

**THE INFLUENCE OF POWER ON INDIVIDUAL
COOPERATION DEVELOPMENT AMONG
TEENAGERS' STUDENTS IN CHINA**

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COOPERATION DEVELOPMENT AMONG
TEENAGERS' STUDENTS IN CHINA**

by

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LIST OF ABBREVIATIONS

M1	Mean
SD	Standard Deviation
LSD	Least Significance Difference
M2	Middle school student
H	High school student
C	University student
ES	Economic Situation
SeI	Self-emotion Identification
OeI	Others-emotion Identification
SoP	Sense of Power
SoC	Sense of Cooperation
CI	Confidence Interval
F1	Interpersonal Cognition
F2	Purpose Cognition
F3	Collaborative Cognition
F4	Equal Cognition
CS	Cognitive Style
CC	Cooperative Cognition
NF	Number of friends
PT	Perspective Taking
CB	Cooperative behavior
CBR	Cooperative behavior Rate

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PENGARUH KUASA TERHADAP PEMBANGUNAN KERJASAMA INDIVIDU DALAM KALANGAN PELAJAR REMAJA DI CHINA

ABSTRAK

Kerjasama merupakan suatu bentuk manifestasi penting terhadap tingkah laku prososial (iaitu pemikiran dan tindakan sukarela yang bertujuan untuk memberi manfaat kepada orang lain). Meneroka pembangunan kerjasama dalam kalangan remaja dapat mendedahkan lebih banyak hukum pembangunan tingkah laku prososial mereka. Pemilihan remaja dari pelbagai peringkat umur sebagai sampel kajian ini adalah bagi meneroka pengaruh sebenar maksud kuasa ke atas pelbagai peringkat pembangunan kerjasama (perasaan kerjasama, kognisi kerjasama dan tingkah laku kerjasama). Kajian ini dijalankan melibatkan dalam kalangan remaja yang bersekolah di sekolah menengah rendah, sekolah menengah tinggi dan penuntut universiti di Huizhou, Guangdong, China. Kajian penyelidikan yang dijalankan ini meliputi tiga fasa. Fasa 1 kajian ini menggunakan kaedah soal selidik di mana penyelidik menggunakan skala aspek rasa terhadap kuasa, skala terhadap empati dan skala rasa terhadap kerjasama untuk mengukur secara umumnya tahap kuasa, empati dan rasa kerjasama dalam kalangan 1,055 orang remaja, dengan mendapati bahawa terdapat penurunan ketara dalam aspek rasa kerjasama dalam kalangan mereka apabila meningkat usia; kuasa secara positifnya dapat meramalkan aspek rasa kerjasama; umur mengawal kesan kuasa terhadap aspek rasa kerjasama; kuasa meramalkan rasa kerjasama melalui perantaraan empati. Fasa 2 pula penyelidik menggunakan kaedah soal selidik meliputi skala rasa terhadap kuasa, dengan memasukkan ujian berangka dan skala kognisi kerjasama bagi mengukur aspek rasa kuasa secara umum, gaya kognitif (*field independence-field dependence*), dan tahap kognitif kerjasama dalam

kalangan 1,084 orang remaja, dan secara keseluruhannya mendapati bahawa trend pembangunan kognisi kerjasama adalah meningkat; kuasa secara positifnya meramalkan kognisi kerjasama; umur menjadi agen pengawal kesan kuasa terhadap kognisi kerjasama; kuasa secara positifnya meramalkan kognisi kerjasama melalui perantaraan gaya kognisi. Fasa 3 pula menggunakan kaedah campuran (termasuk kajian dan eksperimen): penyelidik menggunakan skala rasa kuasa, skala mengambil kira perspektif dan tugas kebajikan awam untuk mengukur aspek rasa kuasa secara umumnya, pengambilan perspektif dan tahap tingkah laku kerjasama dalam kalangan 883 remaja, dengan secara keseluruhannya mendapati bahawa trend pembangunan tingkah laku kerjasama adalah meningkat; kuasa secara positifnya meramalkan tingkah laku kerjasama; kuasa meramalkan tingkah laku kerjasama melalui perantaraan dalam pengambilan perspektif. Akhir sekali, berdasarkan kajian terhadap ketiga-tiga fasa ini, penyelidik mendapati bahawa: (1) trend pembangunan di pelbagai peringkat kerjasama remaja adalah tidak sama, dengan peningkatan usia, aspek rasa kerjasama secara beransur-ansur telah menurun, manakala bagi kognisi kerjasama dan tingkah laku kerjasama adalah meningkat, yang memperlihatkan trend pembangunan terhadap emosi kerjasama, kognisi kerjasama dan tingkah laku kerjasama telah berbeza; (2) aspek rasa kuasa dalam menggalakkan kesemua tiga-tiga peringkat kerjasama; (3) usia mempunyai kesan pengawal dalam pengaruh kuasa peribadi ke atas aspek rasa kerjasama dan kognisi kerjasama, manakala ia tidak pula mengawal pengaruh kuasa peribadi terhadap aspek tingkah laku kerjasama; (4) kuasa peribadi mempunyai peranan tertentu dalam menggalakkan empati, gaya kognitif dan pengambilan perspektif secara umum, tetapi ia turut menunjukkan bahawa kesan terhadap gaya kognitif, empati dan pengambilan perspektif mempunyai petunjuk yang berbeza. Kajian ini dilihat dapat memperkukuh teori pembangunan kerjasama dengan

ketara, menyediakan asas saintifik untuk kajian seterusnya dan dapat memberikan panduan praktikal serta cadangan untuk latihan kerjasama terhadap remaja bagi membantu mereka dalam proses sosialisasi.

