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Experimental studies on the influence of group identity on economic behavior

Xiaomin Zhang

School of Economics and Management, Southwest Petroleum University, Chengdu, China

Abstract: *The emergence of identity economics provides a new perspective for the study of individual or group decision-making behavior. In recent years, the experimental research on group identity provides abundant evidence for identity economics. This paper reviews literature on identity and sorts out the experimental studies on the influence of group identity on economic behavior. Finally, this paper draws a conclusion on the related research in this field and puts forward the future prospects.*

Keywords: *Group identity, identity economics, Experimental economics, Behavioral economics, Neuroeconomics*

1. Introduction

With the development of behavioral and experimental economics and neuroeconomics, microeconomic theories have taken more account of the preferences and beliefs of individual heterogeneity, but these theories still adhere to the individualistic methodology. However, individual decision-making is inevitably influenced by social context and social ties. An important social background factor that has been widely discussed by economists is identity and identification, which developed the identity economics that aims to study how identity affects decision-making and how people deal with identity issues in economic area.

In interpersonal interaction, we often face a factor that can not be ignored, that is, group identity. When interacting with ingroup members and outgroup members, group identity affects our decision-making behavior. A group of scholars explored the impact of identity on economic decision-making through behavioral game and experimental methods, and made great progress. The experimental method combined with neuroscience can also explore the neural basis of identity influencing economic behavior.

2. Literature review on identity

2.1. Social identity theory

Tajfel and Turner (1979) developed the social identity theory to explain the psychological basis for intergroup discrimination. This theory suggests group behavior is the results of individual's identification with the group. Maintaining or enhancing the positive specificity of the individual to the group can enhance the individual's social identification with the group, and this theory can explain social conflicts and social changes.

According to the social identity theory, the impact of social identity on behavioral decision-making can be summarized into three processes. Firstly, categorization is the process of classifying people including ourselves. Our self-image is related to the category we belong to. Secondly, identification is the process by which we associate ourselves with certain groups. We identify with ingroups, but not identify with outgroups. Thirdly, comparison is the process of comparing our group with other groups. This leads to a favorable bias against the group to which we belong. The social identity theory suggests people belong to groups that have meaning for them. The self-esteem that derives from being a member of a group and the behaviors associated with it are the result of group membership.

2.2. Social identity and group identity

The concept of social identity originated from social psychology. Tajfel et al. (1971) defined social identity as a part of an individual's self-concept, which includes an individual's understanding of his/her

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own membership of a certain (or some) social group, and the evaluation and emotional significance of such membership. Social identity is also defined as a person's self-consciousness that comes from the perception of social groups (Zhou and Wang, 2016).

The research on social identity mainly adopts two methods in social psychology: one is the priming instrument, which can separate and highlight the inherent social identity of individuals; the other one is group identity, which is a method of artificially reconstructing a new identity to form a group identity.

Group identity is reconstructed by economists according to certain experimental design after breaking through the inherent social identity (such as nationality, country, gender, etc.) of subjects in laboratory research. The relatively complex social identity is simplified into group identity, which is used to observe how individuals or groups make decisions under the influence of the newly constructed group identity. The purpose is to study the factors behind the impact mechanism of social identity corresponding to social identification on economic behavior (Zhou and Wang, 2016; Benjamin et al., 2016; Grosskopf et al., 2016). This method allows researchers to change the intensity of induced identity and makes it more likely that all subjects recognize membership of their own group and the other groups, thus generating more experimental control (Eckel and Grossman, 2005).

2.3. Group assignment of experimental study on group identity

Taifel et al. (1971) also proposed the experimental method of the minimal group paradigm, which is the cornerstone of the development and formation of social identity theory, and is also the most commonly used paradigm for constructing group identity to explore group interaction. The minimal group paradigm is a general term for the grouping methods of subjects, such as simple random grouping or simple common task grouping that does not affect the experimental content. To construct group identity in the laboratory, subjects' preference for paintings, i.e. painting identification grouping or simple random grouping is often adopted.

The painting identification grouping method has been used in the research on the influence of group identity on social preference (Chen and Li, 2009; Li et al., 2011). Specifically, the experimenter selected 5 paintings of two painters Wassily Kandinsky (1866-1944) and Paul Klee (1879-1940), separately, and paired them into 5 groups. The subjects were asked to select 5 paintings they liked from the 5 groups of paintings, and then grouped according to the preferences of the paintings. If the paintings of the first artist in the majority are selected, the subject is divided into Kandinsky group; otherwise, the subject is divided into Klee group. This approach is often used to study social identity in the field of social psychology (Tajfel et al., 1971). Chen and Li (2009) believed that when subjects were matched with people with the same group identity (i.e. ingroup members), they were more tolerant and more willing to take reward behavior and social welfare maximization behavior.

The random grouping method has been used in the study of Pan and Houser (2013). The experimenters divided the subjects into two different groups by random grouping. The study found that the cooperative group did not show more generous behavior than the independent group, and they were more confident that the outgroup members would give themselves more positive returns. Camera and Hohl (2021) divided the subjects into three different groups by randomly assigning colors. The experiment found that when the subjects could not easily observe and compare the characteristics based on categorization and behavior, the group effect was unlikely to occur.

