

Article

Institutional Pressures and Megaproject Social Responsibility Behavior: A Conditional Process Model

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Abstract: Megaproject social responsibility (MSR) is a critical factor regarding the sustainable delivery of megaprojects and MSR behavior to implement MSR. However, the questions of which factors effectively promote MSR behavior and how these factors work remain underexamined. Thus, this study aims to examine how the external institutional pressure and internal factors composed of relational behavior and pure altruistic values affect MSR behavior. On the basis of a conditional process analysis conducted on a set of survey data from various organizations involved in megaprojects in China, the results revealed that the higher the degree of mimetic pressure, the higher the degree of MSR behavior. Concurrently, relational behavior mediates the relationship between normative pressures and MSR behavior. Relational behavior also drives MSR behavior, and pure altruistic values moderate the relationships between institutional pressures and MSR behavior. These findings also provide practical suggestions for policymakers on the implementation and governance of MSR.



Citation: Xie, L.; Ju, T.; Xia, B. Institutional Pressures and Megaproject Social Responsibility Behavior: A Conditional Process Model. *Buildings* **2021**, *11*, 140. <https://doi.org/10.3390/buildings11040140>

Academic Editor:
Jurgita Antucheviciene

Received: 9 March 2021
Accepted: 30 March 2021
Published: 31 March 2021

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Keywords: megaproject social responsibility; institutional pressures; relational behavior; altruistic values

1. Introduction

Following USD \$6–9 trillion per year investment in the global megaprojects market, the megaproject research has received increasing attention from both industry and academia around the world [1]. Megaprojects are progressively used as the preferred delivery model across a wide range of fields, such as infrastructure, big science, information technology, supply chains, major events, air, and space exploration [2]. Megaprojects can be divided into three types, namely, scientific and technological megaprojects, military and national defense megaprojects, and construction megaprojects [3]. In the construction engineering field, megaprojects usually refer to large-scale infrastructures, such as railways, airports, canals, bridges, dams, and water supply systems, which are commissioned by governments and significantly influence economic developments, social welfare, and people's life [4,5].

Although megaprojects have entailed significant benefits to economic growth and regional development, they are also controversial due to immense environmental impact and socio-economic issues [6]. Given the lack of social responsibility, the problems exposed during the construction of megaprojects, such as quality accidents, ecological damage, and social conflicts, have led to serious social problems beyond the scope of the project, thereby seriously restricting the project's sustainable development [7,8]. For example, the Three Gorges Project has been controversial because of its ecological damage [9]. Megaproject social responsibility (MSR) refers to the responsibilities implemented by megaproject stakeholders to achieve social welfare beyond their own [10]. MSR include economic, legal, ethical, and political responsibility. MSR is conducive to improving the environment, enhancing project performance, and determining the project's sustainable delivery [11]. Ultimately, the implementation of MSR is necessary and warranted. Participants of megaprojects must actively and orderly perform MSR to improve project sustainability.

In explaining the driving mechanism of social responsibility, institutional theory has a strong explanatory power. Institutional theory postulates that legitimacy is the basis for the survival and development of an organization [12]. The organization's cognition of legitimacy creates institutional pressure, thereby affecting organizational behavior [13]. From the perspective of institutional theory, social responsibility behavior is an important measure for organizations to gain legitimacy [14,15]. The role of institutional pressure in promoting corporate social responsibility behavior has been confirmed in previous studies [16]. However, unlike corporate social responsibility being undertaken by a single company or individual (e.g., CEO), the implementation of MSR relies on the close collaboration of diverse and heterogeneous participants throughout the project's life cycle [17]. Moreover, megaprojects are highly embedded in a series of different socio-political environments, and the participating parties are faced with a more complex institutional environment than enterprises [18]. The application value of institutional theory in megaprojects has been emphasized [19], and Scott [20] recommended to adopt institutional theory to research organizational behavior in megaprojects. Institutional theory is a powerful theoretical lens to research MSR behavior.

Although institutional environmental elements play a key role in improving the sustainability of megaprojects [21], the influence of the external institutional pressures on MSR behavior has not been fully explored. Unfortunately, existing studies on the influencing or driving factors of social responsibility behavior in construction megaprojects are very fragmented and most of these studies focus on a single dimension of social responsibility (e.g., ethical responsibility) or the internal factors. Organizational citizenship behaviors for the environment are the ethical responsibility dimension of MSR behavior. Wang et al. [22] explored the impact of environmental responsibility practices on organizational citizenship behaviors for the environment in construction megaprojects and found that perceptions of project participants on megaproject environmental responsibility practices for internal stakeholders motivate organizational citizenship behaviors for the environment, thereby improving the environmental performance of megaprojects. Perceptions of project participants on megaproject environmental responsibility practices is an internal factor. The impact of institutional pressures on organizational citizenship behaviors for the environment was uncovered in construction megaprojects [23]. Mimetic and normative pressures have a direct positive impact on organizational citizenship behaviors for the environment. However, organizational citizenship behaviors for the environment are just a dimension of MSR behavior. Therefore, those conclusions may not be applicable to MSR behavior, and the impact of institutional pressures on MSR behavior remains unknown. Lin et al. [7] revealed the negative effect of CEO narcissism on the social responsibility practice of construction megaprojects and also the mediating effect of CEO's social responsibility cognition on the relationship between CEO narcissism and MSR practice, revealing the internal influence mechanism of MSR behavior. Xie et al. [24] have explored the impact of a few factors on MSR behavior choices in construction megaprojects, such as institutional pressure, relationship quality, mutual feedback mechanism, and social responsibility cognition. The result uncovered that hypocritical behavior is impacted negatively by institutional pressure and relationship quality and impacted insignificantly by social responsibility cognition. Moreover, synergistic behavior is impacted positively by relationship quality and impacted insignificantly by institutional pressure and social responsibility cognition. However, its research object is limited to the two types of social responsibility behaviors (i.e., hypocritical and synergistic behaviors) and does not cover all dimensions of the MSR behavior. Therefore, on the basis of institutional theory, exploring the driving effect of institutional pressure on the MSR behavior is necessary. The research findings help clarify the driving mechanism of institutional pressure on the MSR behavior and achieve the extensive goal of promoting megaproject sustainability.

The remainder of this article is organized as follows. The second part introduces the theoretical basis and proposed research hypotheses. The third part presents the research methods. The fourth part is where we conducted data analysis. The fifth part discusses

the research results. Finally, the last part presents the theoretical contribution and practical implications and summarizes the conclusions.

2. Theoretical Background and Research Hypotheses

According to research of DiMaggio [25], the institutional environment is characterized by three types of institutional pressures, namely, coercive, normative, and mimetic pressures, which profoundly impact organizational behavior [23]. Especially faced with the highly complex external environment of megaprojects, explaining the organizational behavior of participating parties from the perspective of institutional theory is necessary [20,26].