THE INFLUENCE OF POWER ON INDIVIDUAL COOPERATION DEVELOPMENT AMONG TEENAGERS' STUDENTS IN CHINA

ABSTRACT

Cooperation is an important manifestation of prosociality (i.e., voluntary thoughts and actions intended to benefit somebody else). Exploring the cooperation development of teenagers can further reveal the development law of their prosociality. Adopting teenagers of different ages as research objects, this study explores the influence of a sense of power on the development of different levels of cooperation (sense of cooperative, cooperative cognition, and cooperative behavior). Research was conducted among teenagers in a middle school, a high school, and a university in Huizhou, Guangdong, China. The study was performed in three phases. Phase 1 is the questionnaire method, researcher used scale of sense of power, scale of empathy and scale of sense of cooperation to measure the general levels of power, empathy, and sense of cooperation among 1055 teenagers and found that there was a significant decline in the sense of cooperation among teenagers as they aged; power positively predicts sense of cooperation; age moderates the effect of power on the sense of cooperation; power predicts sense of cooperation through the mediation of empathy. phase 2 is the questionnaire method, researcher used scale of sense of power, embedded figure test and scale of cooperative cognition to measure the general sense of power, cognitive style (field independence-field dependence), and cooperative cognitive level of 1084 teenagers and found that the overall development trend of cooperative cognition was growth; power positively predicts cooperative cognition; age moderates the effect of power on cooperative cognition; power positively predicts cooperative cognition through the mediation of cognition style; phase 3 is mixed

method (including survey and experiment), researcher used scale of sense of power, scale of perspective-taking and public goods task to measure the general sense of power, perspective-taking, and cooperative behavior level of 883 teenagers and found that the overall development trend of cooperative behavior was growth; power positively predicts cooperative behavior; power predicts cooperative behavior through the mediation of perspective -taking. Finally, based on the study of three phases, researcher found that: (1) the development trend of different levels of teenagers' cooperation is not the same, with the increase of age, the sense of cooperation gradually declines, and the cooperative cognition and cooperative behavior are on the rise, that is, the development trend of cooperative emotion, cooperative cognition, and cooperative behavior has been differentiated; (2) sense of power promotes all three levels of cooperation; (3) age has the moderating effect on the influence of personal power on the sense of cooperation and cooperative cognition, while it doesn't moderate the influence of personal power on cooperative behavior; (4) personal power has a certain role in promoting empathy, cognitive style, and perspective-taking in general, but it also shows that the effects on cognitive style, empathy, and perspective-taking have different directions. This research could greatly enrich the development theory of cooperation, providing a scientific basis for subsequent research, and it can provide practical guidance and suggestions for the cooperative training of teenagers, which is helpful to their socialization process.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Cooperation is a common phenomenon in human society (John, 1950). Human daily learning, work, and life are inseparable from cooperation (Dale et al., 2020). In the early days of human society, primitive humans also often adopted social life to improve the survival rate of the entire group due to the low level of productivity, limited ability of human beings to modify nature, dangerous living environment, and difficulty in obtaining food (Szathmáry et al., 2001). In terms of social production, cooperation can stimulate human creativity, improve group performance and productivity, and also solve group conflicts to a certain extent (Zhao, 2009). In modern society, cooperation is also everywhere. The form of group division of labor is often used to carry out learning, and an enterprise also needs close cooperation between various departments and employees to achieve better work performance. In family life, researchers often say that males lead outside, and females lead inside (Sarkar et al., 2023), which is also the embodiment of cooperation in life. Cooperation is ubiquitous and an important driving force for the development of the whole society and human progress. However, the globalization of the economy has made competition continue to intensify with the continuous development of society and the continuous innovation of science and technology, whether it is individual competition or group competition. Thus, the limitations of individual ability are becoming increasingly prominent. Almost every important task is completed without cooperation and the concept of cooperation is increasingly important.

While the individual's choice of cooperation or competition is not something you or I can easily decide, which involves a very complex psychological process

(Argyle, 1991). What are the specific factors that affect cooperation in real life? What does its mechanism of influence look like? It has attracted the attention of many psychologists, and there is a lot of research on cooperation. According to the summary of a large number of cooperation studies, researcher can find that there are two main factors affecting individual cooperation, one is individual factors, and the other is situational factors. In terms of situational factors, the research has been very deep, and different scholars have conducted research according to different perspectives, such as task structure, reward and punishment mechanism, feedback mechanism and so on. In terms of individual factors, existing studies have explored individual characteristics, motivations, social value orientations, and other perspectives. Researchers note that as part of the individual factor, power can have a huge impact on all aspects of an individual's decisions and actions. Power is everywhere and can change teenagers' emotions, cognition, and behavior. In past studies, the direction of the influence of power on individual cooperation seems to be inconsistent, with some studies showing that power can promote cooperation, and some studies showing that power can inhibit cooperation (Yang, 2018; Wang, 2021). What's more, cooperation also has different dimensions: cognitive dimension, emotional dimension, and behavioral dimension according to relevant research, so is the influence of power on different dimensions of cooperation similar? This is something researchers are going to explore.

