

The Factors Contributing to Children's Gender Cognitive Development

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Abstract. Gender topic has been discussed fiercely nowadays. In the more and more inclusive society with various identities about gender, there are also many conventional beliefs like gender stereotypes, which are likely to bring an abundance of social problems, especially for children, as they influence their multiple development. This paper aims to review previous studies and illustrates the factors contributing to children's gender cognitive development (from family and school), which will be discussed mainly focusing on gender identity and gender stereotypes. As families (especially parents) and schools (especially teachers) play a fundamental role in children's cognitive development, the factors are mainly divided into three aspects, including the parents' education ideas, parents' sexual orientations, and the teachers' gender attitudes at school. The most key conclusion is that for parents and teachers with stronger gender stereotypes, children will form stronger gender stereotypes and more traditional gender identity in their gender cognition. The paper also provides suggestions for parents, teachers, and schools.

1 Introduction

In modern society, gender topic has been an issue for people's fierce discussion, including gender equality, feminism, etc. With the development of people's gender identity and cognition, more and more types of beliefs in gender identities and different sexual orientations can be gradually accepted by society [1]. The trend can be reflected in many aspects, such as economics (LGBTQ-friendly community development) and education (inclusive multicultural education) [2,3]. However, there are also plenty of conventional gender beliefs remaining in people's minds, such as gender bias, stereotypes, and even discrimination, which hinder the campaign of pursuing gender equality and obstruct personal advancement, especially for women. As for children who are in a critical period in the formation of their gender cognitions, conventional gender beliefs such as stereotypes can easily lead to a negative impact on children's multiple development, bringing many restrictions and limitations [4]. The stereotypes can sometimes bring stereotype threats in which children's performances at school, including mathematics scores or athletics ability, become worse than in an environment with fewer gender stereotype threats [5]. Besides, gender bias and stereotypes cause bullying among students at school [6]. The following issues from gender stereotypes can also contribute to a series of mental health problems such as anxiety or depression [7]. Hence, there is a necessity for researchers to analyze the factors which affect the gender cognitive development of children. A large number of research papers have investigated the role of parents and teachers in children's formation of gender

cognition, ranging from the influence of parents' education ideas to the position of teachers' gender attitudes and behaviors. These studies are beneficial for parents and educators to obtain more insights about the factors that influence children's formation of gender cognitions. Therefore, they can bring children a more inclusive growing environment, which is better for their development. The goal of this paper is to illustrate a review of previous findings and give a summarization of the factors.

2 Introduction of the concepts

The paper will analyze the factors contributing to children's gender cognitive development and the formation of children's gender beliefs, which will mainly focus on gender stereotypes and gender identity. Besides, the theory of patterns of gender development will be mentioned as a piece of background information. The paper will state the above concepts in detail.

In general, stereotypes reflect the anticipations about people of different specific social groups. Gender stereotypes, based on the binary categorization of gender, emphasize the typical divergence and differences between men and women [8]. It invisibly builds a regulation in people's minds, which describes the expected action and behavior based on people's gender. Hence, it leads to a neglect of the uniqueness of a particular person and an oversimplified cognition of a social group, which can easily influence people's judgment of a person [8]. Gender stereotypes not only affect the perceived potential of men and women when selected for future careers but also influence the evaluation and assessment of people's

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performance in their work [8]. As a result, it narrows people's insight when recognizing and criticizing an individual or an event, which adds restrictions for reasonable personal growth and probably leads to the loss of uniqueness for people of certain groups (like men and women).

Gender identity development shows the extent to which a person experiences oneself as the same person of a particular gender [9]. The identity outlines for people to identify themselves and provides a template for people to treat and interact with others [9]. Hence, it, to some extent influences people's behaviors in their daily life, treating various people from different genders. A person's identity formation usually takes place in adolescence when they mainly develop their value and notion of a specific object, such as a particular gender group, in many different kinds of fields [9]. It is mainly based on the education from their parents while there is an exploration to seek the meaning and significance of their roles [9]. Gender identity development is a process of an extended period, including personal self-definition and identity and gender cognitive development influenced by the social environment [9]. It covers a variety of different cognitive fields, ranging from family roles to career preferences.

Gender development pattern is a theory that describes the long-term development of gender cognition, providing the essential background for researchers to analyze gender cognitive development. It illustrates that children form the early stereotyped notion since they are approximately 2-3 years old in the areas like toys they like or clothes they prefer to wear [4]. And the stereotypes about gender will change into more flexible with the increase of their ages [4]. The notion causes bias and discrimination as children tend to have more positive emotions about their own gender [4].

3 Impact factors

3.1 The role of family education in children's formation of gender cognition.

As parents have stronger gender stereotypes and indicate in their daily life with children, children will form a stronger gender stereotype in their cognition and behaviors, including their appearance, performance at school, and family roles.

