

Authoritative Parenting Style and Aggression in Adolescents: Mediating Role of Machiavellianism

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ABSTRACT

Authoritative parenting promotes warmth and control, aggression reflects hostile behavior, while Machiavellianism involves manipulative interpersonal strategies. The study employed a quantitative, cross-sectional research design with the objective to investigate how far Machiavellianism plays a mediatory role in the relationship between authoritative parenting styles and adolescents' aggression in the Indian context. On a sample of 445 secondary school students (183 boys and 262 girls), the West Bengal Parental Authority Questionnaire by Buri (1991), the Short Form Aggression Questionnaire by Bryant & Smith (2001), and the Short Dark Triad by Jones & Paulhus (2013) were administered. Findings revealed: 1) significant gender differences for both aggression and Machiavellianism. 2) aggression and Machiavellianism are strongly and positively linked, and negative correlation with authoritative parenting style for both father and mother. 3) Mediation analysis showed that authoritative parenting styles of mothers and fathers caused aggression both directly and indirectly.

Keywords: Adolescence, aggression, authoritative parenting style, Machiavellianism

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INTRODUCTION

Machiavellianism is one of the three components of the Dark Triad personality model, alongside narcissism and psychopathy, and is particularly associated with strategic and instrumental aggression rather than impulsive or emotional outbursts (Paulhus & Williams, 2002; Rauthmann & Will, 2011). Studies have shown that people high in Mach traits are more likely to use indirect or relational aggression—such as spreading rumors, manipulating relationships, or socially excluding others—to secure dominance or social advantage (Archer & Coyne, 2005; Bereczkei, 2015). Machiavellianism (Mach) is defined as a personality trait distinguished by reputation, cynicism, coalition formation, and strategic planning, defined by (a) manipulativeness, (b) a callous effect, and (c) a strategic, calculating disposition. Machiavellians exhibit strategic behaviour rather than spontaneous actions” (Jones & Paulhus, 2011a).

Machiavellianism is mainly about focusing on self-interest, using deception, planning carefully, and being flexible to get what you want (Al Ain et al., 2013). People with high “Machiavellianism” strongly want control and success, and they are very determined to reach their goals. They seek power and status (Dahling et al., 2008) and try to take advantage of situations to benefit themselves (Liu, 2008). Sometimes, they may use dishonest or unethical ways to reach their goals or safeguard their own interests (Do & Dadvari, 2017).

Adolescence is a developmental period spanning roughly from ages 10 to 19, characterized by rapid biological growth, identity formation, and increased independence from parents (Santrock, 2020). Adolescence is a crucial stage of development where parents and teenagers must adjust and redefine their relationships (Laursen & Collins, 2009, Parenting style plays a major role in shaping aggressive behaviour in children and adolescents (Davies et al., 2019; Lemola et al., 2012; Qi, 2019). Aggressive behaviour means hurting someone on purpose or taking someone else’s things without permission, which is not acceptable in society (Perlman & Hirdes, 2010).

Most research on antisocial behaviour during childhood has focused on its aggressive forms. Studies have shown that aggressive tendencies begin early in life and often continue from childhood through adolescence and into adulthood (Wahl & Metzner, 2012). In recent years, a worrying increase in aggressive behaviour among children has been reported, making it a serious public health concern (Ahemaitijiang et al., 2021). Such behaviour is associated with a variety of negative social outcomes, including juvenile delinquency, peer rejection, and involvement in criminal activities (Burt et al., 2016; Reijntjes et al., 2011).

Aggression (AG) refers to behaviour intended to cause harm or injury to another individual and can manifest in various forms, including “physical and verbal aggression,” as well as emotional responses like “anger” and cognitive aspects such as “hostility” (Bryant and Smith, 2001). “Physical and verbal aggression, involve hurting or harming others, represent the instrumental or motor component of behaviour; anger, involves physiological arousal and preparation for aggression, represents the emotional or affective component of behaviour; while “hostility, consists of feelings of ill will and injustice, represents the cognitive component of behaviour” (Bryant and Smith, 2001).

Adolescence and early adulthood are crucial stages of development during which parents play a key role. The parenting style chosen by parents significantly influences the quality of relationship with their adolescent children (Shek, 2002). Parents have a powerful impact on shaping the behaviours and attitudes of adolescents (Sarwar, 2016). Parenting style reflects the emotional environment of the family where interactions between parents and children occur (Park & Walton-Moss, 2012). Numerous studies have highlighted that parenting style affects important aspects of a child’s development, including academic performance, ability to learn independently, self-esteem, and overall well-being (Fortner et al., 2012). The important contributions of Diana Baumrind, a well-known clinical and developmental psychologist well recognized for her studies on parenting styles, were highlighted in this context by Coste (2015). Parenting style refers to the consistent patterns of behaviour and attitudes that parents use to raise and interact with their children (Baumrind, 1991).