The development of cooperation is very important for teenagers (Zhang et al., 2017) and is an important manifestation of social development. At present, cooperation research on teenagers is not sufficient. As such in this research, the attempt was made to discover the relationship between power and different levels of cooperation in different ages of teenagers and specific impact mechanisms, thus providing constructive suggestions for the cooperative education of current schools.

1.2 Background of The Study

Cooperation plays a significant role because it occurs frequently in many people's lives every day. To be more exact, our lives are almost inseparable from cooperation. At the individual level, cooperation can promote the social development of individuals, improve individual communication skills, and allow individuals to gain respect and understanding in the process of good cooperation (Deutsch, 2011). Whereas at the interpersonal level, cooperation can lead to harmonious interpersonal relationships and a friendly team atmosphere. At the societal level, cooperation can improve efficiency and promote social harmony. From the point of view of Johnson and Johnson (1989), a large number of research studies suggest that a cooperative process (as compared to a competitive one) is very important in our lives, which could result in greater group productivity, more favorable interpersonal relations, better psychological health, and higher self-esteem. What's more, more constructive resolution of conflicts is the result of cooperative as opposed to competitive processes. Therefore, researchers should pay more attention to the concept of cooperation and how to cultivate cooperation (rather than competition).

In China, the General Office of the CPC Central Committee and the General Office of the State Council (2017) issued the Opinions on Deepening the Reform of the Education System and Mechanism, which clearly stated that researchers should focus on cultivating key competencies that support lifelong development and adapt to the requirements of the times, and the four key competencies that students need to possess are cognitive ability, cooperation ability, innovation ability, and vocational ability. The 21st Century Learning Alliance of America (2002) also proposes the 4Cs of core literacy in the 21st century, including Critical Thinking, Creativity, Communication, and Collaboration. For children and adolescents, cooperation is not

only a key competency in the field of learning but also an important way to interact with and integrate into groups, affecting not only the quality of peer relationships but also the self-development and physical and mental health of individuals (Singh & Agrawal, 2011). However, early social psychology research also found that people tend to prefer competition over cooperation without special guidance, which is closely related to the mentality of worrying about a lack of resources, distrust of others, and seeking advantages in social comparisons. In other words, competition is an evolutionary instinct, and cooperation needs acquired guidance (Cui, 2022). Cooperation includes three aspects: the sense of cooperation (emotional aspect), cooperative cognition (cognitive aspect), and cooperative behavior (behavioral aspect). Thus, how to cultivate the cooperation concept (cooperative cognition) and emotional characteristics (sense of cooperation) of teenagers in the current development, improve the level of cooperation behavior, or adapt to the requirements of the future society better is a practical problem and important task that every educator or the teenager himself unavoidably face (Li & Sun, 2001; West et al., 2021).

In the modern complex educational systems, educational psychologists combine efforts with educators, administrators, teachers, and students. The efforts aim at learning more about how power affects teenagers' behavior development. Power is vital as it influences interpersonal relations and social interactions between them and their relations and interactions with other individuals such as teachers and parents (Anderson et al., 2012). Their power within their environment of them is among the significant factors that influence their cooperative behavior development. Cooperative behavior development in teenagers addresses two or more adolescents' interactions toward a common purpose, which is of interest (Buchs & Butera, 2015). For instance, teenagers come together to form a sports club that satisfies their love for a particular sport. The

influence of power among teenagers is seemingly suggesting that it leads to more significant brain activities related to cooperative behavior processes. Therefore, it is evident that unbalanced power relations are likely to result in negative cooperative behavior development. Additionally, power and influences sometimes create discrimination, attitudes, intolerance, and verbal violence. Dominant teenagers can form groups based on popularity, academic development, and social status instead of forming ones based on equality, solidarity, authentic friendship, or respect.

Research shows that teenagers are in a critical period of authority recognition and socialization and are more sensitive to their power status and relationships (Damon & Eisenberg, 1998). On the one hand, risk-taking and risk decision-making in social difficulties decrease with age (Gardner & Steinberg, 2005) and cooperative behavior increases with age (Matsumoto et al., 2016). On the other hand, peer relationships have a greater impact on adolescent risk-taking and risk decision-making relative to adults (Gardner & Steinberg, 2005). What's more, teenagers may be more self-focused since they try to attain self-knowledge and self-sufficiency (Galanaki & Leontopoulou, 2017). At the same time, they also pay a lot of attention to others since teenagers regard others' thoughts and feelings as more important or salient than adults do, which means teenagers may allocate strong processing resources to understanding others through heightened motivation (Somerville, 2013). Here we could see the contradiction between self-focus (intrapersonal) and other-focus (interpersonal) among teenagers. Among them, the three variables of empathy, cognitive style, and perspective-taking can describe the degree of focus (others-focused vs self-focused) to a certain extent (Boele et al., 2019; Damen et al., 2017; Gilad & Maniaci, 2022). In the other-focus model, an individual's positive other-focused attention is predicted to cause the individual to behave prosocially (Kok, 2008), and cooperation is a typical representative of

prosociality (Wu et al., 2022). Besides, studies have shown that power affects an individual's focus (empathy, cognitive style, perspective-taking) (Gilad & Maniaci, 2022). Therefore, in addition to studying the cooperative development of teenagers, this research will further explore the influence mechanism of power on teenagers' cooperation: the mediating role of focus (empathy, cognitive style, perspective-taking) and the moderating effect of age.