Relational behavior includes three dimensions: information exchange, flexibility, and solidarity [27]. Among them, information exchange is positioned as the common expectation that information is exchanged continuously and freely. Flexibility is defined as the common expectation of each other's behavior between partners when the contract environment changes. Solidarity refers to the common expectation of cooperation between partners that is conducive to the overall cooperation rather than their own interests.

Team altruistic theory considers that altruistic value motivations include self-interested and pure altruisms [28]. Given that most of the participants in megaprojects are state-owned enterprises, they do not consider their own interests stingily, but pay more attention to improving social welfare [29,30]. Therefore, this article selects pure altruistic values to measure the altruistic values of megaproject managers.

2.1. Relational Behavior

Megaprojects are characterized by high risk and uncertainty, which requires all participants to develop a flexible coordination mechanism to quickly resolve management issues and potential conflicts [31]. For examples, flexible response to environmental changes, deliver information timely, and maintain long-term cooperative relationships [27]. These positive behaviors that promote collaboration among organizations are called relational behaviors [32,33]. Relational behavior had been proven to improve the performance of megaprojects and facilitate successful delivery [34,35]. The existence of institutional pressure will promote the relational behavior of actors. Li et al. [36] pointed out that the external institutional framework will encourage actors to actively adopt development relationships. Zheng et al. [27] revealed that stakeholder pressure perceived by megaproject participants can significantly promote relational behavior. Concurrently, relational behaviors have also been proven to increase the willingness of megaproject participants to cooperate and promote collaboration among all parties to fulfill their social responsibilities [24]. Therefore, relational behavior may play a mediating role.

2.2. Pure Altruistic Values

Even in the same institutional environment, the level of organizational social responsibility behavior may be different [37]. To explain the differences of organizational behavior behind institutional convergence, Hoffman [38] recommended to link the institutional pressure with the internal of the organization. Li et al. [28] noted that benign organizational behavior will be driven by external and internal factors. Only when the external institutional pressure is effectively transmitted by internal factors, can organizations be encouraged to better fulfill their social responsibilities. Therefore, the effect of internal factors on the relationship between external institutional pressure and social responsibility behavior must be explored. From the internal perspective of the organization, organizational social responsibility decision making largely depends on the manager's cognition of the external environment [39,40]. Moreover, this process will be filtered by the manager's values [41]. The role of top managers' altruistic values or moral standards has been emphasized in promoting the organization's social responsibility performance [30,42]. However, what remains undecided is whether the altruistic values of top managers can effectively transmit institutional pressure, thereby promoting the practice of organizational social

responsibility behavior. Therefore, the altruistic values may moderate the relationship between institutional pressures and MSR behavior.

2.3. Coercive Pressure and MSR Behavior

Coercive pressure emphasizes the external restrictions and constraints imposed by statutory or recognized rules, including laws and government regulations on behavior [25]. Coercive pressure is often linked to the government [43]. On the one hand, the government restricts the social responsibility practices of project participants by promulgating mandatory measures, such as legal institutions, industry standards, and management regulations. Megaprojects have been severely criticized for ecological damage, thereby facing strict environmental review [10]. Wang et al. [23] uncovered that when project participation is subject to these coercive pressures, they will have an emotional attachment and responsibility to environmental concerns, thereby increasing their investment in environmental protection.

On the other hand, the government can restrict and guide the MSR practice by constructing special project management entities. Li et al. [44] unveiled that the government is the most important stakeholder in megaprojects, and many megaprojects are subject to direct government intervention and management. Especially in China, a temporary quasi-government organization named the command headquarter has become the main tool for the state to supervise and guide the completion of megaprojects [45]. Through the headquarters, the government can exercise state power to force project participants to temporarily integrate processes for the overall benefit of the project [45]. The role of command headquarters in regulating the social responsibility practices of participants has been observed in megaprojects during the construction of the Hong Kong-Zhuhai-Macao Bridge; the bridge is forecasted to cross the Chinese White Dolphin National Nature Reserve. HZM Bridge Advanced Work Coordination Group and Joint Works Committee of the Three Local Governments are required to achieve the goal of pollution-free ecosystem and zero death of white dolphins. To achieve this goal, the owners, professional institutions, and various participants cooperated closely; they optimized the construction scheme and carried out various special protection measures [46]. On the basis of the above analysis, we propose the first hypothesis as follows.

Hypothesis 1 (H1). *Coercive pressure is positively related to MSR behavior.*

2.4. Normative Pressures and MSR Behavior

Normative pressure emphasizes the expectations and requirements of social norms and professional institutions for behavior [25]. Megaprojects involve many complex external stakeholders, such as the public, media, local communities, and NGOs [10]. The expectations that these external stakeholders request are the social responsibility practices of megaproject participants that constitute a source of normative pressure. Environmental, social, and human issues caused by megaprojects have received increasing attention [47]; the actors of megaprojects must properly respond to the public's legitimate demands for sustainable development [48]. Lin et al. [7] uncovered that public attention is the main driving force for promoting project participants to implement social responsibility. When the public demands strengthening, participants in megaprojects must pay attention to public interests and fulfill social responsibilities. Moreover, social responsibility demands of external stakeholders will significantly curb the behavior to ostensibly implement social responsibility [24]. If the social responsibility practice of megaprojects goes against the external expectations, external stakeholders can create external pressure on project participants through protests and boycotts. For example, local residents boycotted the PX project because of the project's negative externalities and inadequate information disclosure [17]. If participants in megaprojects fail to handle and respond to these conflicts in a timely manner, the project may be delayed or even terminated [49,50].

In addition, the participation of professional institutions helps create normative pressure. Campbell [15] uncovered that the professional norms established by industry associ-

ations will promote enterprises to act in a socially responsible manner. Many managers of megaprojects hold concurrent positions in semi-official industry associations [30]. As the actual decision makers of the project, these managers can exert their influence to promote the dissemination of related norms about social responsibility within megaprojects. Megaprojects have a long-term and far-reaching impact on social and economic development, and the participation and support of experts, consultancies, universities, and other professional institutions are also essential [23]. These professional organizations can not only improve the quality and transparency in project decision making, but also serve as an external supervisory force to guide managers' social responsibility practices. Existing cases have confirmed the role of professional institutions participating in improving the social responsibility practice of megaprojects. For example, the improvement of safety culture in the Delhi Metro project in India [51]. Therefore, Zhou and Mi [52] recommended to propose a social responsibility register through some methods, such as expert judgment and interviews, to facilitate the dynamic management of social responsibility throughout the megaproject life cycle. On the basis of the above analysis, we propose the second hypothesis as follows.

