

*Agnieszka Lasota*<sup>1</sup>

Chair of Psychology, Pedagogical University of Krakow

## Association of affective and cognitive empathy with various dimensions of aggression among Polish adolescents

### Abstract

So far, many studies have confirmed the existence of a negative relationship between empathy and aggressive behaviour. Researchers are still searching for answers on how empathic behaviour may be an inhibitor of aggressive behaviour of people of all ages. This study conducted on a sample of Polish adolescents related to the search for an association between the level of cognitive and affective empathy and different dimensions of aggression. The results confirmed that cognitive empathy has a stronger association with the behavioural dimension of aggression (physical and verbal), however, the emotional dimension of empathy correlates with the experience of affective aggression (anger) or cognitive (hostility). In addition, the results confirmed the existence of gender differences in experiencing both empathy and aggression.

**Key words:** aggression, cognitive empathy, affective empathy, anger, hostility

### Związek empatii afektywnej i poznawczej z różnymi wymiarami agresji wśród polskich adolescentów

#### Streszczenie

Do tej pory wiele badań potwierdziło istnienie negatywnego związku pomiędzy empatią a zachowaniami agresywnymi. Badacze wciąż poszukują odpowiedzi na pytanie, na ile zachowania empatyczne mogą być inhibitorem zachowań agresywnych ludzi w różnym wieku. Badania polskich adolescentów dotyczyły poszukiwania związku między poziomem empatii poznawczej i afektywnej, a różnymi wymiarami agresji (poznawczym, afektywnym i behawioralnym). Uzyskane rezultaty potwierdziły, że empatia poznawcza ma silniejszy związek z behawioralnym wymiarem agresji (fizyczną i werbalną agresją), natomiast wymiar emocjonalny empatii koreluje z doświadczaniem agresji afektywnej (gniewem) czy kognitywnej (wrogością). Dodatkowo, rezultaty potwierdziły istnienie różnic płciowych w doświadczaniu zarówno empatii jak i agresji.

**Słowa kluczowe:** agresja, empatia poznawcza, empatia emocjonalna, gniew, wrogość

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<sup>1</sup> Adres do korespondencji: [aglas@poczta.fm](mailto:aglas@poczta.fm)

## Introduction

Empathy is widely understood as the ability to read, recognize, interpret, and feel the emotions and states of other people and the ability to react adequately. It is most commonly tested using the self-report method and its two dimensions are analysed and interpreted: the cognitive aspect and the emotional aspect (Davis, 1994; Hoffman, 2001). The cognitive aspect reflects the ability of accepting and understanding another person's point of view. The emotional aspect contains two elements: compassion for others and the ability to experience negative emotions when other people are suffering. Although various dimensions of empathy can be measured separately, only a comprehensive analysis of all the components allows for a full understanding of empathy. An overview of available literature on empathy shows that this variable has been one of the most largely studied personal precursors in relation to child and adolescent social functioning (Oros & Fontana Nalesso, 2015). There are many studies that search for the association between prosocial and antisocial behaviour and empathy (e.g. Gini, Albiero, Beneli, & Altoe, 2007; Van Noorden, Haselager, Cillessen, & Bukowski, 2015; Jimenez & Estevez, 2017).

Empirical research has shown that this variable acts as a strong motivator of prosocial behavior, cooperative conflict resolution, altruistic behaviour, help, and social responsibility, while it negatively correlates with antisocial behaviour, aggressive behaviour, social inadequacy, and isolation of children and youth (Oros & Fontana Nalesso, 2015). The results of studies of preschool children suggest that more empathetic children exhibit more prosocial behavior and substantially fewer acts of aggression and violence (Findlay, Girardi, & Coplan, 2006). The study of adolescents also indicates the existence of a negative relationship between the level of empathy and aggressive actions (Miller & Eisenberg, 1988; Garaigordobil, 2009). In a study of Jimenez & Estevez (2017), a direct link between the level of empathy and aggressive behaviour was found in girls and boys. Furthermore, a mediational effect of empathy on the positive climate of family and school aggression was discovered. Studies of Kaukiainen et al. (1999) confirm the negative relationship between empathy and direct aggression, understood as a behavioural dimension. Such a relationship was not found between empathic behaviour and indirect aggression. Studies of Italian school children also confirm the existence of a connection between empathy and aggressive behavior, but only in boys (Albiero & Lo Coco, 2001). A stronger relationship between empathy and aggression in boys is confirmed by the study results of Gini et al. (2007).