1.3 Problem Statement

Modern society is a society full of competition and cooperation (Luo et al., 2022), and competition advocacy is thriving internationally (Maurice, 2013). In China, it could also be seen. Social stratification has increased, social mobility has decreased, and competition has become more intense against the backdrop of China's rapid development, economy, and social transformations (Ani-Asamoah Marbuah, 2016; Zhai, 2023). The existence of competition has its rationality, however, with the development of social history, the phenomenon of excessive competition has emerged in addition to healthy competition. The main reasons for excessive competition in the field of education include: firstly, the limited quality of educational resources leads to excessive competition in all aspects of the selection and evaluation system, and secondly, the main body of education, especially parents, has unnecessary anxiety and tries to help teenagers improve their academic performance and find more hobbies (Zhao, 2022), that is, teenagers are instilled from an early age not to lose at the starting line, to go to school to be the first in the class and the first in the whole grade to compete for good employment opportunities when working. Although this education stimulates students' enterprising spirit, but also brings certain negative effects, these negative effects cannot be ignored (Xiao & Huang, 2011), for example, students with low self-

esteem may be tired of learning when they are too stressed in the competition, and even have a rebellious psychology with their parents and teachers, forming mental illness and excessive behavior. In order to win in the competition, some do not hesitate to adopt unfair competition methods, until they embark on the road of breaking the law and committing crimes. The enlightenment of these phenomena to educators is that while emphasizing competition, it is also necessary to enable students to understand how to cooperate with others, and practice has proved that unity, cooperation, and sharing are also important ways to win in competition. In today's society, cooperation has become one of the essential qualities that make people successful.

Besides, cooperation is an important aspect of social development in teenagers, and it is also a major form and way for their social interaction and learning progress from the researchers' elaboration. Among them, the social development of individuals mainly refers that individuals grow in the social environment, continuously interact with the surrounding environment, and develop into a social person who adapts to social life with the improvement of social adaptability and the mastery of social survival ability, mainly including the development of social cognition, social emotion and social behavior (Katrijn et al., 2020). Social development reflects the content and results of the process of individual socialization (Bühler, & Nikitin, 2020). In other words, social development attaches more importance to the content of psychological development and pays more attention to the growth mode formed by individuals in the process of socialization and a certain psychological quality obtained. Cooperation happens to be a benign interaction mode formed by individuals and others after continuous interaction, which can reflect the results of individual socialization, so cooperation is a very important part of social development. Besides, terms related to social development that are often used in the literature are prosocial behavior (Hodge & Lonsdale, 2011), social

competence, personal and social responsibility, social–emotional learning (Taylor et al., 2017) and character development. At the same time, cooperation is always considered as a very important part of prosocial behavior which is a behavior beneficial to others and society (Eisenberg et al., 2006; Penner et al., 2005; Pfattheicher et al., 2022). Teenage is a sensitive period of social development (Amy et al., 2020). Thus, cooperation is an important part of social development for teenagers.

Cooperation can make relations more harmonious (Kou et al., 2007) and has become an important part of social education for young people. However, there is a phenomenon of a weak sense of cooperation, weak cooperation ability, and even “free ride” among teenagers at present (Liu, 2020). The free ride is a phenomenon that the group member obtains a benefit at another’s expense or without the usual cost or effort while the benefits of the group are the contribution (cooperation) of other individual members in the group work. For example, a group of students is assigned to do a report, however, only one student cares and does all the work through the whole procedure, then it means that the others go along for a free ride (Johnson & Johnson, 1997). Therefore, cooperation in a population consisting of free riders is likely to deteriorate over time (Weber et al., 2018) since free riders undermine the stability of social systems by reaping the benefits without incurring the costs in cooperative interactions (Sylwester et al., 2012). And the main reason is the weak willingness to cooperate which restricts the emergence of teenager’s cooperation behavior (Liu, 2020). At the same time, teenage is a period of the most extreme, at this phase, teenagers totter between hard work and laziness, passion and apathy, and cruel and insensitive, which makes teenagers vulnerable to crime (Sarmini et al., 2018; Ciranka & Van den Bos, 2019). Thus, the cultivation of prosocial behavior, especially cooperative behavior, among teenagers is a problem that cannot be ignored, and it is of great significance to discuss

what restricts the development of cooperation. Generally speaking, teenagers mainly include the period between the ages of 12 and 25, and the individuals at this stage are mainly in middle school, high school and college students. And combined with the actual social background, admission to compulsory education is in principle not determined by scores, i.e., entry to primary and middle school is not based on grades; schools should accept all children to ensure that all children have access to education (Zhai, 2023). The main principle at high school level is to be admitted on the basis of merit through a regional entrance examination that largely decides which tracks and schools students could be enrolled in (Ren & Tao, 2009). To be more specific, at the end of middle school, selection would be based mainly on grades and academic performance; students with poor grades would be shifted to the vocational education track after the city-based entrance examination of high school and national college entrance examination, while students with good grades could enter key schools. The idea that grades are the criterion for evaluation emphasizes competition and also has a strong influence on teenagers' cooperation. Therefore, this research would like to explore the promotion of cooperative development in the teenage stage, especially middle school students, high school students, and university students. The studies on cooperation in the academic setting are more concerned with the aspects of behavior. However, it was seen that there exist different levels in cooperation according to the researcher's idea (Chen & Pang, 2001; Zhao & Wang, 2007; Fiebich et, 2015; Fiebich, 2019). The characteristics of cooperation at different levels are also different. Sense of cooperation emphasizes the emotional level: the degree of willingness to cooperate. Cooperative cognition emphasizes the cognitive understanding of cooperation, and cooperative behavior emphasizes performance at the behavioral level. Adolescents are in a special period: cognitive development is not yet fully mature, and it is necessary to explain the

characteristics of their cooperation in this time phase. Most of the current research only studies one level of cooperation in one study (Sun, 2012; Zhou, 2017; Molho et al., 2019). Therefore, researchers will focus on the development of teenagers' different levels of cooperation.

