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In Search of Network Sustainability: A Multi-Level Perspective on the Paradox of Cooperation and Competition in Networks

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Received: 27 May 2018; Accepted: 9 July 2018; Published: 13 July 2018



Abstract: Although all types of public collaborative networks are aimed towards taking joint actions, relations between partner organizations are not always so explicit. Referring to the dialectic approach, it may be concluded that a number of tensions are identifiable in networks, among them tension between cooperation and competition. Understanding the tensions that exist in inter-organizational networks is vital for a proper comprehension of networks, as continuous efforts to meet multiple, divergent demands should bring about long-term sustainability. To examine the phenomena of cooperation and competition in interorganizational networks, a quantitative study on local partnerships among Social Welfare Centers and other public institutions and non-profit institutions was conducted. Using a multi-level perspective, the research introduces orientation towards both cooperation and competition at different levels of analysis and examines the tensions between them. The results of this research show that there is a mutual influence of orientation towards competition/cooperation, both at the individual level and the network level, and that there is a mutual influence of the reconciliation of the contradictions between orientation towards cooperation and orientation towards competition both at the individual level and the network level.

Keywords: public collaborative networks; multilevel research; trust; cooperation; competition; paradoxes

1. Introduction

In recent years, the tendency to turn away from the positivist, individualist, or atomistic explanation of paradigms—and move towards a relational, contextual and systemic understanding—has evoked increasing interest in the network paradigm [1]. Over the last two decades, the network metaphor has become influential in research on interorganizational relationships [2]. Although the role of management science is to support management practice, one may get the impression that, in the case of networks, practice has been significantly ahead of theory.

The subject of interest of public management is public networks, i.e., those networks composed of organizations from various sectors whose aim is to undertake activities aimed at achieving public benefits [3]. Among others, collaborative networks, which are “collections of government agencies, nonprofits, and for-profits that work together to provide a public good, service, or value” may be distinguished [4]. These networks usually go beyond one sector, take into account many levels of management and relate to a specific policy area or a specific problem [5]. Public management literature indicates the possibility of its application in areas such as health care [6,7], crisis management, environmental protection [8], education [9,10] and social services [11]. I define these networks as a group of three or more public, social or commercial organizations that are interdependent, make decisions about joint operations based on the equal rights of partners, assuming the network facilitates interaction between partners and the exchange of resources, which allows them to act in the public interest, and call them public collaborative networks.

Although all types of public collaborative networks are aimed towards cooperation, relations between partner organizations may not always be so explicit. Firstly, the evidence from watchdog reports on the Australian and New Zealand public sector confirms that cooperation remains highly problematic for public organizations [12]. In addition, their potential partners from different sectors may find obstacles to cooperation. As the results of research undertaken by Getha-Taylor show, both private and non-profit managers indicated that “some of their partnership experiences left them with the impression that public organizations (and their employees) can be unyielding (“inflexible”, “rule-bound”), untrusting (“secretive”, “watchdogs”), and unmotivated (“afraid to make mistakes”, “not results-oriented”)” [13]. Secondly, research results indicate that networks may be composed of organizations that are existing competitors. Cooperation between organizations may be developed despite perceived competition between them, although of course collaborative perception appears to be a reinforcing mechanism to forge network relationships among potential partners [14]. Therefore, the nature of the relationship between the partners is complex: relationships may vary from cooperative, characterized by mutual trust, towards competitive, where distrust is manifested. Understanding the abovementioned tensions is vital for a proper comprehension of networks [15,16].

Our knowledge on the phenomenon of cooperation and competition in all types of networks, including those operating in the private sector, is limited due to the research projects that have been adopted to date in previous research. Giving only part of Raab and Milward’s reasoning, (1) a limited amount of research has discovered interorganizational and interpersonal factors, even though there is evidence that individuals often matter in these networks as leaders and facilitators, and (2) the number of empirical studies on whole networks, understood as groups of three or more autonomous but interdependent organizations, is still relatively small [17]. In particular, focus on the individual level in explaining interorganizational cooperation is rare [14]. The state of knowledge is all the more bounded when it comes to public networks. This paper addresses the abovementioned limitations. As using a multi-level perspective reveals the richness of social behavior, draws our attention to the context and shows the multiple consequences of behavior [18], this paper conceptualizes the specificity of cooperation and competition in public networks as orientation towards both cooperation and competition that occur at different levels of analysis.