Baumrind (1968) introduced three primary types of parenting styles: “authoritative”, “authoritarian”, and “permissive”. “Authoritarian” parents focus heavily on discipline and obedience, often enforcing strict rules without discussing them with their children. Their parenting style is often cold, distant, and relies on one-way communication. By taking the time to explain rules and assist their children in understanding their rationale, authoritative parents, on the other hand, adopt a more democratic stance. Unlike authoritarian parents, they promote two-way communication and use reasoning during interactions (Lin et al., 2023). Building on Baumrind’s work, Maccoby and Martin (1983) proposed a two-dimensional model based on parental “responsiveness and demandingness.” This model led to the classification of four parenting styles: “authoritative (high responsiveness and high demandingness), authoritarian (low responsiveness and high demandingness), indulgent (high responsiveness and low demandingness), and neglectful (low responsiveness and low demandingness)”. Using these frameworks, many studies have explored how different parenting styles affect children's emotional and behavioural development (Perez-Gramaje et al., 2020).

Authoritarian parenting styles concentrates on maintaining control over their children and demand blind obedience. these parents make choices (right/wrong) for their children and do not grant them much independence

(Baumrind, 1983). Children reared in this manner frequently struggle with interpersonal relationships and may suffer from issues such as low self-esteem, depression, lack of drive, and difficulties making decisions as adults. (Baumrind, 1991; Binger, 1994; Forward, 1989; Wennar, 1994; Whitfield, 1987). Children with permissive parents are given a great deal of autonomy to plan their own activities and make their own decisions. Although they are normally kind and encouraging, they tend to shy away from conflict and would rather not take on an authoritative role. Children from permissive homes frequently have low self-esteem and poor social skills (Baumrind, 1991; Reitman et al., 2002). These children may also be seen as egocentric, reliant on others, careless, pampered, misbehaving, uncaring, and occasionally antisocial (Binger, 1994; Wennar, 1994). The nature of authoritative parenting fosters emotional regulation and prosocial behaviour, which reduces the likelihood of aggressive responses in stressful situations. Furthermore, authoritative parents' model constructive conflict resolution, which adolescents often internalize, leading to lower levels of impulsivity and hostility (Rinaldi & Howe, 2012).

The authoritative parenting style (ARPS) strikes a balance between being strict like authoritarian parents and being lenient like permissive ones. Parents using this style are loving and supportive, but they also set clear rules and limits. They allow their children enough freedom to gradually become independent (Baumrind, 1967, 1983, 1991; Reitman et al., 2002). Children raised with this approach are not overly controlled but are given freedom within clear boundaries. These children usually have high self-esteem and are often confident, responsible, secure, well-liked, and curious (Wennar, 1994).

Authoritative parents exhibit both "demanding" and "responsive" characteristics. Authoritative parents supervise and establish explicit expectations for their children's behaviour. They are aggressive yet neither invasive nor restrictive. Their disciplinary approaches are constructive rather than retributive. They desire their children to exhibit assertiveness, social responsibility, self-regulation, and cooperation" (Baumrind, 1991, as cited in Darling, 1999). They are recognized for providing unequivocal and steadfast leadership to their children, although their discipline is tempered with kindness, rationale, adaptability, and transparent communication (Buri, 1991).

Gershoff, (2002) and Goulter et al., (2020) pinpointed that negative parenting actions—like harsh punishment, rejection, or ignoring the child—can lead children to copy bad behaviour, feel angry, and think in a hostile way. Such parenting can also stop children from learning how to control their emotions and actions properly (Ganiban et al., 2021; Thibodeau et al., 2015), making them more likely to be aggressive (Ahemaitijiang et al., 2021; Zhang et al., 2016). For instance, children who face serious mistreatment early in life are more likely to show antisocial and aggressive behaviour (Masud et al., 2019). In contrast, positive parenting—like being caring and setting clear rules—can help reduce antisocial

behaviour (Criss et al., 2010; Kostulski et al., 2021). Parenting also influences how children act socially and how empathetic they become (Schaffer et al., 2009). Studies have found that parenting is a key external factor in developing empathy, and supportive parenting is linked to higher empathy in children (Knafo & Plomin, 2006; Ma et al., 2020; Movsesjan et al., 2014), which helps in preventing aggressive behaviour.