Hypothesis 2 (H2). *Normative pressure is positively related to the MSR behavior.*

2.5. Mimetic Pressures and MSR Behavior

Mimetic pressure emphasizes the pressure of an organization to imitate other successful organizations when faced with uncertainty [25]. Megaprojects are characterized by high risk and uncertainty, and project management often faces severe social, technological, economic, environmental, and political challenges [2,53]. Faced with huge pressure and uncertainty, the actors of megaprojects will seek answers through clues from the surrounding environment [54]. Learning and imitation are the natural response of the organization to the external uncertain environment [55]. Especially in the absence of contractual requirements on social responsibility issues, learning and imitating the best social responsibility practices in the industry have become rational behaviors for megaproject participants to maintain their competitiveness. An empirical study supports that imitation pressure can drive the emergence of organizational citizenship behaviors in the environment more than coercive and normative pressures [23]. Moreover, the example can effectively motivate others to voluntarily conduct altruistic behaviors [56].

Mimetic pressure from internal participants of megaprojects cannot be ignored. MSR are distributed through a complex stakeholder network, and all stakeholders must take the responsibility and perform collaboratively [17]. This means that any party cannot implement social responsibilities alone, but will be affected by the other stakeholders' willingness and performance about social responsibility. To ensure the effective implementation of social responsibility with different participants at different stages of the project, stakeholders must use formal and informal means to pressure other stakeholders and urge them to implement their social responsibility. For example, owners often place mimetic pressure on other parties by setting benchmarks. Owners often initiate labor contests and commend advanced collectives or individuals for things beyond their roles [57]. The establishment of these benchmarks helps form a proactive cultural atmosphere within the project, which drives the learning and imitation of other participants and enhances the overall MSR performance. On the basis of the above analysis, we propose the following hypothesis:

Hypothesis 3 (H3). *Mimetic pressure is positively correlated with MSR behavior.*

2.6. The Mediating Effect of Relational Behavior

The priority of the participants is to establish a reliable relationship with other participants to achieve the predetermined project goals in megaprojects [58]. Relational behavior refers to the behavior of establishing, maintaining, and preserving a cooperative relationship [59]. Relational behavior can alleviate conflicts and promote project progress. For

example, Chi et al. [60] reported that during the construction of the T3 terminal of Beijing Capital International Airport, faced with many claims and disputes in the project, all participants still actively conduct relational behavior and cooperate closely to ensure that the project is delivered on time.

The three dimensions of relational behavior facilitate MSR behavior. Flexibility mainly reflects when parties make their own decisions on unexpected situations. Greater flexibility among parties enables them to adapt more rapidly to environmental changes [61]. Long-term mutuality cannot be achieved without flexibility [62].

Information sharing means communicating information actively and validly. The greater the information sharing among participants is, the more they are able to respond to one another's needs. Frequent and effective communication enhances satisfaction and understanding of one another's intent [63]. Effective and efficient information sharing among participating organizations builds cooperation and trust and reduces conflicts [64].

Solidarity arises when common responsibilities and interests dominate a relationship [65]. Solidarity increases participants' confidence and reduces the incentive of shirking [66].

Implementing social responsibility will generate additional cost [67]. Additional cost is the most critical barrier of MSR implementation [68]. Furthermore, successful implementation of MSR requires close cooperation and collaboration of all parties throughout the whole project life cycle [17]. However, the above-mentioned analysis of relational behavior has proven that relational behavior can reduce these barriers. Therefore, by remaining flexible in unexpected situations, sharing information actively, and acting with solidarity among one another, MSR behavior can be implemented better.

In addition to complying with laws and government regulations, participants will actively establish relationships between individuals and organizations with the government in megaprojects. On the one hand, the government–enterprise relationship as a lubricant can help companies obtain additional political propaganda and resource support [2]. On the other hand, the government also expects participants to actively conduct relational behaviors to quickly and flexibly resolve difficulties [60]. These advantages will facilitate MSR behavior. On the basis of the above analysis, H4a is derived as follows:

Hypothesis 4a (H4a). *Relational behavior mediates the relationship between coercive pressure and MSR behavior.*

Normative pressures come from shared norms and values that are consistently recognized in the field. The relational behavior of organizations in megaprojects is also greatly influenced by industry guidelines, norms, and expectations to regulate their behaviors [69]. Collins and Hitt [70] proposed that to acquire external knowledge, organizations must establish effective relationships. Through relational behavior, parties can obtain, interpret, evaluate, and share knowledge and information on different aspects of social responsibility. The lack of relational behavior will hinder information sharing and knowledge among stakeholders [71].

Hypothesis 4b (H4b). *Relational behavior mediates the relationship between normative pressure and MSR behavior.*

Mimetic pressure comes from an organization's response to uncertainty and its perception of a rival's success. A project participating organization is inevitably subject to pressure from competitors who are also conducting relational behaviors and achieving the associated benefits [69]. When a positive relationship exists between two actors, and they interact and communicate more frequently, they are likely to develop similar attitudes toward a behavior and imitate each other's behavior [72].

Hypothesis 4c (H4c). *Relational behavior mediates the relationship between mimetic pressure and MSR behavior.*

2.7. The Moderating Effect of Pure Altruistic Values

Values are directions that guide individuals to judge the environment and determine behavior [73]. Pure altruistic values refer to the willingness to act completely altruistic out of moral consideration or humanitarianism [28]. Given that social responsibility behaviors are not mandatory and mainly rely on self-fulfillment mechanisms, the values of managers significantly impact organizational social responsibility performance [74]. Aguilera et al. [75] revealed that top managers with altruistic values are ethically committed to do the right thing. The moral commitment of managers helps managers perceive and understand external pressures, thereby transforming passive external pressures into active social responsibility practices [76].

With a high level of pure altruistic values, participants will be more willing to value social responsibility and have high expectations for social responsibility activities [77]. Participants in megaprojects are mostly state-owned enterprises that have achieved greater success [78]. They are more likely to perceive the pressure from government on their social responsibilities, and transmit the pressure to the organizational strategy level. Thus, we propose the fifth hypothesis as follows:

Hypothesis 5a (H5a). *Pure altruistic values positively moderate the relationship between coercive pressure and MSR behavior.*

Soyez [79] argued that subjective norms become significant only if relevant groups share a specific value orientation. As altruistic values reflect prosocial motives [80], participants with altruistic orientation are more likely to be motivated by social norms. Moreover, affected by Confucian culture, a strong social value orientation is that collective interests are more important than personal interests [81,82]. Participants with altruistic values are willing to make sacrifices to improve project performance, thus fulfilling more social responsibilities [29].