The rest of the paper is structured as follows: First, I present a discussion of the underlying theoretical assumptions about cooperation and competition in the context of trust, the multi-level character of cooperation and competition and the paradox of cooperation and competition. Second, the methodology of research is discussed and multi-level models presenting the discussed relationships are presented. After presenting the results of the study, I interpret the empirical results in accordance with the reasoning in the theoretical framework. The paper closes with a discussion of the study’s conclusions, limitations and implications for future research.

2. Theoretical Background

2.1. Cooperation and Competition in the Context of Trust

Cooperation in the public sector is widely understood as “any joint activity by two or more agencies that is intended to increase public value by their working together rather than separately” [19]. Cooperation involves common standards and mutually beneficial contacts [20] and is aimed at achieving common goals, achieved through sharing resources and the involvement of partners [21]. If the issue of cooperation in relation to public organizations seems obvious, the issue of competition is no longer the case. Competition exists when organizations seek out the same limited resources or target the same markets or customers [22]. From an economic perspective, competition is an instrument to achieve gains in allocative and productive efficiency. It is also seen as an important force to increase capacities to combat financial problems or issues of inefficiency, and for the creation of opportunities in the public sector. Although the expectations towards competition as a mode of governance are still rising, there is no general concept of competition for the public sector, but rather different models of

competition [23]. Following the social interdependence theory [24] and the definition of intergroup competition [25], interorganizational competition may be defined as a situation in which the goals of different organizations are linked in such a way that the achievement of goals by any one organization reduces the ability of other groups to reach their respective goals. If there is no doubt about cooperation in networks, understanding competition may pose certain problems. The presented reasoning indicates that although there are actually situations in which networks are created by competitors, as is typical of strategic alliances, in the case of public networks created by various types of public, social, and even commercial institutions, the phenomenon of competition in inter-organizational networks refers rather to challenges in cooperation resulting from the simultaneous need to maintain autonomy while taking collective actions.

Examining collaboration and competition that coexist in networks is linked to the phenomenon of trust. Although it would seem that networks created to achieve public goals should be characterized by a high level of trust, “collaborative networks are considered to be networks because of their network structure, and not by definition networks that are illustrations of the network governance mode in which trust is a defining characteristic” [26]. Building and sustaining trust is complicated by a host of issues, including potential competition among partners [27]. Research on policy networks in New York State [28] provides some evidence on the sources of distrust between partners. These may be a different worldview of problems that the partnership deals with, incongruent goals in terms of the joint actions taken, policy communication or knowledge exchange. Interorganizational relationships may be characterized by a recurring dilemma: the partners involved are expected to be transparent and explicit regarding their intentions, while at the same time being open to opportunities. Partners may look for the possibility of achieving organizational goals themselves and maintain a certain degree of autonomy towards partners. In the struggle to balance these opposing demands, trust is used by trustees to promise both explicitness and opportunity [29].

The existence of reciprocal relationships based on trust is a necessary condition for the existence of all types of networks [30]. Interorganizational trust is considered to be functional in public administration, serving as a *sine qua non* condition for cooperation and making it effective. Therefore, trust is very important for the achievement of goals and satisfactory network performance [31,32]. However, Oomsels and Bouckaert claim that the same argument can be made for interorganizational distrust [33]. While trust is often defined as one party’s optimistic expectations of the behavior of a second party under conditions of personal vulnerability and dependence [34], distrust is the opposite of trust: it is one party’s negative perceptions of another party’s conduct while in a working relationship [35]. Yet Lewicki et al. [36] propose a different approach. They claim that trust is a belief in, a propensity to attribute virtuous intentions to, and a willingness to act on the basis of another’s words, actions, and decisions; and distrust is a fear of, a propensity to attribute sinister intentions to, and a desire to protect oneself from the effects of another’s words, actions, and decisions. Thus, trust and a lack of trust are not opposite ends of a single continuum. It is possible for parties to both trust and distrust one another, given different experiences concerning the complex nature of relationships.

