1	η 2
Physical Self	-.706	-.381	Direct Active Physical Aggression	.547	.360
Psychological Self	-.890	.061	Direct Passive Physical Aggression	.313	.240
Social Self	-.624	-.074	Indirect Active Physical Aggression	.417	.682
Family Self	-.435	-.381	Indirect Passive Physical Aggression	.046	.247
Moral-Ethics Self	-.264	-.433	Direct Active Verbal Aggression	.594	.612
			Direct Passive Verbal Aggression	.751	-.048
			Indirect Active Verbal Aggression	.758	.246
			Indirect Passive Verbal Aggression	-.137	.526
Extracted Variance	.351	.166	Extracted Variance	.261	.178
Redundancy Index	.087	.017	Redundancy Index	.118	.016
			ρ^2	.335	.096
			Canonical Correlation (ρ)	.579 ^{***}	.310 [*]

Notes: The data are from the authors' calculations. ^{*} $p < .05$. ^{**} $p < .01$. ^{***} $p < .001$.

Figures

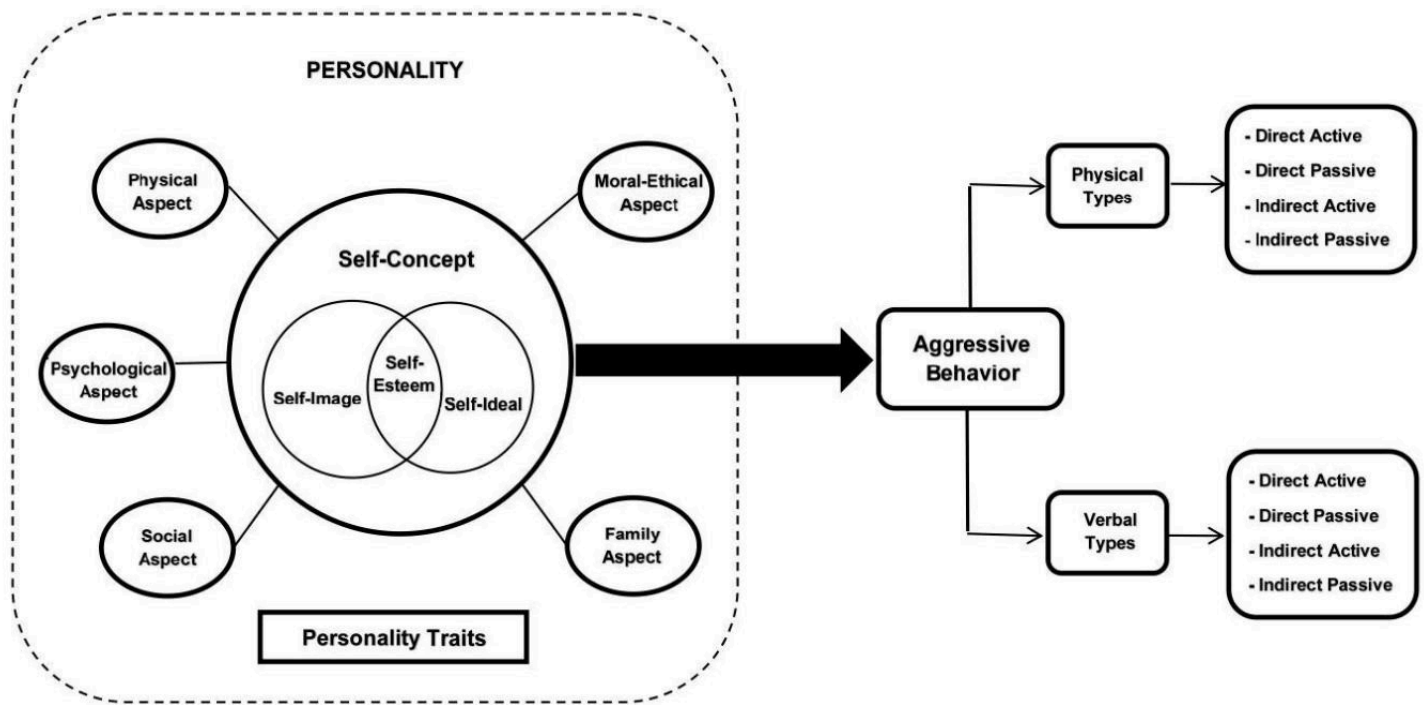


Figure 1

Conceptual framework

Note: The outline of this scheme is derived from the author's original conceptualization