There have been a handful of articles that have researched the role of various factors in cooperation. Although researchers have tried to uncover the factors that influence cooperation, there is no consensus so far. Durlak et al. (2011) mention that teachers, educational psychologists, educators, and administrators try to look into power influence issues by focusing on teenagers' positions (domination and subordination) when aiming to foster better, desirable individual and cooperative behaviors among teenagers during their social interactions. As an ability to influence others by controlling valuable resources and performing rewards and punishments (Kipnis, 1972; Fiske, 1993; Keltner et al., 2003; Anderson & Galinsky, 2006;), power is generally seen as the core of social relations (Cartwright, 1959; Fiske, 1993). In general, for teenagers, power is mainly reflected in two ways of interactions: power influence between the teens themselves such as peer pressure, and older people such as teachers, parents, guardians, and educators. Whether in peer relationships or relationships with elders, whether teenagers belong to domination and subordination, power manifests itself in the psychology of the individual as a sense of power: domination indicates a high sense of individual power while subordination indicates a low sense of power. The intensity of power felt by individuals may be different whether it's between peers or between people with older people. At the same time, in different scenarios, the individual's power role will also be different due to the needs of the situation. The dominant power can manipulate teenagers' cooperative behavioral development towards a particular sociological category and make them behave differently from other behavioral patterns

(Ciranka & Van den Bos, 2019). For instance, in a teen's behavioral relationship, power, and influence may suggest a change in taste of music, sexual behaviors, recreational activities, eating behaviors, and peer choices. In adolescent settings, teenagers who interact frequently tend to develop cooperative behaviors that are similar. The similarity in their behaviors is greatly influenced by one of their peers who have strong clout over the rest. Powerful partners will most likely influence the beliefs and behaviors of others to match their own. Considering that there are different levels of cooperation, here we will discuss how power influences different levels of cooperation: the sense of cooperation, cooperation cognition, and cooperative behavior from the perspective of teenagers.

At the same time, as teenagers become older, teenagers' cooperation changes, and the influence of power on teenagers' cooperation may also change. Zhang et al. (2017) experimentally studied the differences in the effects of social distance and cooperative index on cooperative behavior among teenagers of different ages and found that there were age differences in individual responses to social distance and cooperative index: the cooperative behavior of university students was significantly promoted by social distance, but the impact of social distance on middle school and high school students was not significant; although the impact of the cooperative index on both middle school students and university students was significant, according to the test results of the slope of the regression equation, it was found that the cooperation rate of middle school students had the same trend as the growth trend of the cooperative index, while the growth trend of the cooperative rate of university students was significantly higher than that of middle school students. That is, age can moderate the effect of social distance and cooperation index on teenagers' cooperative behavior. Few studies are looking at the effects of age on the effect of power on cooperation, that is, it

is still unknown that how power influences teenagers' cooperation development (especially from these different groups). Based on the above analysis, we find that age is also likely to moderate the influence of power on different levels of cooperation among teenagers. This is one of the focuses of this research.

Moreover, there are many ways in which power can interact with cooperation, and in addition to direct influence, there are also some influence mechanisms. According to the Agentic-Communal Model, power affects individual cooperation by influencing an individual's focus (self-focus or others-focus). Individuals with high levels of self-focus may tend to pay greater attention to the self, whereas individuals with low levels of self-focus may pay greater attention to others or the surrounding environment (Wang & Tu, 2015). In Exner's (1973) egocentricity framework, self-focus which is thought to be associated with related to social characteristics is considered as an important component (Salovey, 1992). The focus (self-focus or others-focus) is also a very important aspect for teenagers since a feature of teenage social sensitivity is a tendency to speculate about the thoughts and feelings of others, a cognitive ability referred to as mentalizing or theory of mind (Dumontheil et al., 2010). Convergent evidence suggests that teenagers display heightened sensitivity to social evaluation at various levels of complexity and continue to refine their capacity to represent the thoughts and feelings of others (Somerville, 2013). That is, for individuals in adolescence, psychological theories will continue to develop which may affect teenager's focus since through this process they need to put more focus on others, which may have an impact on cooperative behavior in teenagers. Among them, there are many variables related to the point of focus (self-focus or others-focus). According to the Middle Rang Theory, researcher can appropriately select several variables as representatives to study to verify the Agentic-Communal Model. In this research,

researcher selected empathy, cognitive style, and perspective-taking as representative variables. The reason why researcher chooses these three variables is because these three variables could describe the extent between self-focus and others-focus. For empathy, if the individual has a high level of empathy, it means that he (she) is more others -focus. For cognitive style (mainly field-independence and field-dependence), high level cognitive style means field-independence and self-focus. For perspective-taking, high perspective-taking means individual put more efforts on others (others-focus). Based on the above considerations, the researchers believe that these three variables can describe self-focus and others-focus to a certain extent, so this study wants to continue to verify Agentic-Communal Model at the level of cooperation.