To sum up, both trust and distrust may bring positive and/or negative effects. Functional distrust inspires atomization, regulation, and behavioral control, which protect actors against any possible abuse of their vulnerability, which arguably results in predictable (but high) transaction costs and predictable (but low) gains. It allows for the maintenance of a critical perspective in cooperation, the identification of conflicting objectives in cooperation, and enables constructive criticism and innovation [33]. On the other hand, too much trust may lead to a vehement defense of inefficient, ineffective, or even downright counterproductive interorganizational cooperation [37]. As Granovetter [38] observed, too much trust allows for lawlessness, non-accountability, and corruption. Trust can “bind and blind” [39], providing ample opportunity for abuse.

Although an increasing interest in trust may be noticed, the concepts of trust and networks are still not fully clear and less straightforward than they seem [26]. In this paper I propose to expand the

comprehension of trust, discussing cooperation and competition in networks where cooperation is an emanation of trust and competition is a sign of distrust between partners [28,40].

2.2. Cooperation and Competition from a Multi-Level Perspective

The importance of combining multiple levels of analysis in the study of organizational phenomena has been increasingly emphasized in the literature [18,41,42]. A multi-level approach involves considering phenomena in relation to the context in which they occur, and searching for the variables by which they are formed. Particular organizational units are nested in larger structures [43]. These units form working groups, which in turn form larger organizational units (departments, or strategic business units making up an organization). Next, all of these may become part of inter-organizational networks. According to the multi-level approach, the study of constructs at the level of an organization or a network should start with an understanding of the individual level [44].

The multi-level phenomenon of individual and collective actions may serve as a background for a hypothesis on the interdependence of different levels of cooperation and competition in the context of interorganizational networks. The manifestation of individual actions (individualism) or collective actions (collectivism) at the individual level in psychological terms are called idiocentrism and allocentrism respectively. Idiocentrism is characterized by independence, uniqueness, and self-reliance, whereas allocentrism may be described in terms of interdependence, a sense of belonging to the group. At the level of an organization, individualism means, among other things, encouraging employees to achieve their potential and appreciating individual accomplishments, as well as accepting competition between employees. Individualism and collectivism have traditionally been seen as opposite ends of a continuum, but new research shows that they are independent dimensions. Individualism at the individual level affects individualism at the level of an organization. The same relationship was revealed for collectivism [45].

Bedwell et al. [46] point out that cooperation does not have to be considered on one level of analysis, but can occur between levels. Their definition of cooperation as “an evolving process whereby two or more social entities actively and reciprocally engage in joint activities aimed at achieving at least one shared goal” ([46], p. 130) may serve as a starting point for understanding cooperation in a multi-level approach. Competition “arises whenever two or more parties strive for something that all cannot obtain” ([47], p. 531). It may occur between entities on different levels of analysis: individuals, groups or organizations [47].

The phenomena of cooperation and competition are thus visible at different levels of analysis. Concerning inter-organizational networks, the whole network level, the level of organizations, and the level of individuals may all be distinguished. I propose to consider the multi-level nature of cooperation and competition in inter-organizational public networks that provide public goods, services, or values, adopting the lens of orientation towards cooperation and competition. Orientation might be described as an inclination, the adoption of a point of reference; it is a coherent set of interrelated activities and processes. It consists of philosophies that determine the character and direction of the activities and plans, and of the adoption of a different perception of priorities regarding how the organization defines its business. Therefore, it constitutes the basis of a decision-making model adopted in an organization [48]. I define orientation towards cooperation as a coherent set of activities and processes that occur in inter-organizational networks, and refer to the phenomenon of cooperation with other network partners. By contrast, orientation towards competition is a coherent set of activities and processes that occur in inter-organizational networks, and refers to the phenomenon of competition with other network partners. These definitions will be elaborated upon later in this work.