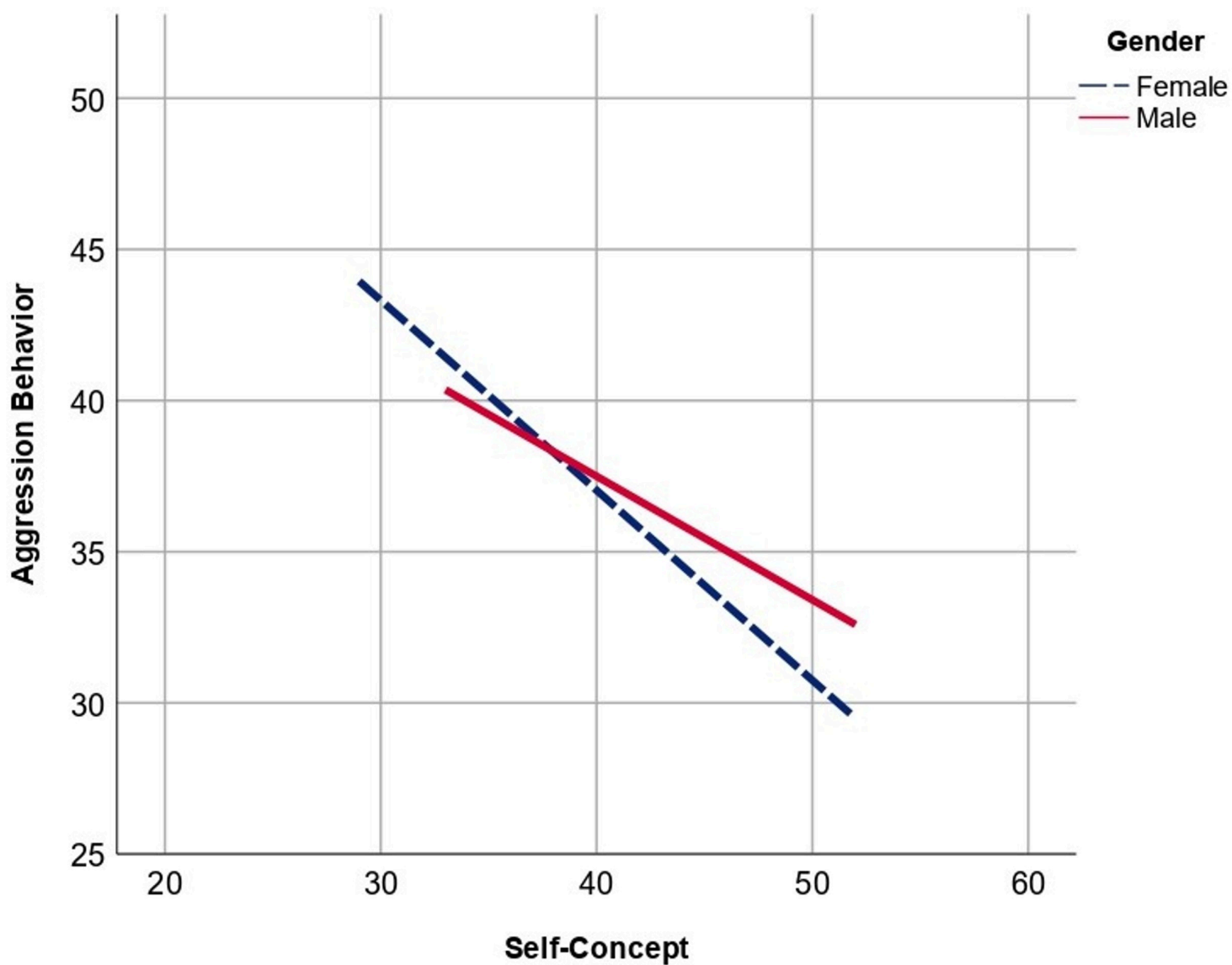


Figure 2

The graph of the associations between self-concept and aggressive behaviour based on gender in Indonesian adults