Hypothesis 5b (H5b). *Pure altruistic values positively moderate the relationship between normative pressure and MSR behavior.*

People with stronger altruistic value orientation are more perceptive of environmental problems and are more inclined to assume responsibility and behave in a more eco-friendly way [83]. Participants with altruistic values pay more attention to learning and imitating excellent benchmarks, such as actively participating in competition organized by the owner to improve production efficiency.

Hypothesis 5c (H5c). *Pure altruistic values positively moderate the relationship between mimetic pressure and MSR behavior.*

Figure 1 shows the proposed theoretical model.

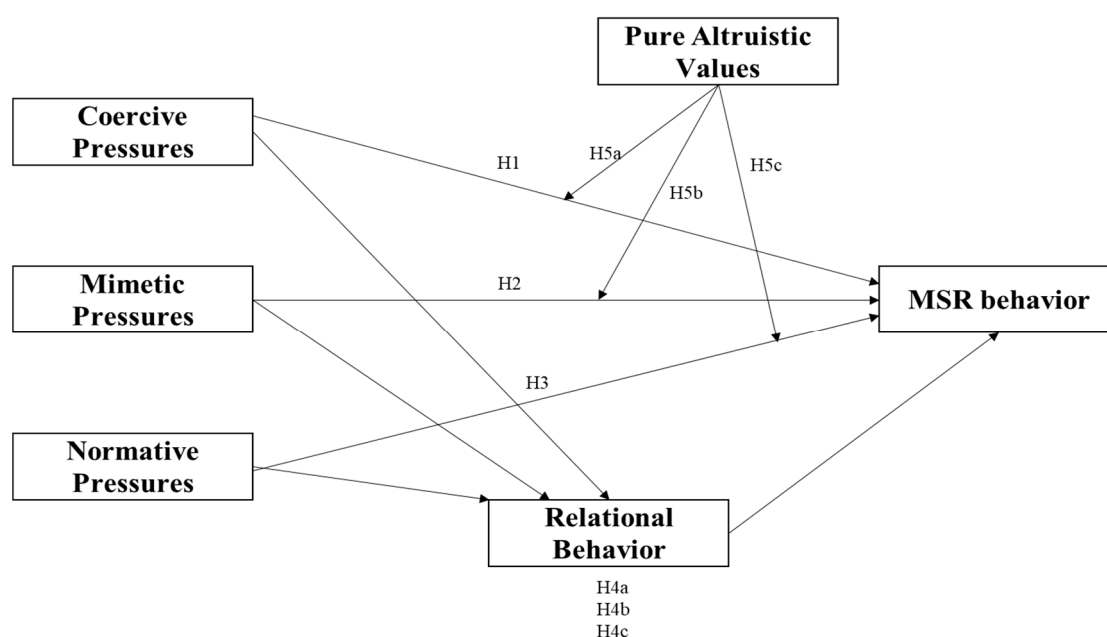


Figure 1. Conceptual model.

3. Research Method

3.1. Measures

In behavioral research, questionnaires are widely recognized as data collection tools [84]. To ensure the accuracy and validity of the questionnaire, we have adopted the following design process. First, we reviewed the pertinent literature on MSR and clarified the connotations of the variables used in this study. Second, we selected scale items that have been proven to be reliable as the initial scale items. With respect to the scale used to measure MSR behavior, we mainly referred to the work of Lin et al. [7] and used 17 items from the four dimensions (i.e., economic, legal, ethical, and political responsibilities). We adapted the measures for coercive, mimetic, and normative pressures based on the work of Wang et al. [23]. We modified and expanded it to ensure that it is applicable to this study and finally designed 11 items. Consistent with the literature of Zheng et al. [27], relational behavior involves 10 items in three dimensions: information sharing, flexibility, and solidarity. Pure altruistic values were measured via the scale adapted from the research of Yang et al. [30] and Li and Liang [82], and we finally selected four items. We evaluated all items on a five-point scale from 1 (very bad/strongly disagree) to 5 (very good/strongly agree).

We conducted a pretest involving 30 megaproject professionals (with over 5 years of experience) to verify the content, clarity, and language of the questionnaire. On the basis of the feedback from the pretest respondents, some measurement items in the initial questionnaire were further revised, and then we formed the final version. Table 1 presents all constructs along with their measurement items.

Given the potential common method bias, we used the pre-procedural remedies recommended [85]. We designed the questionnaire in two separate parts. The first part contains questions about the respondents' background information, whereas the second part focuses on the respondents' views on the last megaproject they have recently undertaken. Second, to minimize informant bias, we sampled respondents with similar roles in their respective organizations and ensured the anonymity of their answers. We asked the respondents to answer questions on the basis of the last megaprojects and informed them that there is no wrong answer. Respondents provided a relatively clear description of the MSR practices and thereby avoided preferentially selecting their most successful experience on MSR behavior, which ultimately reduced the risk of socially desirable responding. We

distributed the survey items under general topics rather than grouped by construct, thereby reducing the inertia of respondents in answering questions.

Table 1. Construct Measurement.

Construct	Code	Item
MSR behavior ^a	E1	The cost control of the megaproject that the organization participated in.
	E2	The construction period control of the megaproject that the organization participated in.
	E3	The quality of the megaprojects that the organization has participated in.
	E4	This megaproject has many innovations and new technologies.
	E5	The organization fits the technical specifications and functional needs of this megaproject.
	L1	The organization strictly abides by the laws, regulations, and industry standards of this megaproject.
	L2	The organization pays attention to fair competition in the industry in this megaproject.
	L3	The organization follows international industry standards in this megaproject.
	L4	The organization discloses project information in this megaproject timely.
	M1	The organization reasonably applies resources and reduces resource waste.
	M2	The organization shows concern for the safety and health of workers.
	M3	The organization's pollution prevention and treatment in this megaproject.
	M4	The ecological environment protection carried out by the organization in this megaproject.
	P1	The employment opportunities created by the organization in this megaproject.
	P2	The organization's development of local public welfare activities in this megaproject.
	P3	The degree of interaction between the organization and your community in this megaproject.
	P4	The organization has promoted public participation in this megaproject.
Coercive pressure ^b	CP1	Government attaches importance to the performance in fulfilling social responsibilities in this megaproject.
	CP2	Government responds quickly to violations of social responsibility reported by the public.
	CP3	Government promotes the concept of social responsibility to your organization through various methods.
	CP4	Industry associations value participants' performance in fulfilling social responsibilities in this megaproject.
Normative pressure ^b	NP1	The consultant proposes the organization to fulfill social responsibilities in this megaproject.
	NP2	The expert team in this megaproject proposes the organization to fulfill its social responsibilities.
	NP3	The media pays attention to and reports organization's performance in fulfilling its social responsibilities in this megaproject.
Mimetic pressure ^b	MP1	Organizations in this megaproject were rewarded or recognized for their good performance of social responsibility.
	MP2	Peer project participants in the industry have expanded their visibility due to their better fulfillment of social responsibilities.
	MP3	Peer project participants with good performance of social responsibility strongly impacts the organization.
	MP4	Peer project participants all attach great importance to social responsibility issues in megaprojects.
Relational behavior ^b	RBS1	The organization strives to work with other participants to solve problems that arise during the construction of the project.
	RBS2	The organization does not mind that other participants owe your organization favors.
	RBS3	The organization is committed to enhancing relationships with other participants.
	RBF1	When unexpected situations occur during the construction of the project, the organization can flexibly manage other participants.
	RBF2	The organization responds flexibly to conflicts between organizations.
	RBF3	The organization can flexibly respond to the change requests of each organization during the construction process.
	RBF4	When unexpected situations occur during the construction of the project, the organization will invite other participants to formulate new agreements.