Numerous studies confirm gender differences in the level of experiencing empathy in favour of women, but only refer to affective empathy (Garaigordobil, 2009; Michalska, Kinzler, & Decety, 2013; Fisher & La's Grand, 2015). There is no recognition of gender differences in cognitive empathy. Also, aggressive behaviour has been confirmed by numerous studies to be presented differently among genders. Physical and verbal aggression is often attributed to males whereas indirect aggression, such as gossiping, complaining, and getting offended, is more often attributed to women (Björkqvist & Niemelä, 1992; Card, Stucky, Salawani, & Little, 2008). Preference for indirect aggression was observed not only in girls during adolescence, but also

in adult women (Björkqvist, Österman, & Lagerspetz, 1994; Lundh, Daukantaitė, & Wångby-Lundh, 2014). The results of Lundh et al. (2014) indicate that direct and indirect aggression, as well as direct and indirect victimization, may have different roles in the development of psychological difficulties in young adolescents.

Many studies indicate the link between school environment and aggression (Jimenez & Estevez, 2017; Steffgen, Recchia, & Viechtbauer, 2013). The results of the Batanova & Louka (2014) study show a link between the two components of empathy (empathic concern and perspective taking) and school aggression in adolescence. The authors observe the impact of family relations and positive school environment on this relationship. The research of Jimenez & Estevez (2017) concerned the role of contextual variables, such as family and school, individual, attitude towards authority (such as empathy), and social reputation in the explanation of school aggression among Mexican adolescents. The results of this study confirmed the mediational role of individual factors in the relationship between perceived school and family environments and aggressive behaviour among youth. These reciprocal relations were analysed separately by gender, indicating a partial mediational effect on girls and a full mediation for boys. Results of Gini et al. (2007) have confirmed that low levels of empathic responsiveness were associated to bullying others. A high level of empathy was positively associated with actively helping victimized schoolmates. Also, Jolliffe & Farrington (2006a) investigated the connection between affective and cognitive empathy and bullying. Low levels of total empathy (EC + PT) correlate with violent bullying in boys and indirect bullying in girls. In addition, only low levels of empathic concern related to bullying solely for females. Furthermore, students who have a positive classroom climate and receive support from teachers have less aggressive behaviour (Povedano, Cava, Monreal, Varela, & Musitu, 2015).

The results of studies seeking a connection between empathy and aggression, understood in terms of the behavioural aspect, often show a simple negative relationship. However, when we take into account the different dimensions of aggression based on the theory of Buss & Perry (1992), its relationship with the cognitive and emotional dimension of empathy is not as clear and unambiguous. Buss and Perry considered both physical and verbal aggression to indicate the behavioural component of human behaviour. Anger is combined with physiological stimulation and therefore reflects the emotional component of behaviour. Hostility (feelings of regret, resentment, and injustice) represent the cognitive component of behaviour.

Is such behaviour as anger, being suspicious of kindness, resentment or jealousy linked to empathy? Are there significant differences between girls and boys in experiencing this type of aggression? The goal of this study was to search for more complex associations between empathy and different dimensions of aggression (affective, cognitive and behavioural) among Polish adolescents.

## Methods

### Participants

The study covered 280 young people between 16 and 18 years old ( $M = 17.09$ ,  $SD = .68$ ) and was conducted in Poland's largest cities. The adolescents, who

participated, attended randomly selected schools with different study profiles: e.g. biological-chemistry profile (25%) preparing for further studies in the field of medical and social sciences; mathematics – physics profile (30%) preparing for further studies in the field of science and a general profile (45%). There were slightly more women (53.5%) than men (46.5%) in the study.