Note: The continuous linear negative correlation represents the male adult group, and the dotted linear negative correlation represents the female adult group

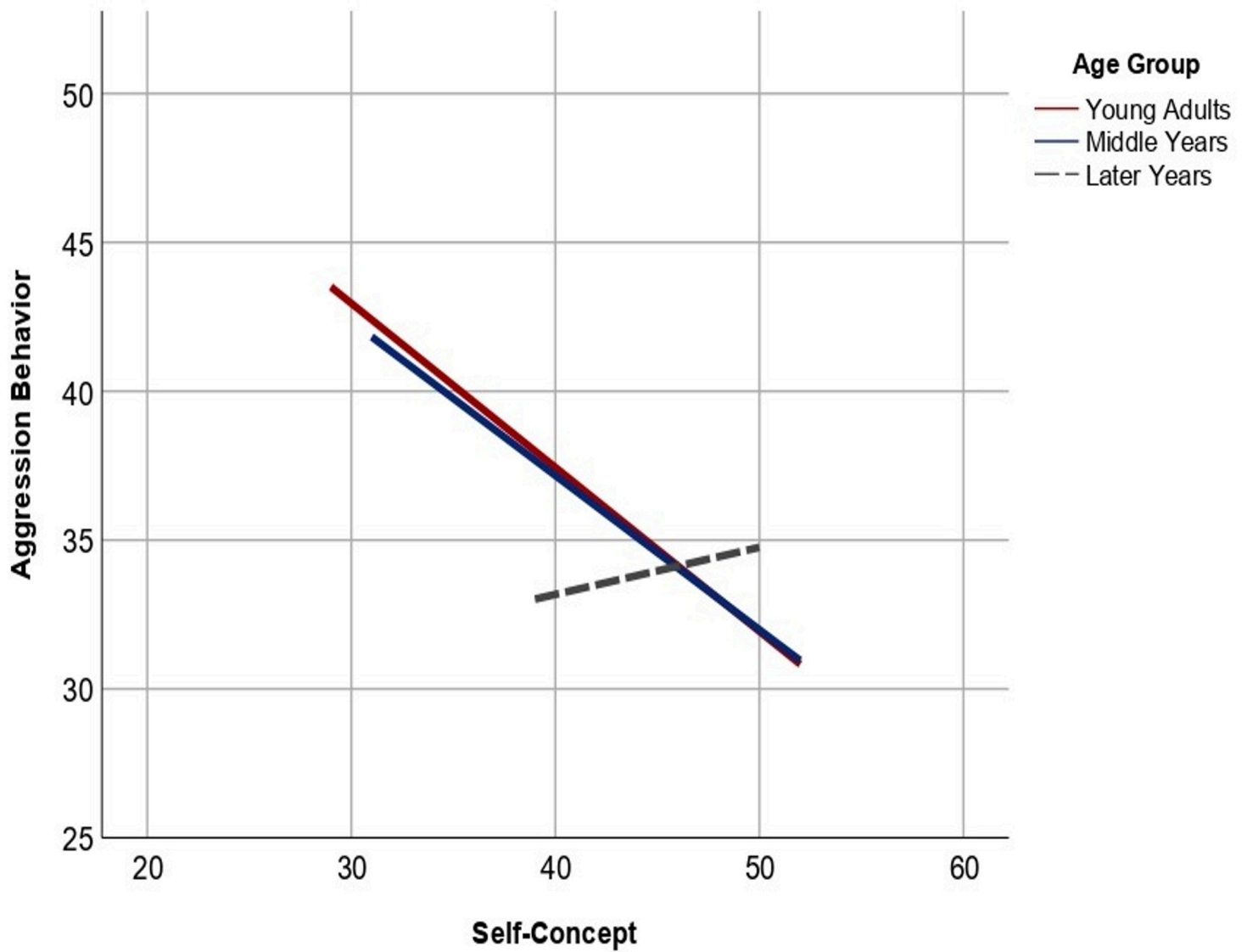


Figure 3

The graph of the associations between self-concept and aggressive behaviour based on age groups in Indonesian adults

Note: The graph shows a continuous linear negative correlation in the young adult and middle-year adult groups, but in the later-year adult group, it shows a dotted linear positive correlation