What's more, based on the different levels of cooperation, we will also verify this model at three levels, which is very lacking in the current research field. On the level of sense of cooperation, we discuss how empathy affects the influence of power on the sense of cooperation. On the level of cooperative cognition, we discuss how cognitive style affects the influence of power on cooperative cognition. And on the level of cooperative behavior, we discuss how perspective-taking affects the influence of power on cooperative behavior. In this way, we can explore the specific influence mechanism of power on cooperation at different levels, further demonstrating the agentic-communal model. Besides, we will discuss the impact of power on cooperation, mainly in terms of the intensity of power. We will start from the intensity of the sense of power felt by the individual and mainly consider the trait sense of power. The trait sense of power refers to a certain type of trait shaped by having certain power, resources, or long-term growth experiences, which is an internal power perception of an individual that is relatively stable, diffuse, and idiosyncratic.

1.4 Research Objectives and Research Questions

There are three research objectives, and each research objective has three research questions. The first research objective is to explore the difference of influence of power on the sense of cooperation among teenagers of different ages and there are four research questions under this research objective: what is the trend of periodic development of sense of cooperation among teenagers? what's the influence of power on the teenager's sense of cooperation? what's the effect of age on the role of power in the sense of cooperation? what is the specific mechanism behind the influence of power on the sense of cooperation?

The second research objective is to explore the difference of influence of power on cooperative cognition among teenagers of different ages and there are four research questions under this research objective: what is the trend of periodic development of cooperative cognition among teenagers? what's the influence of power on teenagers' cooperative cognition? what's the effect of age on the role of power in cooperative cognition? what is the specific mechanism behind the influence of power on cooperative cognition?

The third research objective is to explore the difference of influence of power on cooperative behavior among teenagers of different ages and there are four research questions under this research objective: what is the trend of periodic development of cooperative behavior among teenagers? what's the influence of power on teenager's cooperative behavior? what's the effect of age on the role of power in cooperative behavior? what is the specific mechanism behind the influence of power on cooperative behavior?

1.5 Hypotheses

H1a: Changes in the teenagers' level of sense of cooperation with age may show a trend of periodic growth.

H1b: Power negatively predicts the sense of cooperation.

H1c: Age moderates the effect of power on the sense of cooperation.

H1d: Power predicts the sense of cooperation through the mediation of empathy.

H2a: Changes in the teenagers' level of cooperative cognition with age may show a trend of periodic growth.

H2b: Power negatively predicts cooperative cognition.

H2c: Age moderates the effect of power on cooperative cognition.

H2d: Power predicts cooperative cognition through the mediation of cognition style.

H3a: Changes in the teenagers' level of cooperative behavior with age may show a trend of periodic growth.

H3b: Power negatively predicts cooperative behavior.

H3c: Age moderates the effect of power on cooperative behavior.

H3d: Power predicts cooperative behavior through the mediation of perspective-taking.

1.6 Research Gap

There have been many relevant studies on the impact of power on cooperation. Wang (2019) found that individuals with high power behave less cooperatively when treated unfairly in common resource dilemmas. Bone (2016) used a modified IPD game and found that power asymmetries increased the effectiveness of punishment from strong players only when players were able to vary their investment in cooperation. There are many more related studies, which will not be repeated here. However, there still exist some research gaps. Firstly, the concept of cooperation is complex and rich in

connotation. Most researchers mostly study the concept of cooperation in a single dimension (Van der Weiden et al., 2021; Sun, 2012; Zhou, 2017). Never before have researchers studied multiple levels of cooperation in the same study. Moreover, most of the research on the cooperative development of teenagers has only focused on cooperative behavior (Zhang et al., 2017; Gutierrez-Roig et al., 2014) and the development of the sense of cooperation (cooperative emotion) and cooperative cognition receives little attention, which is a point that has been extremely neglected by previous studies. Besides, questionnaires and experimental methods were combined to measure different dimensions of cooperation. This research can greatly make up for its research gaps, profoundly and comprehensively reveal the development characteristics of teenagers' cooperative emotions, cooperative cognition, and cooperative behavior, and provide basic data support for the cooperative cultivation of teenagers.

Secondly, there are not many studies on the sense of cooperation and cooperative cognition, and there are even fewer studies on the influence of the sense of power on the sense of cooperation and cooperative cognition of teenagers, and there have been more studies on power's influence on cooperative behavior (Bone et al., 2016), but there are almost no studies are exploring the influence of power on the sense of cooperation and cooperative cognition, so this study can largely fill this research gap and comprehensively reveal the impact of the sense of power on cooperation. At the same time, previous studies of the impact of power on cooperation have focused more on adults. It is worth noting that previous experimental studies on power and cooperative behavior have mostly focused on adults and less on teenage groups (Cui & Zhang, 2019). Hollingworth (1932) calls the teenage phase a "psychological weaning period", while Hall (1904) calls it a "storm period", which shows that individuals have undergone great physical and psychological changes in teenagers in contrast to other periods such as

childhood and adulthood (Buchanan et al., 1992). Adolescence is a period of transition from childhood to adulthood, which in turn, differs from other periods by its relatively sharp and complex transition (Ibaydullaeva & Abdurasulov, 2020; van den Bos et al., 2011). Besides, status hierarchies which are highly related to power emerge in adolescence (Hawley, 2016). Thus, systematic studies about power and cooperation targeting teenagers are needed.

Thirdly, few researchers scan power's different effects on cooperation among teenagers from the perspective of age development. Although many researchers have studied the impact of power on cooperation (Richardson et al., 2019; Dannals et al., 2022), no researchers have established a development model for the influence of power on cooperation. This research constructs an age model of the influence of power on cooperation, trying to reveal the developmental factors of power affecting cooperation.