### Measurement

*Empathy.* The Interpersonal Reactivity Index, a very popular scale, was used to study empathy (Davis, 1983). It incorporated 28 items, involving 4 dimensions measured separately as intercorrelated components of empathy. The first dimension possessed a cognitive aspect: the *perspective taking* scale (e.g. *I try to look at everybody's side of a disagreement before I make a decision*). The two following scales were connected with the affective aspect of empathy: the *empathic concern* scale (e.g. *Sometimes I don't feel very sorry for other people when they are having problems*) and the *personal distress* scale (e.g. *I sometimes feel helpless when I am in the middle of a very emotional situation [-]*). The final scale with the least exploratory importance is the *fantasy* scale. Respondents were asked to indicate the appropriate value on a 5-point Likert scale, as the most suitable description of them (from A – it does not describe me at all, to E – it describes me very well). All of the scales demonstrated adequate internal reliability with Cronbach's alpha of 0.85.

*Aggression.* To study the level dimensions of aggression among adolescents a Polish adaptation (Aranowska & Rytel, 2012) of the Buss-Perry Aggression Questionnaire (BPQA, 1992) was used. The subjects responded by selecting one value (1 – extremely uncharacteristic, 5 – extremely characteristic) describing the extent to which the individual items fit the respondent. It is still the most popular scale for the study of aggression; adaptations have been made in many countries. The scale comprised 29 items, subdivided into four main factors: *physical aggression* (9 items), *verbal aggression* (5 items), *anger* (8 items) and *hostility* (8 items).

Based on a factor analysis of Buss and Perry's aggression questionnaire in the Polish population (Aranowska & Rytel, 2012), in order to better interpret the association between empathy dimensions and direct or indirect aggression, two dimensions of *hostility* were distinguished.

Type 1 *hostility* was interpreted as *resentment and envy* and type 2 *hostility* was understood as *being suspicious of kindness shown by others*. *Resentment and envy* were highly dominated by five positions (15, 17, 20, 24, 26), and the suspicion of kindness by two positions (3 and 10) on the scale of *hostility*. In this study, Cronbach's alpha was .86.

### Results

First, an analysis of gender differences in relation to various dimensions of empathy and aggression was carried out. The obtained results, in the form of averages and standard deviations separately for girls and boys, are presented in Table 1. Due to the abnormal distribution of the results in the analysed variables (Kolmogorov-Smirnov test  $p < .001$ ) the Mann-Whitney nonparametric test was used to compare gender-based differences.

Table 1. Mann-Whitney U-test results in terms of differences in empathy and aggression between girls and boys

	GIRLS		BOYS		U	Z	p
	N	Sum of Ranks	N	Sum of Ranks			
Perspective Taking (PT)	150	23572.5	130	15767.5	7252.5	-3.7	< .001
Fantasy (FS)	150	25278.5	130	14061.5	5546.5	-6.22	< .001
Empathic Concern (EC)	150	24626	130	14714	6199	-5.25	< .001
Personal Distress (PD)	150	23971.5	130	15368.5	6853.5	-4.29	< .001
Anger (A)	150	23875.5	130	15464.5	6949.5	-4.14	< .001
Physical Aggression (PA)	150	16902.5	130	22437.5	5577.5	6.17	< .001
Verbal Aggression (VA)	150	19216.5	130	20123.5	7891.5	2.75	.006
Hostility (H)	150	21976.5	130	17363.5	8848.5	-1.33	.18
Resentment (RE)	150	22198.5	130	17141.5	8626.5	-1.66	.097
Suspicion (SU)	150	20404.5	130	18935.5	9079.5	0.99	.32

The difference in terms of empathy using the IRI scale between girls and boys was statistically significant. In terms of cognitive and affective empathy, it transpired that girls achieved higher results than boys in terms of adopting the perspective ( $Z = -3.7, p < .001$ ). What is more, in terms of affective empathy, girls achieved significantly higher scores than boys on the EC scale ( $Z = -5.25, p < .001$ ), and PD ( $Z = -4.29, p < .001$ ). Additionally, on the scale of fantasy, the intergroup differences in favor of girls were statistically significant ( $Z = -6.22, p < .001$ ). Analysis of the dimensions of aggression showed gender differences. Boys, unlike girls, attributed *physical* ( $Z = 2.75, p < .001$ ) and *verbal* ( $Z = -4.29, p < .05$ ) aggression significantly more often.

In further analysis, the relationship between different aspects of empathy and various dimensions of aggression was sought for. An R-Spearman correlation analysis was carried out (Table 2).