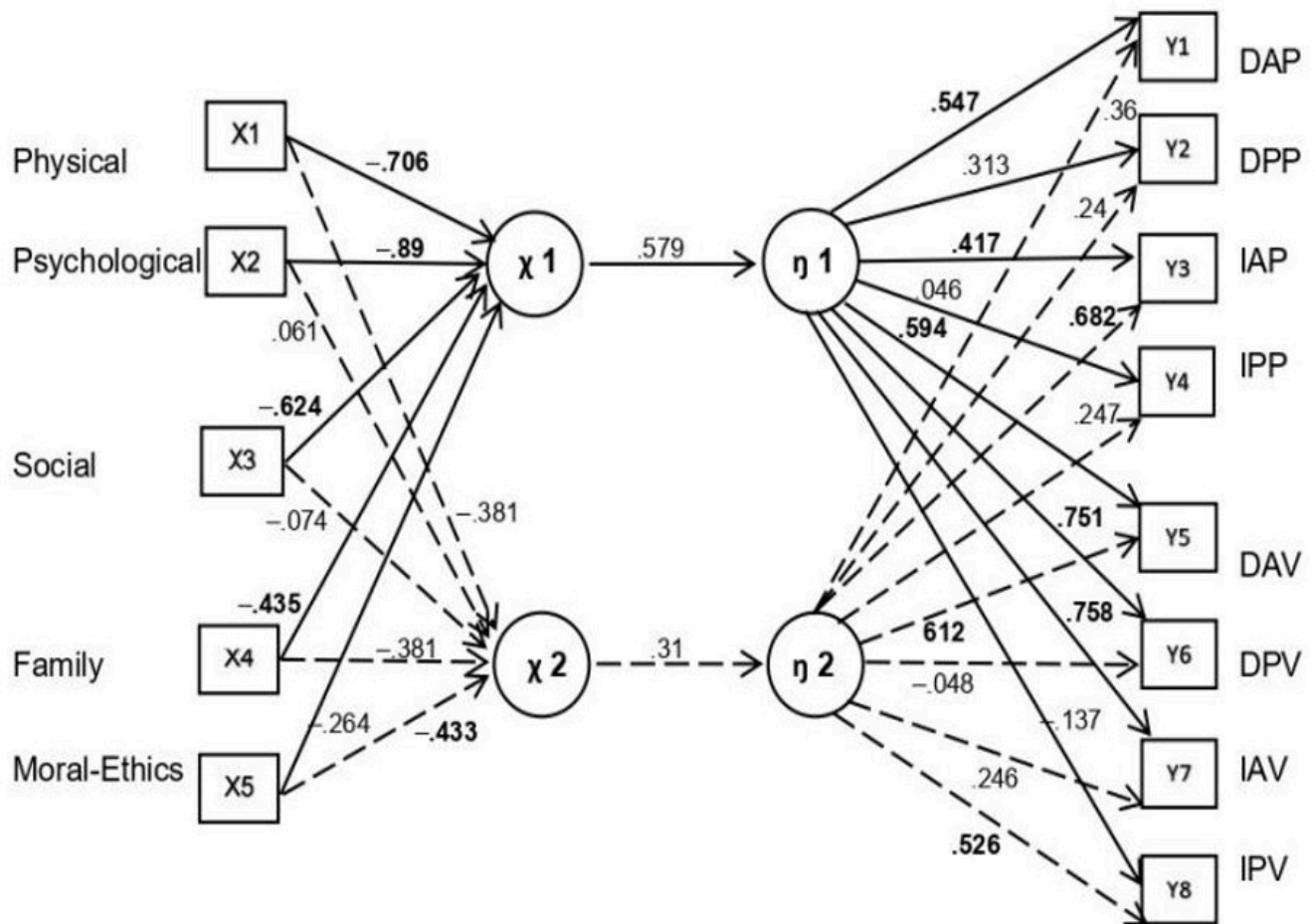


Figure 4

The canonical correlation analysis model for the variable sets of self-concept and aggressive behaviour in Indonesian adults runs with a gender variable

Note: Canonical vector pair 1 with continuous arrow lines represents the female adult group, and canonical vector pair 2 with dotted arrow lines represents the male adult group