I suggest considering both concepts at the individual, organizational, and network levels. Here I wish to emphasize that my intention was not to create isomorphic constructs; starting from the network level, I was searching for variables at other levels, which would facilitate capturing the broader context of the phenomenon of orientation towards cooperation/competition and their potential relationships. At the level of entire networks, I focus on network level strategy, i.e., strategy that an organization

develops together with other organizations. As was mentioned, organizations can cooperate or compete. Cooperation enables partners to share strengths, to create stability in their interaction and to minimize risk. Thus, an organization is embedded in a network of relationships, to maximize the benefits. In accordance with the concept of separate organizations, each organization is perceived as isolated from its environment, with visibly defined boundaries that delineate its borders. A competitive situation is regarded as atomistic, which means that each company focuses on its own goals, which leads to rivalry and conflicts with other organizations. It is consistent with neoclassical economic theory, according to which individuals and organizations created by them are primarily guided by self-interest, because rivalry is a natural tendency. Thus, an organization is seen as an independent, discrete entity [49].

The level of strategy is linked with the individual level. The strategic actions reflect the experiences of managers [50,51]. Since the initial emergence of behavioral theory of organizations, researchers have been using theories of psychology to explain phenomena such as competition or cooperation between organizations. Social interdependence theory states that people's beliefs about how their goals are related determine the way in which they interact, which in turn affects their performance and group cohesiveness [29]. Subsequently, social comparison theory laid the groundwork for the articulation of the concept of "aspiration levels" that exist among organizations [52] which predicts organizational strategy and development. Inclinations, perceptions, and individual motivation are able to affect the results of an organization's operation [53]. Decision-makers, while making strategic decisions, are guided by "mental patterns", which are the result of their experience. Cognitive maps, which may be operationalized as strategic perspectives [54], influence strategic behavior and shape strategy [55,56]. There is also a reverse relationship: the activities and results of an organization shape cognitive maps [57,58]. Therefore, strategy is the result of strategic perspectives adopted by managers. According to the basis of the multi-level approach, the opposite is also true: organizations influence individuals. For example, the structure of an organization determines the flow of information, thus influencing the process of managers' decision-making. Structural aspects of hierarchical systems establish the distribution of power in an organization by stimulating the use of power [43]. The past repertoire of actions which organizations have taken shapes managerial responses to market signals in such a way that active repertoires encourage managers to increase the scope of market-oriented activities [59,60].

In the aforementioned considerations, it was assumed that orientation towards cooperation/competition at the individual level and at the network level are interlinked. I also propose that orientation towards cooperation/competition at the organizational level moderates this relationship. This orientation is manifested in the form of organizational culture, which can promote cooperation or competition. It is claimed that organizational culture impacts strategy [61]. Bates et al. [62] even claim that strategy and culture are essentially synonymous. Organizational culture also shapes the perceptions of organizational members [63] and their cooperative behaviors [64]. Moreover, organizational culture affects the relationship between values expressed by managers and an organization's performance and may strengthen the relationship between cooperative or individualistic orientation and the actions of individual cooperative behaviors and preferences for certain types of organizational practices [65].

Hence the assumption about the moderating character of organizational culture, because in the cases studied, networks include individuals or groups of individuals who are members of organizations, and not entire organizations. In interorganizational networks, each partner's organizational culture may affect the interaction between organizations [66].

The aforementioned reasoning enables the introduction of the following hypotheses:

H1a. *Orientation towards cooperation at the individual level influences orientation towards cooperation at the network level.*

H1b. *Orientation towards cooperation at the network level influences orientation towards cooperation at the individual level.*

H1c. *Orientation towards cooperation at the organizational level moderates the influence of orientation towards cooperation at the individual level on orientation towards cooperation at the network level.*

H1d. *Orientation towards cooperation at the organizational level moderates the influence of orientation towards cooperation at the network level on orientation towards cooperation at the individual level.*

H2a. *Orientation towards competition at the individual level influences orientation towards competition at the network level.*

H2b. *Orientation towards competition at the network level influences orientation towards competition at the individual level.*

H2c. *Orientation towards competition at the organizational level moderates the influence of orientation towards competition at the individual level on orientation towards competition at the network level.*

H2d. *Orientation towards competition at the organizational level moderates the influence of orientation towards competition at the network level on orientation towards competition at the individual level.*

2.3. Cooperation and Competition In Networks—The Dialectical Perspective

Probably in all types of public networks partners may face the “intrinsic tension between self-interest—achieving individual organizational missions and maintaining an identity that is distinct from the collaborative—and a collective interest—achieving cooperation goals and maintaining accountability to collaborative partners and their stakeholders” ([20], p. 26). Additionally, collaborative networks face many interconnected challenges, including goal conflicts, different priorities and values of partners, highly varied stakeholder demands, incompatible organizational cultures, and competition for scarce resources [67,68].