The Dark Triad (DT) refers to three personality traits— “narcissism,” “psychopathy,” and “Machiavellianism” (Paulhus & Williams, 2002). Machiavellianism, often shortened to "Mach" is a personality trait where a person tends to manipulate others, be dishonest, stay emotionally distant, and focus mainly on their own benefits. The term originates from Niccolò Machiavelli, a 16th-century political philosopher who wrote *The Prince*, a treatise that advised rulers to use cunning, manipulation, and strategic deception to maintain power and control.

In psychology, individuals high in Machiavellianism are described as being cold, calculating, and exploitative, often engaging in unethical behavior without remorse to achieve their goals (Christie & Geis, 1970; Jones & Paulhus, 2009). In this study, the research problem is related to growing aggression among adolescent boys and girls, and to reduce or prevent aggression in adolescent boys and girls by finding out the underlying causes. Research shows that family environment plays a key role in the all-round development of an individual. The most important environmental factors to reduce or prevent aggression are the Quality of Parent-Child Relationship, Good Quality Parenting Style, and Family. The family plays a crucial role in human development and significantly influences the formation of Dark Triad personality traits. Research found that the quality of the parent-child relationship is connected to how these traits develop. Path modeling showed that good parental care is linked to lower levels of different parts of the Dark Triad. Adolescents who perceived authoritative parenting—characterized by understanding, encouragement, and support—were less likely to develop Dark Triad traits. As a result, lower levels of these traits in adolescents and young adults can reduce aggression and foster better adaptation. Overall, a nurturing parenting style appears to have an inverse relationship with the development of Dark Triad personality traits. Hence, to maintain peace, order, and stability in society, as well as to promote the physical and mental well-being of individuals and for a sustainable, humane society (in alignment with the UN Sustainable Development Goals, Goal 3: Good Health and Well-Being; and Goal 16: Peace, Justice, and Strong Institutions), it was crucial to explore the whether authoritative parenting styles influenced aggression through DT traits(Mach), thereby uncovering the underlying intricate mechanisms that contributed to aggression in the Indian context.

Authoritative parenting, which combines warmth, responsiveness, and consistent discipline, has been widely recognized in Western literature as the most

effective parenting style for promoting positive youth development (Baumrind, 1991; Steinberg, 2001). Authoritative parenting is linked to reduced aggression and better emotional regulation in adolescents. However, much of the existing research has been carried out in Western contexts, with relatively little focus on authoritative parenting influence in non-Western cultural environments.

Culture plays a significant role in shaping parenting beliefs and practices, meaning that the effects of authoritative parenting may vary across societies (Dwairy et al., 2006). The influence of authoritative parenting on adolescent behaviour, particularly aggression, remains underexplored in countries like India, where family dynamics are influenced by traditional and cultural values. Therefore, cross-cultural research is essential to better understand how authoritative parenting operates and influences adolescent behaviour in diverse sociocultural environments. Although Machiavellianism—a personality trait marked by manipulation and a lack of empathy—has been linked to aggression (Jones & Paulhus, 2009; Rauthmann & Will, 2011), but it has received limited attention as a mediating factor in the relationship between parenting style and adolescent aggression (Láng & Birkás, 2015). Further, most of research studies have studied these factors separately, and not incorporating ARPS, Mach and AG together. The paper tried to address these gaps by examining Machiavellianism as a mediator between authoritative parenting and aggression among Indian adolescents.

LITERATURE REVIEW

Authoritative Parenting Styles and Machiavellianism

Studies (Láng & Birkás, 2015; Campbell et al., 2004) indicate that supportive, authoritative parenting fosters empathy and moral reasoning—traits generally absent in Machiavellian individuals. Authoritarian and neglectful parenting styles are linked to higher Machiavellian traits because they cause emotional insecurity and don't provide good examples of positive behaviour (Jonason et al., 2014). Parents exhibiting Machiavellian traits are less likely to adopt authoritative styles (Petrica & Panisoara, 2024), instead favouring harsh or neglectful approaches (Masykuroh & Poerwandari, 2025). Thus, authoritative parenting serves as a developmental safeguard against the emergence of Machiavellianism.

Machiavellianism and Aggression

Machiavellianism—a core DT—is strongly associated with instrumental and relational forms of aggression. Unlike impulsive aggression, individuals high in Machiavellianism use manipulation, deception, and calculated aggression to achieve personal goals (Jonason & Krause, 2013). Such aggression is often covert, including behaviours like gossip, exclusion, and backstabbing, particularly in competitive or high-stakes environments (Archer & Coyne, 2005). These

individuals typically show low empathy and remorse, reinforcing their manipulative strategies (Jones & Paulhus, 2009). Recent studies (Chen et al., 2024; Isom & Hubbard, 2025) further confirm that Machiavellianism predicts aggression in both high-risk groups and digital spaces, highlighting its role as a psychological risk factor for socially exploitative behaviour.