*Perspective taking* correlated positively in both girls ( $r = .41, p < .001$ ) and boys ( $r = .42, p < .001$ ). A negative correlation was reported between the cognitive perspective of empathy and the level of *physical aggression* in both women ( $r = -.33, p < .001$ ) and men ( $r = -.48, p < .001$ ). In boys *PT* correlated negatively with anger ( $r = -.45, p < .001$ ) and less with the two dimensions of hostility *RE* ( $r = -.17, p < .05$ ) and *SU* ( $r = -.2, p < .001$ ). The affective aspect (*EC*) of empathy correlated in both genders in relation to the cognitive aspect of empathy and *personal distress*, while the relationship between *EC* and *PD* was slightly stronger in girls ( $r = .36, p < .001$ ) than in boys ( $r = .27, p < .05$ )  $r = .405$ ). *Empathic concern* correlated negatively with *physical aggression* in both men ( $r = -.25, p < .05$ ) and women ( $r = -.33, p < .001$ ), and with *verbal aggression* in men ( $r = -.17, p < .05$ ). It correlated positively with *hostility* in women ( $r = .27, p < .05$ ) and its sub-scale: *resentment and envy* ( $r = .29, p < .05$ ).

The second dimension of emotional empathy, *personal distress*, also correlated with some dimensions of aggression. *Personal distress* did not correlate with direct

Table 2. The values of r-Spearman correlation coefficients between dimensions of empathy and aggression

EMPATHY					AGGRESSION					
	sex	FS	EC	PD	A	PA	VA	H	RE	SU
PT	1	.14	.41***	.06	-.12	-.33***	-.17*	.09	.03	.08
	2	.14	.42***	-.15	-.45***	-.48***	-.17	-.2	-.17*	-.2*
FS	1	-	.21*	.12	.02	.04	.11	.13	.12	.13
	2	-	.29***	.44***	.36***	-.05	.44***	.19*	.24*	.09
EC	1		-	.36***	.09	-.33***	-.02	.27*	.29*	.09
	2		-	.27*	.01	-.25*	-.17*	-.1	-.02	-.17
PD	1			-	.28***	-.06	.02	.35***	.4***	.17*
	2			-	.52***	-.03	.11	.6***	.55***	.39***
A	1				-	.35***	.39***	.17*	.1	.11
	2				-	.47***	.43***	.55***	.58***	.27*
PA	1					-	.21*	.08	-.03	.31***
	2					-	.35*	.17	.19*	.15
VA	1						-	.27***	.11	.16*
	2						-	.18*	.08	.26*
H	1							-	.87***	.69***
	2							-	.94***	.71***
RE	1								-	.34***
	2								-	.49***

\* $p < .05$ ; \*\*\* $p < .001$ , 1- girls, 2- boys

aggression (*physical and verbal*), but a positive association was found between *PD* and the level of *anger* in girls ( $r = .28, p < .001$ ) and a slightly stronger one in boys ( $r = .52, p < .001$ ). Personal distress positively correlated with hostility in female participants ( $r = .35, p < .001$ ) and male ones ( $r = .6, p < .001$ ). Moreover, *PD* positively correlated with both *hostility* and its two sub-scales: *resentment and envy* (in girls  $r = .4, p < .001$ ; boys  $r = .55, p < .001$ ) and *suspicion towards kindness* (girls  $r = .17, p < .05$ ; boys  $r = .39, p < .001$ ). In male participants, a positive relationship was also found between the level of fantasy and the three dimensions of aggression: *anger* ( $r = .36, p < .001$ ), *hostility* ( $r = .19, p < .05$ ) and *verbal aggression* ( $r = .44, p < .001$ ).

What was also confirmed, was the existence of a positive linear relationship between the various dimensions of aggression. The greatest correlation in both genders was observed between the level of *anger* and other factors of *aggression*. *Anger* positively correlated with *physical aggression* (in women  $r = .35, p < .001$ , in men  $r = .47, p < .001$ ), *verbal aggression* (in girls  $r = .39, p < .001$ , in boys  $r = .43, p < .001$ ) and *hostility* (in girls  $r = .17, p < .05$ , in boys  $r = .55, p < .001$ ). In male participants, anger was positively correlated with *resentment and envy* ( $r = .58, p < .001$ ) and

*suspicion* ( $r = .27, p < .05$ ). In all the surveyed cases, the dimensions of *physical* and *verbal aggression* correlated with each other (in girls  $r = .21, p < .05$ ) in boys  $r = .35, p < .05$ ). Gender differences emerged in terms of two *hostility* dimensions. It turned out that in boys *physical aggression* correlated with the *RE* ( $r = .19, p < .05$ ), whereas in girls with *SU* ( $r = .31, p < .001$ ). A positive relationship between *verbal aggression* and *hostility* both in males ( $r = .18, p < .05$ ) and females ( $r = .27, p < .001$ ) and the relationship between *verbal aggression* and *suspicion* in boys ( $r = .26, p < .05$ ) and in girls ( $r = .16, p < .05$ ) was also revealed.