Thus, the nature of relationships between partners may be complex. On the one hand, interorganizational cooperation is viewed by many as a process of giving up organizational autonomy; yet organizations still need to achieve its own objectives. Partners also want to maintain their own distinct identities and organizational authority separate from the collaborative effort. Despite the individual interests of each organization, they are able to cooperate with each other owing to the shared values of their representatives who act jointly within the network. Normative behavioral patterns are complemented by the moral basis of social contracts, which cause units to be guided not only by pragmatism, but also by certain moral principles. Developing standards related to cooperation stabilizes the functioning of interdependent systems of organizations. This does not mean that the desire to preserve autonomy or to pursue an organization’s own interests is eliminated, or that there are no conflicts between organizations, but rather that common standards facilitate the adjustment of individual interests [69]. Consequently, organizations must balance the dualism of agency and collective concerns. When cooperation threatens organizational independence, organizations would be less willing to continue relationships [31].

Referring to the dialectical approach, and rich literature on strategic alliances, it might be suggested that network operation is associated with the occurrence of many paradoxical tensions. These tensions may be understood as “contradictory yet interrelated elements experienced by organizational actors” [70], such as contradictory demands, goals, interests, and perspectives [71]. The literature on paradoxes describes the prevalence of tensions and suggests ways of dealing with tension [72]. Numerous studies apply paradoxes to delineate tensions across diverse contexts and levels

of analysis. At a macro level, paradoxes in inter-firm relationships, such as collaboration-competition tensions, are recognized [73].

Therefore, collaborative contexts are inherently paradoxical, containing persistent contradiction between interdependent elements. For this reason, the paradox perspective has been applied to more adequately represent the complex nature of collaboration and the tensions embedded therein [68]. Paradox theory deepens understandings of the varied nature, dynamics, and outcomes of organizational tensions. In organizational research, the use of paradoxes has often focused on resolving, removing or omitting their existence [72]. Yet the collision of coexisting yet contradictory social forces may produce a new order. Such synthesis seeks a method that will make it possible to reconcile opposing views [74]. Tensions should not be perceived as problems or difficulties, but should rather be viewed and used as opportunities, facilitations, and enhancements. According to Smith and Lewis, although choosing from among competing tensions might provide a boost to short-term performance, only continuous efforts to meet multiple, divergent demands may bring about the long-term sustainability of the network [70]. One of the key aspects of sustainable relationships refers, among others, to the lifespan of cooperation, i.e., the willingness to continue actions with partners (even if the particular project has been finished). Cooperation undertaken in such circumstances leads to the further development of the partnership, boosts trust and eliminates barriers to cooperation between partners [75]. Long-term relationships have advantages regarding the sustainable competitiveness of partner organizations. For this reason, managers should consciously coordinate their inter-organizational exchange relationships towards a long-term orientation based on reciprocity [76]. Yet tensions can also be helpful by increasing alertness and mindfulness and by questioning existing routines [77]. According to the above, networks experience instability not when one of the extremes (in this case: cooperation/competition) is realized, but when one of the poles representing the individual dialectic tensions dominates the other [78]. Cooperation becomes risky for the partners if the exchange relationship involves forgoing one's own short-term profits in order to realize long-term gains together with a cooperation partner [79]. Thus, for the sustainability of the partnership understood in terms of its durability, the reconciliation of contradictions seems to be crucial.

While reviewing the literature in the field of paradoxes that exist in organizations, Smith and Lewis [70] claim that such paradoxes may occur between different levels of analysis: of an individual, of a group, of a project, of a dyad and of an organization. Moreover, the same paradoxes may occur simultaneously at all levels. The authors quote the case of tension between learning and performance, which takes place at the levels of an individual, a group, and an organization. In addition, tensions may cascade from one level to another, and experiences on one level may create challenges on another one. In addition, Fernandez et al. [80] emphasize the multi-level nature of tensions in co-opetition in their discussion. Apart from the inter-organizational level, they discern intra-organizational and inter-individual levels, and propose that resource limitations may influence the priority given to activities undertaken by partners, and that employees may face tension when a current competitor becomes a partner or when a current partner becomes a competitor. Besides, individuals experience conflicting emotions, beliefs and identities within co-opetition.