At last, previous studies have also validated the Agentic-Communal Model of Power (Anderson, 2020; Li et al., 2022). However, few researchers confirmed this Agentic-Communal Model of Power at the cooperation level, which is the theoretical gap and could be filled by this research. We further explore the deep mechanism of the influence of power on cooperation from three dimensions: cooperative emotion (sense of cooperation), cooperative cognition, and cooperative behavior, which can help us further explore the deep mechanisms underlying the influence of power on cooperation. In addition, among research on the mediating variables of power and cooperation, although empathy and perspective-taking are involved (Blader et al., 2016; Galinsky et al., 2006; Overall et al., 2023), almost no researchers have explored how cognitive style as a mediating variable affects the influence of power on cooperation. According to Liu (2014) et al., it is of great practical significance to strengthen the research on the influence of power on cognitive style and play the positive role of power.

1.7 Conceptual Definitions

1.7.1 Power

Power, as an interdisciplinary research hot topic, has been defined in different disciplines. Among them, sociology defines power as the ability to influence and control others, and to make others behave in a certain way. This suggests that sociological-related studies emphasize the role of power in human relationships, considering power as the ability of the individual to influence and control others, and believing that the essence of power is enforced in the way of punishment or threat. While psychology defines power from a broader perspective and believes that power means individuals' asymmetric control over valuable resources (Emerson, 1962; Kelley et al., 2003; Keltner et al., 2003; Fiske, 2010; Magee & Smith, 2013), or can influence the results of others and their behavior, individuals with power can exert asymmetric control of the results (Galinsky et al., 2008; Liu & Zhang, 2017). When defining power, psychology considers not only social relationships between individuals but also the interaction of individuals with the external environment. Past research shows that the effect of power can be reflected in race (between group levels), authority or powerful social role (interpersonal level), and people's personality characteristics (individual level) (Guinote, 2008).

In addition, the psychological definition of power also reveals two roles of power, on the one hand, power may make an individual influence and control others (Fiske, 1993). On the other hand, power can also help people control the current situation, be free from the external environment, and gain more freedom of action.

1.7.2 Power as a psychological state

Galinsky et al. (2003) argued that power could also become a psychological property of the individual. Keltner et al. (2003) indicated that the experience of holding

power in a particular situation generates a constellation of characteristics and propensities that could be manifested in affect, cognition, and behavior. They also suggested that the concepts and behavioral tendencies associated with power are activated whenever the possession of power is implied, consciously or nonconsciously, in a new situation, or even when an experience with power was simply recalled. Because these propensities are stored in memory, they can be carried outside of the situation in which power was directly experienced. Therefore, a sense of power can be considered as the psychological state or mindset of feeling powerful (Rucker & Galinsky, 2017).

1.7.3 Teenager

The word “adolescent” stems from the Latin “adolescere” whose meaning is “to grow”. Not surprisingly, there is thus no precise definition of adolescence or young adulthood. Adolescence is generally considered the period in human growth and development that occurs after childhood and before adulthood. The word “teenager” encompasses the period from 13 to 19 years (Iversen et al., 2013; Boissel & Baruchel, 2018). The World Health Organization (WHO) definition regards teenagers to be individuals aged 10-19 years old (WHO, 2005), which is also agreed by another researcher (Stengård & Appelqvist-Schmidlechner, 2010). However, teenagers in Malaysia are defined as individuals between the ages of 15 and 30 years and this definition has been fully utilized starting in 2018 (Abdul Mannan, 2019).

1.7.4 Cooperation

1.7.4(a) Sense of cooperation

The sense of cooperation is clearly defined by Lu (2009). She divided the emotional quality system of teenagers into six categories: moral emotion, rational emotion, aesthetic emotion, life emotion, interpersonal emotion, and emotional ability after research, among which the sense of cooperation belongs to a kind of interpersonal

emotion. It refers to emotions that they are willing to work with others. In general, a sense of cooperation is a willingness to work with others, and through cooperation, an individual can experience positive emotions. The sense of cooperation is more emotional than cooperation.

1.7.4(b) Cooperative cognition

Cooperative cognition is the understanding of common behavior and its rules, and the significance of cooperation based on the full perception of the common target situation. It is a basic premise and an important basis of cooperative emotion and cooperative behavior (Zhang et al., 2010).

1.7.4(c) Cooperative behavior

Cooperation occurs when an individual incurs a cost to provide a benefit for another person or people. Costs include things that relate to genetic fitness like resources (e.g., money, time, labor, and food). Throughout our discussions, we often refer to cooperative acts as giving help, while cooperative acts are not limited to giving help (Richerson et al., 2003). Thus, cooperative behavior refers to the activity between individuals or groups for a common goal to promote the realization of the results which benefit both themselves and others (Henrich, 2006). However, cooperation often occurs in specific situations, which means to cooperate or not doesn't happen independently and more likely occurs in situations where your decision results are interdependent with the results of others (Liu & Hao, 2014), which means the unilateral willingness to cooperate does not necessarily bring about the cooperation results, only when the two people choose to cooperate at the same time, can bring about the win-win results. Nowadays, researchers are very concerned about cooperative behavior in social dilemmas where individual interests conflict with collective interests.