## Discussion

Aggressive behaviour in adolescence is a serious problem (Jimenez & Estevez, 2017; Smith, 2016). A specific view of adolescent personal identity is related to interpersonal aggression prevention (Kossewska, 2009). Particular attention should be paid to the importance of adolescent-context interrelation and gender differences (Jimenez & Estevez, 2017).

The current study confirmed the association between cognitive and affective empathy and the three different aspects of aggression: external reaction (*physical and verbal aggression*), attitude (*hostility*), and emotional reaction (*anger*). As expected, women present a higher level of empathy – cognitive and emotional – than men. Some researchers confirm that females score higher compared to men, but only for affective and not cognitive empathy (Lafferty, 2004).

These results show the differences in experiencing cognitive and emotional empathy by Polish adolescents. Girls achieved higher results in terms of all empathy sub-scales and in emotional aggression (*anger*). Boys achieved higher scores in terms of behavioural aggression (*physical and verbal aggression*). There were no significant gender differences in the cognitive aspect of aggression (*hostility*).

Empathy seems to act as an inhibitor in presenting aggressive behaviour. A high level of empathy in adolescence seems to be a protective factor against aggressive behaviour (Van Noorden et al., 2015). The results of this research confirm the previous findings (Bjorkvist, 1994) about the impact of experiencing empathy for anti-social behaviour. It appears that high values on the scale of perspective taking are accompanied by low scores on the scale of physical aggression. This effect is visible in both genders. This means that the level of cognitive empathy is particularly important in direct aggression. The obtained correlation supports the results of previous studies. Kaukiainen et al. (1999), who conducted research among children between 10 and 14 years of age, also shows a negative correlation between the ability to adopt other people's perspective and levels of physical aggression. Batanova & Louka confirmed in their study (2014) that lower levels of empathic concern, and not perspective taking, contribute to increases in subsequent overt aggression. The results indicated that positive family relations of boys buffered the negative impact of low empathic concern on overt and relational aggression one year later. The level of both types of empathy and the positive perception of school influenced the reduction of overt aggressive behaviour. Neither positive family relations nor school climate played protective roles for girls. The analysis of the relationships

between mothers' and fathers' attitudes and the level of aggression of adolescents in my further studies (Lasota, 2017) showed that a lower level of aggression in boys is associated with the positive attitudes of both their mother and father. However, a lower level of aggression in girls only correlates with paternal positive attitudes.

In the presented study, men's ability to take another person's point of view correlated negatively with anger and hostility – the affective and cognitive types of aggression. The ability to adopt someone else's perspective also relates to the emotional dimension of empathy, i.e. empathic concern towards another person. The results confirm that regardless of gender, the better the ability to adopt someone else's perspective the higher the level of empathic concern. These findings confirm the results of other authors. A lower ability to anticipate the negative consequences of one's behaviour is linked with a lower level of empathy (Van Noorden et al., 2015; Jimenez & Estevez, 2017).

The obtained data confirmed the existence of a negative correlation between *EC*, defined as the tendency to empathize, and the behavioural aspect of aggression (*physical and verbal aggression*). On the other hand, an inverse, positive relationship was detected between *EC* and the cognitive dimension of aggression (called *resentment and envy*) and between *personal distress* and *aggression*. *PD* is the tendency to experience personal distress and discomfort in the situation of other people suffering. Experiencing *PD* is unrelated to the dimension of behavioural aggression (*physical and verbal*), but it strengthens aggression in the cognitive and emotional dimension by intensifying anger, hostility, and other emotions that make up the overall dimension of *hostility (jealousy, resentment, suspicion)*. The effect of a positive relationship between this *affective dimension of empathy, hostility, and anger* is visible in the tested women and men, while in the latter, this relationship is stronger. Such reports can also be found in literature. Davis's research (1994), seeking the relationship between measurements of experienced empathy (IRI) and dispositional hostility, also confirms the association between personal unpleasantness with high scores on the scale of suspicion and the tendency to become offended. Similarly, a stronger relationship was observed in men.