Concluding the analogy, another two hypotheses were put forward. If cooperation and competition are multi-level phenomena in which one level determines the other, and if tensions between them may occur at different levels of analysis, the reconciliation of contradictions on one of the levels should affect the reconciliation of contradictions on another level.

H3a. *Reconciling the contradictions between orientation towards cooperation and orientation towards competition at the individual level influences the reconciliation of the contradictions between orientation towards cooperation and orientation towards competition at the network level.*

H3b. *Reconciling the contradictions between orientation towards cooperation and orientation towards competition at the network level influences the reconciliation of the contradictions between orientation towards cooperation and orientation towards competition at the individual level.*

3. Research Method

3.1. Sample

In order to test the presented hypotheses, a survey was conducted among the members of inter-organizational networks, aimed at solving important social problems. The area of operation of these networks is connected with the implementation of social services of general interest, which underlie human dignity and guarantee everyone the right to social justice. I was interested in these partnerships including Social Welfare Centers which are public institutions that may undertake formal or informal actions with other public or non-profit organizations. The area of operation of these networks is connected with the implementation of social services of general interest, which underlie human dignity and guarantee everyone the right to social justice. Their operation often relates to minimizing the negative effects of redistribution, which leads to injustices and promotes social arrangements that permit members of society to interact with each other. Thus, the operation of partnerships contributes to strengthening social sustainability [81].

It is often difficult to notice these types of partnerships, as they may not even have individually separated office space in which to function. The local partnerships operating in Poland are not as formal as in other European Union countries. Often, partnerships are concluded to implement individual EU projects. Although cooperation between organizations from three sectors is not excluded, partnerships are most often established between public and non-governmental organizations. Usually they also consist of a few partners only, and less frequently may comprise a dozen or so.

Due to the fact that there is no list or database on such local partnerships, the first step was to identify them. For this purpose, inquiries were sent to all social assistance centers operating throughout the country, with the question pertaining to participating in this form of organized activity. 152 partnerships have been identified, of which 45 refused to participate in the research, while in 30 cases the partnership consisted of only two organizations. In order to increase the reliability of the results and to prevent common-method bias, the survey was carried out based on responses from three partners in each partnership. Each of them assessed the orientation towards cooperation and competition at network, organizational and individual levels. Such a sample selection is a consequence of embedding units in organizations and networks, and is required for multi-level studies. In addition, as indicated by McGuire and Silvia [82], in numerous studies on inter-organizational networks, only the opinions of the network leaders were examined, whereas it would be valuable to examine the perception of other organizations within its network. In total, data from 69 partnerships was analyzed, which gives a total number of 207 respondents when we consider that each partnership contributed responses from a leader and two partners.

3.2. Measures

The survey used six instruments to measure the constructs in the presented conceptual framework. All instruments have previously shown acceptable levels of reliability and validity. A 7-point Likert response format was used for all items (1 'strongly disagree' to 7 'strongly agree'). At the network level, orientation towards cooperation and competition is reflected in the concept of embedded and discrete organization [49]. Six questions were asked to measure the orientation towards competition, including 1. focus on achieving organizational goals, even if the price for doing so is conflict; 2. maximizing organizational benefits from cooperation; 3. rivalry for resources; 4. maintaining independency; 5. clearly defined roles and sharing of power between partners; and 6. short-term orientation, resulting more out of necessity than willingness. Orientation towards cooperation is based on contrary assumptions.

Orientation towards cooperation and competition at the level of an organization may be measured using two opposed types of organizational culture, namely market culture and clan culture. Each type of perceived organizational culture was measured using the six items of the Organizational Culture Assessment Instrument (OCAI) [83]. What lies at the basis of market culture are the assumptions that the environment is unfriendly, or even hostile, so the organization must keep strengthening its competitive position. The main duty of managers is to guarantee efficiency, performance and profits. The organization favors competition between employees and a competitive attitude towards the environment. By contrast, an organization displaying a clan culture might be described as resembling a family. It is dominated by common values and goals, featuring consistency and a high level of participation, together with a sense of community. Rules and procedures, as well as the focus on profit, are replaced by cooperation between employees, a desire to increase the involvement of the members, and the sense of responsibility for the company's employees. The basic belief of the clan culture is that the best way to manage the organization's environment is through teamwork and employee development.