Authoritative Parenting Styles and Aggression

Authoritative parenting—characterized by warmth, responsiveness, and consistent discipline—is consistently linked to lower levels of aggression in children and adolescents. This parenting style fosters emotional regulation, empathy, and prosocial behaviour, which help mitigate both reactive and proactive aggression (Baumrind, 1991; Steinberg, 2001). Compared to authoritarian and neglectful styles, authoritative parenting reduces externalizing behaviours such as hostility, bullying, and physical aggression (Hoeve et al., 2009). Recent studies (Darman et al., 2025; Umar et al., 2025) further confirm that authoritative parenting acts as a protective factor, supporting emotional development and reducing aggressive behaviour across developmental stages. Additionally, research by Lansford et al. (2014) and Pinquart (2017) highlights the role of authoritative parenting in promoting social competence and reducing conduct problems worldwide. More recent meta-analyses (Rodriguez et al., 2023; Chen & Wang, 2024) underscore its positive impact on emotional regulation and decreased aggression in diverse cultural contexts.

Based on the literature review regarding the association between variables the objective of the study was to investigate how far Machiavellianism plays a mediatory role in the relationship between authoritative parenting styles (father and mother individually) and adolescents' aggression in the Indian context. Authoritative parenting style may lessen aggression in adolescents by reducing the development of Mach personality traits.

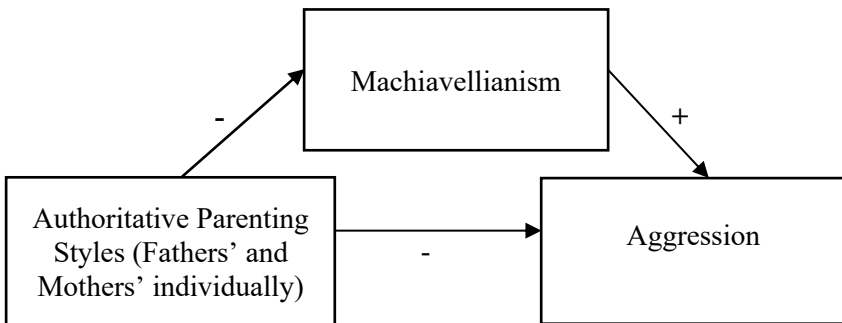


Figure 1: Theoretical model depicting relationship of authoritative parenting style and aggression, Machiavellianism acting as a mediator.

Research Questions:

1. Does the Fathers' Authoritative parenting style mediate the relationship between Machiavellianism and aggression among adolescents?
2. Does the Mothers' Authoritative parenting style mediate the relationship between Machiavellianism and aggression among adolescents?

RESEARCH METHOD

This study used a quantitative, correlational approach with a cross-sectional survey to explore how Machiavellianism acts as a mediator between authoritative parenting style and aggression in adolescents. For this study, a total of 455 secondary school students from both government and private schools in West Bengal were chosen through stratified multistage sampling method, covering three districts: Murshidabad (34.14%), Malda (19.14%), and Burdwan (46.71%).

Initially a sample of 700 students was selected after cleaning of data for incomplete or duplicate responses, a final data of 445 participants was retained, resulting in a response rate of 63.57%. Prior to distributing the questionnaire, each participant was verbally informed that their participation was entirely voluntary, the survey was anonymous, and the information collected would be used solely for scientific research purposes. Verbal consent was obtained before the distribution of the survey. The study involved 445 adolescents, including 183 boys and 262 girls, with an average age of 15.5 years, ranging from 14 to 18 years. Ethical approval was given by the Institutional Ethics Committee of Lovely Professional University (Approval Number: LPU/IEC-LPU/2024/1/14), and all participants gave their informed consent.

Measurements

Parental Authority Questionnaire (PAQ)

The three parenting style prototypes—permissive, authoritarian, and authoritative—were gauged using the Parental Authority Questionnaire (PAQ) developed by Buri (1991). Each parenting style is represented by ten of the thirty elements on the scale. A 5-point Likert scale, with 1 denoting "strongly disagree" and 5 denoting "strongly agree," was used to record responses. Cronbach's alpha values for the "authoritative", "authoritarian", and "permissive" dimensions ranged from 0.75 to 0.92 in earlier research. The PAQ's reliability for evaluating perceived parenting styles of Indian adolescent population was confirmed when it was revalidated in the prior mentioned cultural context. It showed excellent internal consistency, with Cronbach's alpha coefficients of 0.947, 0.954, and 0.965 for fathers and 0.987, 0.963, and 0.964 for mothers.