Table 1. Cont.

Construct	Code	Item
Pure altruistic values ^b	RBI1	The organization will provide other participants with proprietary information, if the information is helpful to other participants.
	RBI2	The organization will promptly inform other participants of events or changes that may affect them.
	RBI3	The organization will not only provide other participants with the project information required by the contract, but also provide additional project information.
	PV1	In this megaproject, the organization believes that actions should be taken to gain public trust and respect.
	PV2	In this megaproject, the organization believes that actions should be taken to help solve social issues and fulfill social responsibilities.
	PV3	In this megaproject, the organization believes that actions should be taken to promote technological progress in the industry.
	PV4	In this megaproject, the organization believes that actions should be taken to increase industry trust and social identity.

^a The scale of the measure is as follows: 1 = very bad; 2 = bad; 3 = neutral; 4 = good; 5 = very good. ^b The scale of the measure is as follows: 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree.

3.2. Sample and Data Collection

The scale of project investment is the most common criterion for judging whether it is a megaproject. Flyvbjerg [2] considered that megaprojects refer to large and complex projects that usually cost over US\$1 billion. However, Hu et al. [86] supported that US\$1 billion is established on the basis of the conditions of developed countries and are not applicable to developing countries. According to the research of Wang et al. [23] and Zheng et al. [27], China's megaprojects can be defined as large-scale infrastructure projects costing over 1 billion RMB and significantly impact social production, economic growth, people's lives, and the natural environment.

The formal questionnaire survey will be conducted in China from September 2020 to November 2020. As China is experiencing the biggest infrastructure investment boom in recent years [87], many megaprojects provide first-hand data for empirical investigations. We selected various megaprojects with different project types to increase the representativeness of the overall sample and provide a broader view of industry practice. We collected 334 responses from 960 respondents, representing a response rate of 34.8%. We only regarded respondents with experience of social responsibility practice in megaprojects as the target respondents. These respondents should also be familiar with laws, regulations, and policies related to social responsibility. After cleaning out the short response time responses or invariant responses in a row, 149 valid responses remained for the analysis. The surveyed megaprojects included 89.3% costing from 1–5 billion RMB and 4.7% costing over 5 billion RMB. The remaining demographic characteristics for these projects and the survey respondents are shown in Table 2.

To improve the quality of the answers, we informed all respondents of the purpose of the study and assured them that their answers to the questionnaire were confidential. After completing the investigation, we gave each respondent who answered effectively a small monetary reward through WeChat. Using Harman's single-factor test, we tested the data for common method bias [88]. The first factor, which was extracted using principal axis factoring without rotation, accounts for only 36.43% of the overall variance. The result satisfied the required threshold ($36.43\% < 50\%$) regarding the ratio of the first factor accounting for the overall variance. Hence, we conclude that common method variance is not a critical issue for our analysis. To test for non-response bias, we compared the first and last waves of respondents on all the variables using Mann–Whitney U Test [89]. The significance level of each variable was over 0.05. Hence, no critical degree of non-response bias exists.

Table 2. Demographics of surveyed projects and respondents.

Category	Attribute	Count	%
Types of respondent firms	Government	2	1.3
	Owner	11	7.4
	Designer	6	4.0
	Contractor	101	67.8
	Supervisor	21	14.1
	Consultant	2	1.3
	Testing company	1	0.7
	Operator	3	2.0
	Supplier	2	1.3
Education	Below bachelor's	62	41.6
	Bachelor's	81	54.4
	Master's	5	3.4
	Ph.D.	1	0.7
Work experience	1–5 years	51	34.2
	5–10 years	42	28.2
	More than 10 years	56	37.6
Project duration	Less than 2 years	37	24.8
	2–3 years	67	45.0
	More than 3 years	45	30.2

3.3. Data Analytic Strategy

This study analyzed the data using Smart PLS 2.0 M3 and PROCESS analysis for SPSS (v.3.3). For the limitation of samples, we adopted partial least squares (PLS) and a component-based structural equation modeling (SEM) technique that was appropriate for small sample size and non-normal datasets to validate the measurements [90]. To test for the hypothesized relationships, we employed contemporary practices of moderation and mediation advocated by Hayes [91]. Traditional approaches for examining mediation and moderated mediation have several conceptual and mathematical limitations [92]. The PROCESS presented in Hayes [91] allows the estimation of mediating and moderating effects using bootstrapping procedures on the basis of generating multiple random samples. We used bias-corrected bootstrapping with 5000 samples to test the significance of the mediating and the moderating effect and produce 95% confidence interval. If the confidence interval does not include zero, then the effect is significant at $p < 0.05$. Bootstrapping procedures make no normality assumption and provide stronger accuracy in confidence intervals [92]. Given non-normal samples, bootstrapping procedures as a method for statistical inference fit well with this study.

4. Research Results

4.1. Evaluation of the Measurement

The adequacy of the measurement model was evaluated with reliability, convergent validity, and discriminant validity.

Reliability was examined using the composite reliability (CR) values. Table 2 shows that all of the values (minimum = 0.774) were above the commonly acceptable threshold, 0.7 [93]. Convergent validity was assessed by two criteria [94]: (1) all indicator loadings should be significant and exceed 0.6 [90]; and (2) the average variance extracted (AVE) by each construct should exceed the variance due to the measurement error for that construct (i.e., AVE should exceed 0.50). As shown in Table 3, all of the items exhibit a loading higher than 0.6 on their respective construct and all of the AVEs ranged from 0.535–0.799, thus satisfying both conditions for convergent validity.

Table 3. Evaluation of Measurement Models.