The presented study of Polish youth provides invaluable information on a more complex relationship between cognitive and emotional empathy and the different dimensions of aggression. Firstly, the negative correlation between empathy and aggression is most evident in the cognitive aspect of empathy. Cognitive empathy correlates negatively with all aspects of aggression, although most strongly with the behavioural dimension. Secondly, the emotional dimension of empathy, which directs attention at other people's suffering, correlates negatively with the behavioural aspect of aggression, but positively with the cognitive dimension of aggression. Finally, empathy, regarded as the feeling of discomfort while other people suffer, correlates positively with both emotional and cognitive aggression but not behavioural.

These results should be considered in terms of the environment. The school and the family are the closest social context for a developing adolescent (Jimenez & Estevez, 2017). The school environment is one of the most important predictors



of aggression among adolescents. A positive interpersonal family climate for the acquisition of skills in social interaction and empathy learning is more important.

This study may have some important implications for school projects, contributing to the development of empathy and the decrease of aggression. School training, involving the development of empathy in adolescents, can greatly contribute to the reduction of aggressive behaviour.

Training school-aged children to understand emotions through a metacognitive and conversational intervention, played a significant role in improving their social cognition (Ornaghi, Piralli, Cherubin, & Grazzani, 2012; Ornaghi, Brockmeier, & Grazzani, 2014). Also, a significant effect of the training on empathy appeared. The intervention made children more willing to put themselves in the place of others and it developed better recognition and understanding of the emotions of others and their own emotional involvement (Ornaghi et al., 2012). The results showed that participants of the training significantly gained an understanding of their emotions, in the theory of mind, and empathy (Ornaghi et al., 2014). What is more, a positive effect on emotion comprehension remained stable for another six months. Grazzani Gavazzi & Riva Crugnola (2011) offer intervention models designed to improve emotional competence, useful to prevent or counteract risk situations and improve the psychological well-being of children and youth in various contexts. Both emotional and cognitive mechanisms are responsible for controlling aggression. Highly developed cognitive processes, based on abstract thinking, as well as a sense of guilt, are good predictors of a low level of interpersonal aggression (Kossewska, 2009).

Moreover, scientific literature on health psychology has recently contributed to focusing attention not only on the risk, but also on protective factors in the physical and emotional subjective well-being of adolescences (see: Grazzani Gavazzi, Albanese, & Duncan, 2006; Oros & Fontana Nalesso, 2015). The results of the Oros & Fontana Nalesso (2015) study have confirmed that in the stages of childhood and adolescence, joy and sympathy prevent peer rejection. Sympathy and serenity ease prosocial and assertive responses while decreasing aggressive behaviours. Aggression is also negatively related to gratitude. Therefore, special attention should be paid to intervention and prevention programs for adolescents, not only to deal with difficult emotions, but also to express positive emotions.

However, some limitations to this study must be mentioned. The first limitation is a small number of surveyed Polish adolescents and the use of a cross-section design. A longitudinal study would be required to shed more light on this relationship and would lead to greater confidence in the direction of the relationship between empathy and aggressive behaviour. Secondly, adding to the study several other variables, such as environmental and individual factors, will contribute to a better understanding of these relationships. Finally, the empathy scale measured by IRI has been recently criticized. According to Jolliffe & Farrington (2006b), the IRI does not study cognitive empathy, widely understood as the ability to understand the emotions of others, but only the ability to take another person's perspective. The use of other tools to measure cognitive and emotional empathy would be desirable.

In conclusion, the current research has important implications for social intervention from an ecological perspective: intervention programs should pay attention

to both individual characteristics and immediate social contexts (family and school) (see: Kossewska, 2009; Jimenez & Estevez, 2017). Teachers and parents should stimulate adolescents in thinking and talking about their feelings to improve their socio-emotional abilities. These results are important in understanding the dynamics of the processes involved, and for the further design of intervention programs to promote emotional and social skills in childhood and adolescence.

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