Family education includes the parents' behaviors and beliefs when educating their children. Implicit association test (IAT) is usually used to assess the extent of people's potential opinions about gender stereotypes. As for the gender stereotypes about intellectual ability, which is a typical topic about gender stereotypes, there is a common hypothesis that parents being more biased about the academic performance of different genders will significantly impact children when forming the cognition and impressions about the intellectual ability of different people. Researchers have analyzed whether parents' and children's gender-brilliance stereotypes have a correlation in 2022 [10]. The experiment focused on children from 8-12 years old and their parents living in Singapore [10]. Facing the related words and pictures of human faces, the

reaction time for people (children and their parents) when sorting the images of faces and the associated words for each group (stereotype-congruent or stereotype-incongruent) would be recorded [10]. After the recording, the D scores (the difference in average response times between the stereotype-incongruent and stereotype-congruent trials, divided by a measure of the variability in response times across the session) are computed through computer programs [10]. At last, it used linear regression to have a correlation analysis to dispose of the data [10]. As a result, there was a positive correlation between the D score of parents and children, which demonstrated parents with more gender stereotypes are more likely to influence their children's gender stereotype formation and lead to a more significant stereotype [10]. Another experiment in 2022 for Japanese children gained similar results [11].

Regarding the family role and housework distribution, another group of researchers also applied IAT tests to measure the potential awareness of gender stereotypes. Compared with the above experiments, which only covered the IAT tests for the family, this experiment also asked the participants (parents and children) to answer five items about household tasks [12]. The researchers analyzed the behaviors regarding work and housework (the contributions and working hours) for parents and their career preferences for their future [12]. The items above aim to show the explicit gender cognitions of children and parents, which made up for the above research in which there is an absence of discussing the role of parents' actual behaviors in front of children, demonstrating the relationship in multiple dimensions [12]. Here, the study has found that children's beliefs about gender differences in family role distribution will be influenced by both mother and father, especially for girls, who will tend to family instead of work [12]. The parents' behaviors will affect children's gender identity. For example, the more mothers enact the conventional family role at home, the more their children (especially girls) imagine they could fulfill the gender-stereotypical roles in the future [12].

There are many other research papers focusing on gender development in other topics in children's daily lives, such as the outfit on Halloween. Studies have shown that children's preferences for wearing gender-stereotypical clothes have a connection with the gender-stereotypical traits of their costume at Halloween, as the clothing type for children whose clothes are decided by their parents will be less than that for the children who choose the outfit by themselves [13].

In conclusion, children will maintain more gender stereotypes with parents who have stronger gender stereotypes.

3.2 The role of parents' sexual orientation in children's formation of gender cognition.

It is unsurprising that here we have some conclusions that as homosexual parents contain less gender stereotypes compared with children in heterosexual two-parent families, children living with lesbian or gay parents form less gender stereotypes [14-16]. Besides, compared with

lesbians, children with gay parents create relatively more robust gender stereotypes and differences in their gender identity [15,16].

In many researches about the role of parents' sexual orientation in their children's gender cognition, the researchers usually use questionnaires or interviews to prove their hypothesis. The analysis can be mainly divided into two categories—the impacts on children's gender identity or children's gender behaviors.

To analyze gender identity specifically, a multidimensional conceptualization of gender identity, which was developed by Egan and Perry, has been taken into consideration in an experiment in 2009 [14,17]. It classifies gender identity into the following aspects—gender typicality, gender contentedness, felt pressure to conform to gender stereotypes and intergroup bias [14,17]. The experiment also investigated children's expectations and the role they play in romantic relationships with a person from another gender [14]. The subjects were focused on families with gay, lesbian, or heterosexual parents and their children(4-8 years old) [14]. The children were asked to pick up descriptions of different genders and judge the degree of truth for them [14]. As a result, children living with lesbian parents they usually under less stress from parents about following gender stereotypes, and they develop less sense of superiority about their own genders, forming fewer gender stereotypes [14].

In studies aiming at gender behaviors like game preference, there has been a series of experiments. Focusing on different types of families with their first adopted child in America, an investigation with questionnaires and interviews was conducted [15]. It asked parents to provide descriptions of children's game behaviors using the Pre-School Activities Inventory (PSAI), whose items contained toys, activities, and features of different activities [15]. The different items would be divided into the scale for boys and girls, and the results were the differences between scales for boys and girls [15]. Children with higher scores were more masculine [15]. The estimate illustrated that boys and girls in lesbian or gay families would usually perform fewer behavior differences and gender stereotypes when playing since their parents maintain a free attitude and relaxing environments towards gender differences [15]. In comparison with other types of families, boys in lesbian families lack masculine characteristics [15].