Construct/Item	Loading	t Value	AVE	CR
Coercive Pressures			0.688	0.898
CP1	0.845	26.618		
CP2	0.777	12.153		
CP3	0.883	35.341		
CP4	0.808	18.911		
Mimetic Pressures			0.603	0.858
MP1	0.732	11.639		
MP2	0.836	26.313		
MP3	0.798	18.391		
MP4	0.735	14.939		
Normative Pressures			0.701	0.875
NP1	0.880	39.290		
NP2	0.870	36.013		
NP3	0.756	14.195		
Relational Behavior			0.751	0.901
RBF			0.675	0.892
RBF1	0.893	38.783		
RBF2	0.854	19.353		
RBF3	0.837	23.015		
RBF4	0.688	12.452		
RBI			0.649	0.847
RBI1	0.867	30.342		
RBI2	0.795	22.593		
RBI3	0.752	12.981		
RBS			0.535	0.774
RBS1	0.668	7.829		
RBS2	0.701	10.647		
RBS3	0.816	24.351		
MSR behavior			0.799	0.941
Economy			0.539	0.854
E1	0.769	16.828		
E2	0.680	12.534		
E3	0.780	22.272		
E4	0.735	18.658		
E5	0.702	12.655		
Law			0.567	0.840
L1	0.797	21.839		
L2	0.759	20.109		
L3	0.711	13.572		
L4	0.743	12.008		
Moral			0.656	0.884
M1	0.808	25.813		
M2	0.788	17.131		
M3	0.811	23.157		
M4	0.832	23.613		
Politics			0.585	0.849
P1	0.720	13.219		
P2	0.760	15.439		
P3	0.742	15.808		
P4	0.832	31.845		
Pure Altruistic Values			0.674	0.892
PV1	0.821	17.412		
PV2	0.772	12.328		
PV3	0.847	22.630		
PV4	0.841	23.308		

Note: RBS = solidarity in relational behavior; RBF = flexibility in relational behavior; RBI = information exchange in relational behavior.

As suggested by Chiu et al. [95], discriminant validity was verified on the basis of three criteria: (1) factor loadings of all items for a construct should exceed cross factor loadings [96]; (2) all of the correlations among the constructs should be below the 0.85 threshold; and (3) the correlations between a construct and other constructs in the model should be lower than the square root of the AVE for the construct [94]. As shown in Table 4, the square root of AVE for each construct in the diagonal is greater than its highest off-diagonal correlation with any other construct and all of the correlations that ranged from 0.435–0.813 are below the 0.85 threshold. Each item is loaded onto a construct that is higher than any of its cross loadings with other constructs (see Supplemental Materials).

Table 4. Correlations of Latent Variables and Evidence of Discriminant Validity.

	1	2	3	4	5	6
1. Coercive Pressures	0.829					
2. Mimetic Pressures	0.752	0.777				
3. Normative Pressures	0.813	0.720	0.837			
4. MSR Behavior	0.593	0.597	0.598	0.894		
5. Relational Behavior	0.568	0.569	0.615	0.531	0.867	
6. Pure Altruistic Values	0.595	0.572	0.563	0.435	0.661	0.821

Note: The number in bold represents the square root of AVE.

Regarding the second-order construct, the relational behavior has strong relationships with its first-order constructs—solidarity (0.856), flexibility (0.906), and information sharing (0.836). Additionally, the MSR behavior has strong relationships with its first-order constructs—economy (0.935), law (0.866), moral (0.917), and politics (0.855). Hence, all first-order constructs are sufficiently highly correlated for their second-order constructs.

4.2. Hypothesis Testing

To investigate H1–H4, the bootstrapping method with an SPSS application (PROCESS, Model 4) provided by Preacher and Hayes [97] was used. As can be seen in Table 5 and Figure 2, the results indicate, as expected, a positive relationship between mimetic pressures and MSR behavior ($\beta = 0.22$, $p < 0.05$). Therefore, H2 is supported. An insignificant relationship between coercive pressures and MSR behavior exists ($p > 0.05$). In addition, normative pressures are insignificantly related to MSR behavior ($p > 0.05$). Hence, H1 and H3 are unsupported.

Table 5. Summary of Model 4.

Path Coefficient										
RB						MSR Behavior				
Variable	β	Boot SE	t	Bootstrap 95%CI		β	Boot SE	t	Bootstrap 95%CI	
				LLCI	ULCI				LLCI	ULCI
CP	0.092	0.148	0.763	−0.214	0.375	0.18	0.096	1.568	−0.067	0.311
MP	0.184	0.111	1.777	−0.04	0.399	0.22	0.085	2.191 *	0.007	0.345
NP	0.392	0.118	3.382 **	0.182	0.641	0.171	0.083	1.482	−0.021	0.304
RB						0.198	0.063	2.49 *	0.019	0.264
R ²			0.385					0.44		
F (df)			30.223(3, 145) ***					28.277(4, 144) ***		
Indirect effect of Predictor on MSR behavior through relational behavior										
Predictor	Bootstrapped indirect effect			Boot SE		Boot LLCI		Boot ULCI		
CP	0.018			0.033		−0.044		0.093		
MP	0.037			0.024		−0.009		0.085		
NP	0.078			0.041		0.007		0.167		

Note: Standardized regression coefficients are reported. CP = coercive pressures; MP = mimetic pressures; NP = normative pressures. LLCI = lower limit in 95% confidence interval; ULCI = upper limit in 95% confidence interval. Bootstrap sample size = 5000; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (2-tailed).

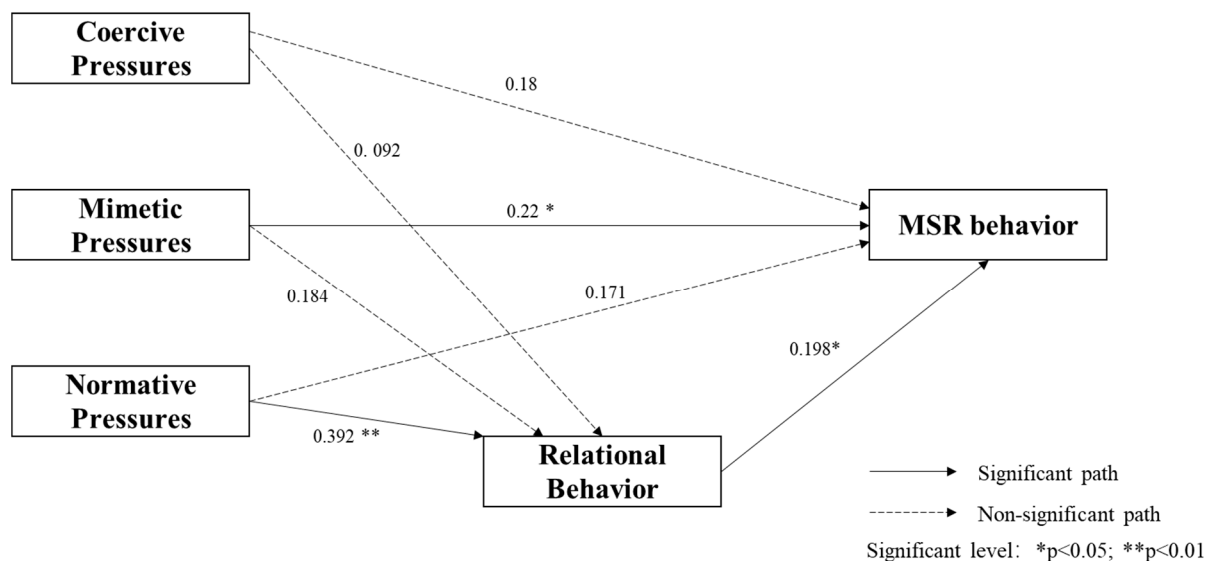


Figure 2. Theoretical model of institutional pressure on MSR behavior with relational behavior.