Short Form Aggression Questionnaire (BPAQ-SF)

Aggressive behaviour was measured with a brief questionnaire called the Aggression Questionnaire (BPAQ-SF), created by Bryant and Smith in 2001. The 12 items in this condensed version of Buss-Perry Aggression Questionnaire have been divided into four subscales: "hostility, anger, verbal aggression, and physical aggression". Each subscale has three items. On a 5-point Likert scale, with 1 denoting "extremely uncharacteristic of me" and 5 denoting "extremely characteristic of me," participants provided their answers. With Cronbach's alpha values of 0.858 for "physical aggression", 0.731 for "verbal aggression", 0.75 for "anger", 0.867 for "hostility", and 0.806 for the total aggression score, the BPAQ-SF showed good reliability in the current study carried out in the Indian context.

Short Dark Triad (SD3)

Dark personality traits were measured using Short Dark Triad (SD3), created by Jones and Paulhus (2013). The 27 items in SD3 were split equally among three subscales- Machiavellianism, Narcissism, and Psychopathy, each with nine items. A 5-point Likert scale, with 1 denoting "strongly disagree" and 5 denoting "strongly agree," was used to gauge participant responses. According to the initial reliability estimates for adults, Cronbach's alpha values for Machiavellianism, Psychopathy, and Narcissism were found to be 0.71, 0.77, and 0.74 in Study 1, 0.74, 0.72, and 0.68 in Study 2, and 0.76, 0.73, and 0.78 in Study 3, respectively. The item 8 of the Psychopathy subscale was eliminated because of a low corrected item-total correlation (less than 0.30) (Yasir, 2016). After the elimination one item (Item no. 8) out of 9 items from psychopathy, Cronbach's α of 0.989 for Machiavellianism, 0.943 for Narcissism, and 0.946 for Psychopathy was obtained, indicative of high internal consistency and strong reliability of SD3-26 on the current Indian sample. In the current study only Machiavellianism scores were considered.

Procedure for Data Collection

Prior permission was obtained from the Heads of institutions of selected schools, before the actual data collection. The researcher personally visited the schools and administered the tools, viz. Parental Authority Questionnaire (PAQ), Short Form Aggression Questionnaire, and Short Dark Triad (SD3) on students of Class IX and X (average age 15.5 years) and collected the data.

Method of Data Analysis

SPSS software for Windows to perform the statistical analysis was utilized. Demographic details for all the variables- Authoritative Parenting Style, Machiavellianism, and Aggression among adolescents were examined through descriptive statistics. Inferential statistics was used, including t-test to examine significant differences between means and Karl Pearson's correlation was

calculated to assess relationships among variables. To test the mediation model, Model 4 from Dr. Andrew F. Hayes' PROCESS Macro version 4.0 for (SPSS v23) (Hayes, 2017) was used. This method employs bias-corrected bootstrapping. According to Hayes (2017) and many experts, it is no longer necessary for independent and dependent variables to be correlated in order to conduct mediation analysis.

Hayes suggests using 10,000 bootstrap samples to find 95% confidence intervals (CIs) for the indirect effect. The indirect effect is seen as significant if the confidence interval does not have zero in it (Choudhury et al., 2025). Compared to traditional methods such as the Sobel test or Baron and Kenny's approach (1986) (Mahmoodi-Shahrehabaki & Oslund, 2024), this bootstrapping technique is more flexible because it does not assume normal data distribution and works well for both small and large samples. It also has greater statistical power than other confidence interval methods (MacKinnon, Lockwood, & Williams, 2004). Partial mediation is established when: i) a significant association exists between the independent and dependent variables with the mediating variable included; and ii) the confidence interval does not encompass zero (Rucker et al., 2011). In this current study, authoritative parenting style was the independent variable, aggression was the dependent variable, and Machiavellianism served as the mediating variable.