3. Experimental studies on the influence of group identity on economic behavior

3.1. Experimental studies on group identity based on game model

3.1.1. Public goods game

Eckel and Grossman (2005) asked subjects to participate in a repeated public goods game, which was defined as a team production problem. The results showed that actions aimed at enhancing team identity were helpful to improve the level of team cooperation. Before the team production task, working together on an unrelated and unpaid project significantly enhanced the subjects' cooperation tendency relative to their own interests. Drouvelis and Nosenzo (2013) studied the impact of group identity constructed by random grouping on leading-by-example in public goods games. This study found that when leaders and subordinates shared the same identity, it is conducive to cooperation, while when only some subordinates and leaders shared the same identity, and another part of subordinates and leaders had different identities, it has little impact on cooperation. In addition, Charness et al. (2014) also explored how group identity

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affected the participants' choice of group members and their contribution to the public goods game. They found that the participants trained in team building had a higher level of contribution when facing any member (whether or not they have experienced team building together) .

3.1.2. Dictator game

Bernhard et al. (2006) conducted a dictator game experiment with third-party punishment by using natural groups. The results showed that the third party showed more obvious altruism towards the victims belonging to their group, but showed higher tolerance towards the dictators of their group. In the dictator game with third-party punishment, if the decision maker with different identity from the third party unfairly treats the receiver with the same identity as the third party, the third party has the highest willingness to punish. If the third party, the decision maker and the receiver belong to the same group, the punishment for unfair treatment is the lowest (Butler et al., 2013). Kranton et al. (2012) studied the impact of the group identity on the conflict and social preference based on the dictator game. They believed that the heterogeneity of social preference has a great relationship with social background.

3.1.3. Prisoner's dilemma game

Goette et al. (2006) constructed the group identity by random grouping, and trained in the military camp to strengthen the participants' identification with the group, and studied the relationship between the group identity and cooperation in the prisoner's dilemma game. They found that when the subjects were paired with the ingroup members, they would be more inclined to cooperate, and the preference for the ingroup members and the hostility towards the outgroup members would lead to this effect. Charness et al. (2007) studied the influence of group identity on individual behavior by applying prisoner's dilemma game and gender war game in the two experimental groups. They found that when the group identity was highly consistent with the subject's identity, the group identity would significantly affect individual behavior.

3.2. Experimental studies on neural mechanism of group identity

Neuroscience has become an important direction in the study of individual microeconomic decision-making. In recent years, the research of neuroeconomics on identity related decision-making has starte. Some studies have begun to explore the brain neural response network in behavioral games involving group identity, and locate some important brain regions and potential neural mechanisms.

Montalan et al. (2011) analyzed the influence of group identity on individual decision-making attention allocation and its EEG response. They believed that individual decision-making attention allocation was affected by group identity. Wang et al. (2014) studied how racial identity affected people's efficiency-equality tradeoff in distribution and related EEG responses, and found that subjects tended to allocate more favorably to the same race. Wang et al. (2014) analyzed the ultimatum game involving identity difference, and the results showed that in the context of group interaction, the group identity of interactive members could affect the early attention resource allocation and fair attention of individuals. Wang et al. (2017) found that when interacting with ingroup members in the ultimatum game, extreme and moderate unfair offers would produce more negative feedback-related negativity (FRN), while when interacting with outgroup members, it did not show different responses to different offers.

Morese et al. (2016) analyzed the dictator game with the punishment of the third party. The functional magnetic resonance imaging (fMRI) results showed that when the third party observed the behavior of decision makers with the same identity rather than different identities, brain regions related to understanding other people's thoughts were active. It indicated that when the subjects observed the unfair behavior of the same identity decision-makers, they tried harder to understand the reasons and found excuses for the people of the same identity. Yang et al. (2020) analyzed the dictator game between groups and found that after the establishment of in-group bonding, individuals would contribute more money to the in-group members to defeat the competitors. They identified within-group neural synchronization using functional near-infrared spectroscopy in the right dorsolateral prefrontal cortex (rDLPFC) and the right temporoparietal junction (rTPJ) as a candidate mechanism underlying intergroup hostility.

4. Conclusion and prospect

This paper has reviewed the concept of identity and social identity theory, and combed the experimental research on group identity in recent years. The existing literature mainly focuses on group

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conflicts, racial culture differences, fairness, emotions and so on. In the future, we can use group identity to solve management problems and apply the experimental results to practice. At present, most studies on group identity are behavioral experimental research based on game model, and the research on the neural mechanism of group identity is relatively rare. Therefore, the neural mechanism of group identity affecting economic behavior can be studied in the future through non-invasive brain functional imaging technology, transcranial direct current stimulation, eye movement and other methods. The experimental research on group identity is mainly based on students from western developed countries,however, it can also be carried out with Chinese students as subjects in the future.

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