The mediation test for relational behavior was performed. The indirect effect is significant if no zero is included in the 95% confidence interval (CI). The lower part of Table 5 shows that the indirect effect of normative pressure on MSR behavior through relational behavior (H4c: $\beta = 0.078$) based on 5000 bootstrap samples is estimated to lie between 0.007–0.167 with 95% confidence interval. Similarly, the bias-corrected bootstrap confidence interval for the indirect effects of coercive pressure and mimetic pressure both include zero. Hence, H4c is supported, but H4a and H4b are not supported.

Next, H5 was tested for whether pure altruistic values interact with three kinds of institutional pressures in predicting MSR behavior, by entering the interaction terms of pure altruistic values with each institutional pressure respectively. Thereby, to test the moderation effects (H5), the PROCESS (Model 5) was performed. As shown in Table 6, pure altruistic values have a positively moderating effect on the relationship between MSR behavior and three kinds of institutional pressures, including coercive (Unstand.coeff. = 0.187, $p < 0.001$), mimetic (Unstand.coeff. = 0.191, $p < 0.01$), and normative pressures (Unstand.coeff. = 0.182, $p < 0.01$). Therefore, H5a, H5b, and H5c are supported. The outcomes of the moderating effect between MSR behavior and institutional pressures on pure altruistic values are presented in Figure 3.

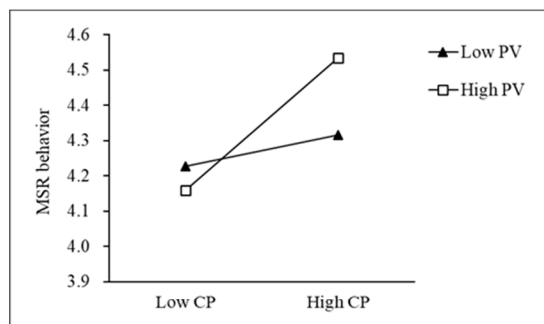
Table 6. Results of Moderation Analyses.

	Unstand.coeff.	se	t	LLCI	ULCI	ΔR^2
CP*PV	0.187	0.047	4.007 ***	0.095	0.279	0.057 ***
MP*PV	0.191	0.057	3.373 **	0.079	0.303	0.041 **
NP*PV	0.182	0.054	3.393 **	0.076	0.289	0.042 **

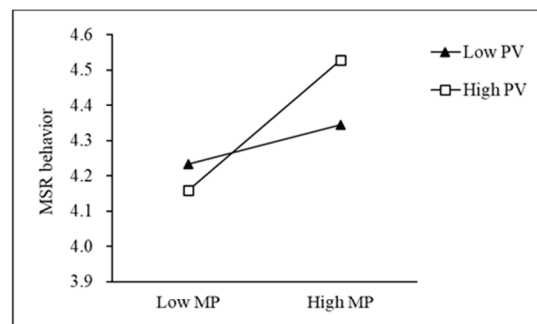
Note: Unstand.coeff. = unstandardized coefficient; PV = pure altruistic values; ** $p < 0.01$, *** $p < 0.001$.

To further explore the moderating effect, we investigated the direct effect of the three kinds of institutional pressures on MSR behavior at three values of pure altruistic values, i.e., at the low-, at the mean-, and at the high-level PV. The impact of coercive pressures on MSR behavior is significant in the high-and mean-PV groups and was stronger in the high-PV group (see Table 7). In low-level PV, the direct impact of coercive pressures was insignificant. The impact of mimetic pressures on MSR behavior was significant in the high-and mean-level PV groups and was stronger in the high-level PV group (see Table 7). In the low-level PV, the direct impact of mimetic pressures was insignificant. The impact of

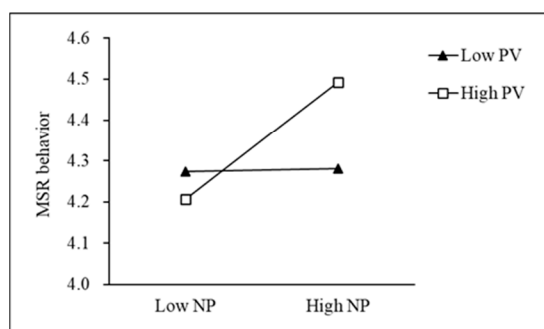
normative pressures on MSR behavior was significant in high-level PV groups and was stronger in the high-PV group (see Table 7). In low- and mean-level PV, the direct impact of normative pressures was insignificant.



Plot1: CP → MSR behavior



Plot2: MP → MSR behavior



Plot3: NP → MSR behavior

Figure 3. Moderating effect of PV on the relationship between institutional pressures and MSR behavior.

Table 7. Effects of institutional pressures on MSR behavior at different levels of pure altruistic values.

Institutional Pressures	Level	Effect	SE	t
CP	low PV	0.065	0.084	0.774
	mean PV	0.182	0.082	2.213 *
	high PV	0.274	0.088	3.104 **
MP	low PV	0.091	0.086	1.061
	mean PV	0.211	0.082	2.592 *
	high PV	0.305	0.088	3.453 **
NP	low PV	0.005	0.089	0.051
	mean PV	0.119	0.081	1.461
	high PV	0.209	0.085	2.451 *

Note: * $p < 0.05$, ** $p < 0.01$, (2-tailed).

5. Discussions

Different types of institutional pressure affect MSR behavior distinctly. Coercive pressure does not significantly affect MSR behavior, which differs from expected results. However, this result is similar to the result that coercive pressure has no significant impact on organizational citizenship behaviors for the environment in megaprojects [23]. One possible explanation is that because megaprojects are often led by the government, and mandatory pressure is often related to government supervision, which makes the government play the role of an athlete and a referee. This situation is likely to reduce the impact of coercive pressure on MSR behavior.