RESULTS

1. The Baseline Situation of Authoritative Parenting Style, Aggression, and Machiavellianism across Gender (demographic variable)

Table 1: Comparison of Gender for all variables (Mean ± SD) (N = 445)

Variables	Boys (n=183)	Girls (n=262)	t
FARPS	31.90±4.105	32.51±3.932	1.585
MARPS	31.93±4.078	32.55±3.886	1.610
AG	43.36±7.713	40.87±6.865	3.578**
Mach	35.17±4.485	32.68±4.935	5.427**

*Note: "FARPS = Fathers' Authoritative Parenting Style, MARPS = Mothers' Authoritative Parenting Style AG = Aggression and Mach= Machiavellianism, **p < 0.01."*

The results presented in Table 1 show no significant gender differences in the perception of Fathers' authoritative parenting style (Boys: 31.90 ± 4.105; Girls: 32.51 ± 3.932; t = 1.585, p > 0.01) and Mothers' authoritative parenting style (Boys: 31.93 ± 4.078; Girls: 32.55 ± 3.886; t = 1.610, p > 0.01). This indicated that both boys and girls perceived their fathers and mothers parenting style as authoritative. However, significant gender differences emerged in aggression and

Mach. Boys reported significantly higher aggression ($M = 43.36$, $SD = 7.713$) compared to girls ($M = 40.87$, $SD = 6.865$), with a t -value of 3.578 ($p < 0.01$). Likewise, boys scored significantly higher on Mach ($M = 35.17$, $SD = 4.485$) than girls ($M = 32.68$, $SD = 4.935$), $t = 5.427$ ($p < 0.01$). The findings indicated that adolescents of both genders similarly perceived their fathers and mothers as exhibiting authoritative parenting style, while boys tend to exhibit greater levels of aggression and Machiavellian traits than girls.

2. Correlation Analysis

Table 2: Correlation Matrix Between Fathers’ Authoritative Parenting Style, Mothers’ Authoritative Parenting Style, Aggression, and Machiavellianism (N=445)

Variables	M ±SD	FARPS	MARPS	AG	DT(Mach)
FARPS	32.26±4.011	1			
MARPS	32.30±3.973	0.993**	1		
AG	41.89±7.321	-0.214**	-0.210**	1	
Mach	33.71±4.906	-0.129**	-0.133**	0.475**	1

Note: “FARPS = Fathers’ Authoritative Parenting Style, MARPS = Mothers’ Authoritative Parenting Style AG = Aggression and Mach= Machiavellianism, ** $p < 0.01$.”

The result displayed in Table 2 presents the correlation matrix among FARPS, MARPS, aggression, and Mach for a sample of 445 adolescents. The findings indicated that both FARPS and MARPS were significantly negatively correlated with aggression ($r = -0.214$ and $r = -0.210$, respectively, $p < 0.01$) and Mach ($r = -0.129$ and $r = -0.133$, respectively, $p < 0.01$), indicating that adolescents who perceived their fathers and mothers parenting style as authoritative were associated with lower levels of aggression and Machiavellian tendencies. Additionally, aggression was positively correlated with Mach ($r = 0.475$, $p < 0.01$), suggesting that adolescents with higher Machiavellian traits tend to exhibit higher levels of aggression. These results supported the protective role of authoritative parenting in reducing maladaptive traits and behaviours in adolescents.

3. Mediation Effect Test

A mediation analysis was carried out to investigate whether Machiavellianism serves as a mediator in the relationship between fathers’ authoritative parenting style and aggression. The description of model along with the different variables where Y [Aggression (AG)] is Dependent Variable, X [Fathers’ Authoritative Parenting Styles (FARPS)] is Independent Variable, and M [Machiavellianism (Mach)] is the Mediating Variable. The sample size is 445.

Table 3 Mediation analysis of fathers' authoritative parenting styles, Machiavellianism, and aggression among students
Mediation Estimates

Effect	Standardized coefficient (β)	Estimates [Unstandardized coefficient (b)]	SE	95% Confidence Interval		% Mediation
				Lower	Upper	
Indirect (a*b)	-.0588	-.1073	.0407	-.1858	-.0258	27.4
Direct (c')	-.1557	-.2841	.0758	-.4332	-.1351	72.6
Total (c)	-.2145	-.3914	.0847	-.5579	-.2250	100

Path Estimates

Effect	Standardized coefficient (β)	Estimates [Unstandardized coefficient (b)]	SE	95% Confidence Interval	
				Lower	Upper
FARPS → Mach	-.1292	-.1580	.0576	-.2712	-.0447
Mach → AG	.4551	.6792	.0620	.5573	.8010
FARPS → AG	-.1557	-.2841	.0758	-.4332	-.1351