Compared with the experiment above, the same scientific research team later investigated the impact of parents with the change of time, using the same method with more samples [16]. Here, the researchers also considered the effects of children's siblings(brothers and sisters), but it is not the emphasis of this certain topic [16]. The results demonstrated a similar conclusion to the previous study. Especially for children with lesbian parents, the gender difference behaviors were less than those with heterosexual parents or gay parents at the very beginning (2-3 years)when they just adopted their children [16]. Apart from that, as time increases, the boys' gender behaviors will become more masculine significantly, under more pressure about gender

differences for any type of family [16]. It is likely because of the impacts of school and society.

3.3 The role of teacher's gender attitudes and behaviors in children's formation of gender cognition

After children reach the age when they need to enter school, the school has accounted for a large proportion of children's education, including their gender notions. There are substantial gender stereotypes in schools that influence the daily performance of the children, especially for subjects about STEM (Science, Technology, Engineering, and Mathematics). Concerning the beliefs about mathematics, teachers' expectations will cover gender bias and then influence children's attitudes towards their ability in mathematics and even their performances at school, which are likely to strengthen children's gender stereotypes about mathematics ability for a specific gender group [18].

The significance of differences in teachers' gender attitudes influences students' gender stereotypes and behaviors in different subjects [19]. An experiment took place in America, which analyzed the children's formation of gender stereotypes in different environments with varying levels of significance of gender differences [19]. The children(3-5 years old) were divided into two groups. They were sent to 2 kindergartens (one with a high significance of gender difference while the other with a lower significance) for two weeks [19]. During the two weeks, the researchers used a variety of actions to indicate the gender difference, including (some physical isolation, equipment in classrooms, and teachers' words differentiating the gender) [19]. After two weeks, the children would be evaluated for their gender stereotype levels by the Preschool Occupation, Activity, and Trait-Attitude Measure (POAT-AM) and investigated their interests in playing with peers of different genders [19]. The children in the environment of high significance showed more rejection of children of different genders, which showed their higher intergroup bias [19]. It demonstrated that teachers with words filled with more distinguishing gender differences, children will gain stronger gender stereotypes [19]. This experiment proved the role of teachers in the children's formation of gender cognition.

Overall, the stronger gender stereotypes and biases indicated in their daily teaching for teachers, the stronger gender stereotypes will be formed by children.

4 Discussion

4.1. Main conclusions

In children's early formation of gender cognition, both family and school play a fundamental role. As parents are the socializing agents for kids at home and teachers are the educators at school, they have taken the responsibility of the exemplary role for children's notions and behaviors, including their concepts about gender [20]. Through the empirical study, we have found that by staying with both

parents and teachers with stronger gender-stereotypical beliefs, children will form stronger gender stereotypes in their gender cognition [4,10-13,18,19]. With parents of different sexual orientations, children with homosexual parents have fewer gender stereotypes and less stress about their gender identity compared with heterosexual parents [14-16].

4.2 Limitations and suggestions

The research for LGBTQ groups can be more specific as fewer pieces of research analyze the bisexual, transgender, and queer community. Since sexual orientation can be more and more diverse, various types of families can be analyzed for children's gender cognitive formation. Parents with different sexual orientations are likely to gain completely different gender notions, which influence the next generation.

Through the above studies, we can vividly observe the influence parents and teachers can have on the children about their gender cognition. As parents' behaviors (like the clothes selection and the beliefs they inculcate in their children) have influenced child significantly, parents should absorb more updated ideas and enhance their acceptance and inclusiveness, creating a more free and warm environment for children for their healthy development (for example, students form math anxiety quickly when they under the gender stereotype threat, which means many students' math performance and confidence will be influenced by gender stereotypical environment) and their better performance in their future life. (For both children's development at school, just as I mentioned above, and their future career life, gender development had considerable influence: There are plenty of biases and stereotypes for females, which can be an obstacle in their career development) [5,21,22]. As for teachers, studies have shown that female teachers for STEM subjects appearing in the classroom can reduce students' gender bias for the subjects [23]. The school should be favorable to receive more female teachers in related subjects without prejudice. Besides, teachers should not limit students' selection for subjects or take stereotypes and biases when judging or treating students of different genders. Eventually, it requires efforts from the whole society, ranging from individuals to the entire country, to build an environment with less bias and prejudice.

5 Conclusion

This review illustrates the factors influencing children's gender cognitive development about their formation of gender identity and stereotypes. As families and schools provide children with the first notions and education about the meaning of gender, children's formations about their gender identity and cognition are affected by them inevitably and fundamentally. From the three aspects—parents' education beliefs, parents' sexual orientation, and teachers' attitudes towards gender identity at school, this study can find that the more input about conventional gender opinions, even stereotypes to children, the more

stereotypes they will form in their process of gender cognitive development. The paper mentions the limitations in the researches about gender identity and stereotypes and also proposes three suggestions for both parents and teachers. The conclusions are conducive for schools and families to help children form more free and equal gender beliefs in education. Hence, a more open and fairer environment can be built for children to grow up.

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