Mimetic pressure can facilitate MSR behavior, and its path coefficient is 0.22. Compared with general projects, replicating previous experiences of megaprojects is difficult due to their uniqueness and one-off nature [98], and megaprojects are characterized by huge risks and complexity [99]. Thus, imitating other organizations with good practice on MSR can help a company manage the complex environment in megaprojects more easily. Mimetic pressure formed by conducting oneself in an exemplary way is important, because the phenomenon wherein managers only have verbal promises but no substantive actions often occur [100]. Normative pressure significantly affects MSR behavior, which also differs from expected results. The reason may be that normative pressure involves social cognition of behavior, and social norms alone are not enough to affect MSR behavior. Therefore, the influence of normative pressure on MSR behavior must be further examined through relational behavior.

The results confirm part of the mediating role of relational behavior. Although megaprojects are temporary organizations, the influence of the relationship between participating parties cannot be ignored. The results show that normative pressure significantly and positively impacts MSR behavior through relational behavior. This finding provides a certain explanation for how institutional pressure spreads in the organization. This may be because the normative pressure is caused by related organizations (for example, industry associations and consulting companies) that will conduct publicity and education through formal education and professional networks to gradually develop a common view on things [101]. Moreover, relational behavior includes the dimensions of information sharing, and relational behavior can improve relationship quality [27]. With the relational behavior among members of the organization, normative pressure is diffused in the process of member interaction.

This study validated the moderating effect of pure altruistic values. The results indicate that at the high altruistic values, the three types of institutional pressure significantly affect MSR behavior. The degree of influence in descending order is mimetic, coercive, and normative pressures. The moderating effect may be because for a strong altruistic practitioner, taking MSR behavior is consistent with his/her personal values and can meet his/her own identity needs. Therefore, any external pressure can facilitate it to conduct MSR behavior.

5.1. Theoretical Contributions

First, this study expands existing MSR research and promotes the ongoing research on institutional pressures and values as driving factors. Although previous research uncovered that institutional pressure is an important factor in MSR behavior [24], it failed to explore the impact of different types of institutional pressure on MSR behavior. The empirical results unveil that mimetic pressure positively affects MSR behavior, whereas coercive and normative pressures do not significantly affect MSR behavior. Therefore, this study provides new insights into the antecedents of MSR behavior, which are related to decision makers concerning MSR behavior. Regarding values, a value–action gap in socially responsible behavior (e.g., waste recycling, environmental action [102]) was found. A possible reason for a gap is that it does not consider the constraints of culture, institution, and structure on people's actions [103]. The fact that values cannot directly affect behavior has also appeared in this study (see Table 5); however, this study uses pure altruistic values as a moderating item for further research. The results unveil that altruistic values can positively moderate the impact of the three types of institutional pressures on MSR behavior. Therefore, this study provides new insights into the value–action gap problem. Second, this research fills in the research gap by integrating the altruistic values of managers and relational behaviors into the model of the influence of external institutional pressures on MSR behavior to achieve the research goals. The introduction of relational behavior is to explain the mechanism of how institutional pressure affects MSR behavior. The results indicate that relational behavior mediates mimetic pressure and MSR behavior. The result of the moderating effect reveals the influence of the interaction of managers' altruistic

values and institutional pressure on MSR behavior. The results uncover that MSR behavior is affected by internal and external factors. The synergy between internal and external factors can better promote MSR behavior.

5.2. Practical Implications

These findings provide project managers and decision makers with practical advice on motivating MSR behavior and governance. The results reveal that pure altruistic values can positively moderate the impact of the three institutional pressures on MSR behavior and promote the fulfillment of MSR behavior, which would promote the sustainable delivery in megaprojects. For the internal and external factors to coincide, an effective MSR behavior governance strategy must be designed and established. First, practitioners should be trained to have a sense of mission and pride in participating in megaprojects from a historical perspective to improve their altruistic values level, thereby promoting the implementation of MSR behavior. For example, to create sublime sustainability and brand it [104], and take advantage of the special symbolism of megaprojects to build an altruistic organizational culture [29]. Second, policymakers should formulate effective institutional arrangements or policies to increase various institutional pressures. For example, timely and continuous project information disclosure [17], and organizing regular communication activities with peer projects [23]. Third, different stakeholders should be encouraged to strengthen cooperation, and participating parties should seek to establish a blameless and win-win culture [105], promoting the relational behavior.

6. Conclusions

This paper is an exploratory study in the field of MSR. Public incidents caused by the lack of social responsibility in megaprojects exert a heavy negative impact on the local community and the natural environment [10]. Therefore, MSR behavior must be studied to achieve the sustainable delivery of megaprojects. In megaprojects, institutional pressure is an important factor affecting MSR behavior [24]. However, how institutional pressure affects MSR behavior in megaproject environments remains unclear. Thus, this study established a model on the basis of institutional theory to test five hypotheses with institutional pressures as predictors, relational behaviors as mediator, altruistic values as moderator, and MSR behavior as the outcome. Then, we collected a sample of 149 megaprojects participants in China and analyzed them using PLS-SEM and PROCESS.

The results reveal that MSR behavior is driven by mimetic pressure and relational behavior, while relational behavior only mediates normative pressure. Coercive and mimetic pressures do not significantly impact MSR behavior through relational behavior. Second, coercive and normative pressures will not directly affect MSR behavior. In addition, the moderating role of altruistic values is particularly important. Altruistic values can actively moderate the relationship between the three types of institutional pressures and MSR behavior, especially at the high level of altruistic values. These findings provide a theoretical contribution to previous studies and managerial implications.

This study has two limitations that must be resolved in future work. The first is to use a cross-sectional survey method. The survey ignores the dynamics of MSR behavior during the entire megaproject life cycle. During this period, the types and importance of social responsibility issues concerned by various stakeholders are changing. The behavioral goals of MSR will also alter accordingly. Future research should consider longitudinal analysis to understand how MSR behavior evolves over time. Second, this study only collected data from megaprojects in China. Given the differences in regional economic development and cultural backgrounds, different countries and regions deal with social responsibility issues distinctly. Therefore, the sampling method may also affect the robustness of the survey results, and future research must verify the robustness.

Supplementary Materials: The following are available online at <https://www.mdpi.com/article/10.3390/buildings11040140/s1>. The file, titled “Cross loading,” is the result of comparison between items’ factor loading and cross loading.

Author Contributions: Resources, L.X.; data curation and formal analysis, T.J.; writing—original draft, T.J.; writing—review and editing, L.X. and B.X.; project administration, L.X. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the National Natural Science Foundation of China, grant number 71871096.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Acknowledgments: The authors wish to express gratitude to the National Natural Science Foundation of China (Grant No. 71871096) for financial support on this research.

Conflicts of Interest: The authors declare no conflict of interest.

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