1.7.5 Empathy

Empathy is regarded as a social immersion, which means shared feelings and understanding between self and others (Stefan et al., 2006; Vega & Ward, 2016). Here we mainly consider empathy's affective reactivity to other people and emphasize the idea of shared feelings between self and others, which means individuals focus on others, choose their opinions, experience their emotions, and then produce similar or consistent emotional experiences and behavioral reactions with others (Čavojová et al., 2011). Actually, empathy is an alternative emotional response-ability. This connotes a mechanism based on affective that relates together the feelings' observation (in others) with generation (in the self). Knowing what others think/feel depends on the 'mentalizing' structure or cognitive empathy while feeling or sharing what others feel and think depends on the 'mirroring' structure or affective empathy (Hurley et al., 2008; Shamay-Tsoory et al., 2009).

1.7.6 Cognitive style

Studies on the cognitive style originally derived from Witkin (1954), who and his colleague Asch found in studying visual orientation that there are two cognitive style differences in human individuals, namely the differences between field-independent and field-dependent types. This difference is mainly manifested in the different degrees that people rely on the external environment ("field"). Cognitive style is also known as cognitive mode. According to Messick's definition, cognitive styles are considered as stable attitudes, preferences, or habitual strategies that determine individuals' modes of perception, memory, thought, problem-solving, and characteristic self-consistency in information processing around a constant personality trend (Messick, 1976; Messick, 1984; Kozhevnikov et al., 2014). Similarly, Witkin et al. (1977) depicted cognitive

styles as the individual differences in the ways people perceive, think, solve problems, learn, and relate to others.

1.7.7 Perspective -taking

Perspective-taking is defined as the ability to understand and reason about or predict other people's thoughts, beliefs, mental states, or emotions, and is also referred to as cognitive empathy, cognitive theory of mind, or mentalizing (Davis, 1983; Frith & Frith, 2006; Shamay-Tsoory et al., 2006; Hollarek & Lee, 2022; Ku et al., 2015). There exist two sub-processes involved in perspective-taking: one process is to calculate what someone sees, knows, or thinks, and another one is to select the appropriate content while inhibiting the alternatives (Leslie et al., 2004; Leslie et al., 2005; Chen et al., 2021).

1.8 Operational Definitions

1.8.1 Power

In society, power can be seen as the embodiment of an individual's ability and status. It is a special influence between people, but also a kind of ability. In this research, we are concerned with personal power, that is, the sense of power felt by the individual, which is different from the actual social power, referring to the perception and judgment of their own influence or control ability. Simply put, actual power refers to an interpersonal ability to influence, while a sense of power refers to people's perception of this ability to influence. This research will measure the sense of power in this way: to directly use the general power scale to measure the individual sense of power, the higher the score, the stronger the sense of power.

1.8.2 Teenagers

Considering the above conceptual definitions and various factors, as well as the school attendance of teenagers, here we define teenagers as middle school students, high school students, and university students and the age range is mainly 12 to 25 years old. We selected the second year of middle school, high school, and university students as representatives of the teenage group.

1.8.3 Cooperation

This research mainly focuses on the three dimensions of cooperation: emotional dimension, cognitive dimension, and behavioral dimension, which are embodied in the sense of cooperation, cooperative cognition, and cooperative behavior.

1.8.3(a) Sense of cooperation

Sense of cooperation is measured by the scale of sense of cooperation compiled by Sun in 2012. There are 15 questions on this scale and there is only one dimension. The higher the score of the teenager on this scale, the stronger the sense of cooperation.

1.8.3(b) Cooperative cognition

Cooperative cognition is measured by the scale of cooperative cognition by Zhou in 2017. The scale mainly contains four dimensions: interpersonal cognition, purpose cognition, collaborative cognition, and equality cognition. The score of teenagers' cooperative cognition is the sum of the scores of these four subscales. The higher the scores, the higher the level of cooperative cognition.

1.8.3(c) Cooperative behavior

For cooperative behavior, researchers are more likely to use experimental methods to measure. The social dilemma is one such research paradigm. In social dilemmas, individuals can gain higher benefits than they pursue collective interests, but

at the same time, if all members pursue individual interests, then the benefits of group members are lower than when all members pursue collective interests. The proper solution to social dilemmas usually depends on cooperative behavior (Van Lange et al., 2013). Social dilemmas refer to situations in which individual rationality leads to collective irrationality (Kollock, 1998). Cooperation in social dilemmas means individual decisions benefiting the interests of the collective or others, while defection refers to decisions that benefit you. This research uses the public goods task. Cooperative behavior is mainly reflected in the contribution rate in the public goods task. The more teenagers contribute to group accounts, the higher their level of cooperative behavior.

1.8.4 Empathy

The connotation of empathy is very rich. In this sub-study containing the concept of empathy, researcher mainly wants to explore the mediating effect of empathy on the role of power in the sense of cooperation. According to the Agentic-communal model, power affects the individual's focus: self-focus and other-focus. Thus, here researcher chooses to use the subscale of the empathy scale compiled by Fang (2010) to test the individual's ability to recognize emotions. Which is divided into two dimensions (the ability to recognize one's own emotions and the ability to recognize the emotions of others), that is, researcher wants to explore the individual's self-focus or other-focus at the emotional level. The higher the score of teenagers on the scale, the stronger their ability to empathize.

1.8.5 Cognitive style

There are many ways to classify cognitive style, including field independent or field-dependent, contemplative-impulsive or simultaneous-simulative, and so on. Similar to the empathy section above, researcher wants to explore the individual's focus