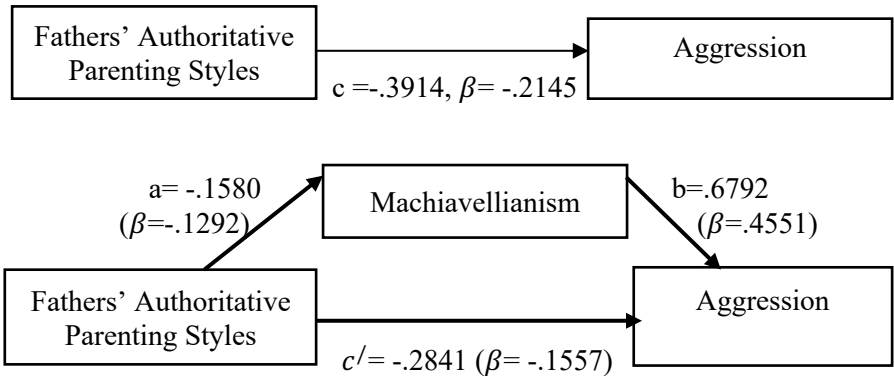


Figure 2 Machiavellianism in the relationship between fathers' authoritative parenting style and aggression

The total effect of the model was found to be significant, $c = -.3914$, CI $[-.5579, -.2250]$, $p < .001$. Further direct effect, $c' = -.2841$, CI $[-.4332, -.1351]$, $p < .001$; as well as indirect effect were also found, $a*b = -.1073$, CI $[-.1858, -.0258]$ to be

significant. These results suggested that Mach partially mediated the relationship between FARPS and aggression.

In summary, these findings showed that Machiavellianism partially mediates the relationship between fathers' authoritative parenting styles and aggression, with a significant indirect effect. Additionally, this type of mediation occurs when the predictor (FARPS) variable exerts part of its impact through a mediator. Another predictor variable exerts some influence directly on the outcome variable—aggression—rather than through a mediating variable, Machiavellianism. Consequently, the impact was applied to the dependent variable through both the independent variable (FARPS) and the mediating variable (machiavellianism). Consequently, both path (a*b) (indirect effect) and path c' (direct effect) were significant. The direct effect constituted 72.6% of the total effect, whereas the indirect effect via Machiavellianism contributed around 27.4% (indirect effect/total effect). This suggested that the majority of FARPS impact on aggression was direct, with a lesser, although significant, percentage mediated by Machiavellianism.

A mediation analysis was carried out to explore whether Machiavellianism serves as a mediator in the relationship between mothers' authoritative parenting style and aggression. The description of the model along with the different variables where Y [Aggression (AG)] is the dependent variable, X [Mothers' Authoritative Parenting Styles (MARPS)] is the independent variable, and M [Machiavellianism (Mach)] is the Mediating Variable. The sample size is 445.

Table 4 Mediation analysis of mothers' authoritative parenting styles, Machiavellianism, and aggression among students
Mediation Estimates

Effect	Standardized coefficient (β)	Estimates [Unstandardized coefficient (b)]	SE	95% Confidence Interval		% Mediation
				Lower	Upper	
Indirect (a*b)	-.0606	-.1117	.0406	-.1922	-.0324	28.87
Direct (c')	-.1494	-.2752	.0767	-.4260	-.1245	71.13
Total (c)	-.2100	-.3869	.0856	-.5552	-.2187	100

Path Estimates

Effect	Standardize d coefficient (β)	Estimates [Unstand ardized coefficient t (b)]	SE	95% Confidence Interval	
				Lower	Upper
MARPS \longrightarrow Mach	-.1331	-.1644	.0581	-.2786	-.0501
Mach \longrightarrow AG	.4553	.6795	.0621	.5574	.8016
MARPS \longrightarrow AG	-.1494	-.2752	.0767	-.4260	-.1245

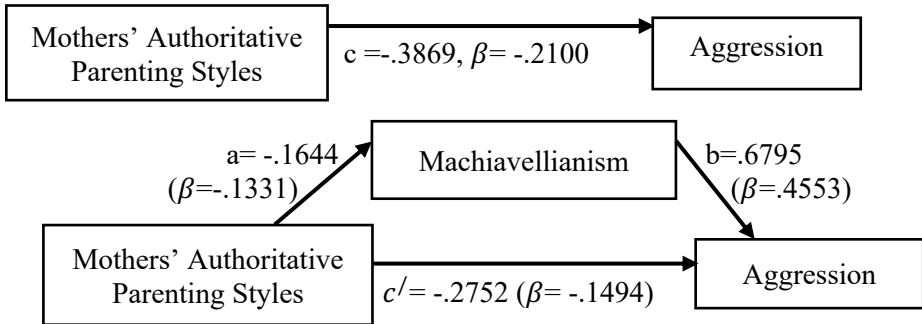


Figure 3 Machiavellianism in the relationship between Mothers' authoritative parenting style and aggression

The total effect of the model was found to be significant, $c = -.3869$, CI [-.5552, -.2187], $p < .001$. Further direct effect, $c' = -.2752$, CI [-.4260, -.1245], $p < .001$; as well as indirect effect was also found, $a*b = -.1117$, CI [-.1922, -.0324]. These results suggested that Mach partially mediated the relationship between MARPS and aggression.

In summary, the findings showed that Machiavellianism partially mediated the relationship between mothers' authoritative parenting style and aggression, with the indirect effect being statistically significant. Additionally, this type of mediation occurs when the predictor variable (MARPS) exerts part of its impact through the mediator. Another predictor variable directly influences the outcome variable—aggression—rather than through the intermediary variable Machiavellianism. Consequently, the impact was applied to the dependent variable via both the independent variable (MARPS) and the mediating variable (Mach). Therefore, both path ($a*b$) (indirect effect) and path c' (direct effect) were significant. The direct effect accounted for **71.13 %** of the total effect, while the indirect effect through Machiavellianism contributed to **~28.87 %** (indirect effect/total effect). This indicated that most of the influence of mothers' authoritative parenting styles on aggression was direct, with a smaller but significant portion being mediated by machiavellianism.

DISCUSSION

This study explored how authoritative parenting style relates to aggressive behavior in teenagers, with Machiavellianism acting as a link between them. The findings from correlation and mediation analyses provided important understanding of how these three factors are connected.

The findings for Hypothesis 1 showed that “fathers’ authoritative parenting style significantly mediated the relationship between Machiavellianism and aggression in adolescents.” The mediation analysis indicated that the effect of fathers’ authoritative parenting on aggression was only partially direct and mainly transmitted through Machiavellian traits. An increase in fathers’ authoritative parenting led to a decrease in aggression by reducing Machiavellian traits, and vice versa. This suggests that fathers’ authoritative parenting influences aggression indirectly via Machiavellianism, where changes in the parenting style correspond inversely with changes in both Machiavellian traits and aggression.

Similarly, Hypothesis 2 demonstrated that “mothers’ authoritative parenting style also significantly mediated the relationship between Machiavellianism and aggression.” The effect of mothers’ authoritative parenting on aggression was partially mediated by Machiavellianism, showing the same pattern as fathers’ parenting style. Mothers’ authoritative parenting was significantly and negatively associated with aggression through Machiavellian traits. These findings are consistent with previous studies. For example, Yendell et al. (2022) found that reduced parental supervision and higher Machiavellian traits increased aggression in German adolescents. Liu et al. (2019) discovered that Machiavellianism fully mediated the link between parental emotional warmth and violence in Chinese youth, highlighting cultural differences in the effects of parenting styles on aggression. Moreover, research shows mixed results on gender differences in perceiving authoritative parenting, possibly due to cultural or methodological variations.

Authoritative parenting has been consistently linked to lower aggression (Azimi et al., 2012; Batool, 2013; Masud et al., 2019) and reduced Machiavellian traits (Rasheed et al., 2021). Parental warmth and monitoring negatively correlate with Machiavellianism (Birkás et al., 2015; Jonason et al., 2014; van Lier, 2015; Yendell et al., 2022). Machiavellianism also predicts various types of aggression, including verbal and indirect forms (Bekiari, 2016; Chauhan & Hussain, 2023; Japp, 2023; Noor et al., 2023;), and shows a strong association with adolescent aggressive behaviour (Abell & Brewer, 2014; Berger et al., 2015; Lau & Marsee, 2012; Maneiro et al., 2020; Permana et al., 2023).

Overall, this study offers valuable insights into how authoritative parenting influences aggression among Indian adolescents, highlighting the mediating role of Machiavellianism and expanding understanding of parenting’s impact on adolescent behaviour.

CONCLUSIONS

This study concludes that both fathers' and mothers' authoritative parenting styles indirectly reduce adolescent aggression by lowering Machiavellian traits. Adolescents raised in warm, structured, and supportive environments are less likely to develop manipulative tendencies that contribute to aggression. The findings underscore the protective effect of authoritative parenting and highlight the importance of addressing maladaptive personality traits like Machiavellianism to reduce aggression in Indian youth.

Based on the findings, the following recommendations are proposed:

Parents are encouraged to treat sons and daughters equally, avoid gender-based expectations, and encourage open expression of emotions and fair sharing of responsibilities. Training and awareness programs should be developed to highlight the importance of authoritative parenting and its role in reducing Machiavellian traits and aggression. Workshops and counselling should be offered to parents and adolescents to help them recognize and manage Machiavellian tendencies. Parenting education and family counselling programs should be promoted, and community initiatives should be funded to support healthy development in adolescents. Future research should explore how authoritative parenting and Machiavellianism affect aggression across different cultures and economic backgrounds. Other factors that could influence the link between parenting styles and teenage aggression should also be examined.

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