To measure orientation towards cooperation and competition at the individual level, I referred to the proposition of Meyer [54], who extends the discussion on the paradoxes in business strategy, introducing the level of an individual (a manager). The strategic perspective, meaning the perception of strategic issues, is also covered. One of the views refers to cooperation and competition between organizations. In the literature on strategic management, little attention is paid to various "strategy paradigms" that exist between managerial staff members [84]. Underlying the whole concept is the theory of managerial cognition. A manager, while taking strategic decisions, uses his or her own mental models to read the reality and to act accordingly [85]. These cognitive representations of reality are based on experience. Six items from Meyer's scale were used, which deal with opposing perspectives on the perceived effects of the partnership (constraints vs. benefits); partners' involvement (achieving their own goals vs. achieving common goals); or resignation to the possibility of achieving goals (joint action should only occur if necessary vs. joint action should be the norm).

3.3. Data Analysis

After ensuring that the collected data were in order and making the decision to include or exclude individual surveys in the dataset, calculations for every single pair of contradictions were made based on the method presented by Bratnicki [86]. The capability of contradiction reconciliation was calculated using the following equation:

$$d = \sqrt{(7 - x)^2 + (7 - y)^2}$$

where x and y relate to the items representing the contradictions. This method has been chosen as the only known method which allows one to calculate how contradictions are reconciled. The results of the ratings were collated onto a strategic risk profile grid based on two coordinate axes. The magnitude of the calculated strategic risk profile makes it possible to assess the ability to reconcile contradictions related to cooperation and competition. The profile of the strategic risk is calculated as the distance from the upper right-hand corner of the decision grid—the point with the coordinates (7, 7) signifying the best answer—to the point with the coordinates of the respondent's rating—a point with the coordinates (x , y). The greater the calculated distance, the less effective the organization is in coupling the examined contradictions. The point with the coordinates (7, 7) represents the ideal state (strategic risk profile = 0), while the point with coordinates (1, 1) is the worst possible result (strategic risk profile = 8.49). The strategic risk profile results received take on a value of from 0 to 8.49 and can be subdivided into three basic zones: safety, caution, and danger. The first zone includes the values from 0 to 2.83 and signifies the capability of reconciling key contradictions (safety). A result in the 2.84–5.66 zone is in the caution zone. The highest strategic risk profile (5.67–8.49) indicates a lack of possibility of benefiting from the advantages flowing from the reconciliation of contradictions (the danger zone).

Subsequently, a factor analysis was carried out to capture the structure of hidden variables, and confirmatory analysis was carried out to verify the hidden variables. The factor structure of orientation towards competition at the network level initially created six observable variables (items). Factor analysis with varimax rotation showed that three variables were characterized by a sufficiently high value of factor loads (above 0.5), and subsequent variables had lower values of charges, and were therefore eliminated. In the case of orientation towards competition at the level of the organization, one variable was eliminated. In turn, orientation towards cooperation at the network level was finally assessed using five variables. The results of the factor analysis carried out to reconcile contradictions at the network level allowed the researchers to determine the dependence of items 1, 2 and 3. These results do not mean that the proposed scales were not properly constructed, but with such specificity of the research sample, only the selection of such variables created a strong univariate structure, which made it possible to use in subsequent stages of analysis.

In the analysis of the data obtained and testing hypotheses regarding cause and effect relationships between the examined variables, a Structural Equation Modeling (SEM) and hierarchical linear model (HLM) were applied. SEM is a combination of factor analysis and path analysis in one method—that is, modeling relations between structural hidden variables by means of systems of equations. Importantly for the research conducted, Muthen [87] extends the SEM model to variables with non-normal distributions. HLM is one of several techniques for multi-level modeling of the random coefficient. It answers two questions: (1) What is the effect of the properties of a higher level unit on the lower level result? (2) How does the property of a higher level unit affect the relationship between the lower level variables?

The procedure used to examine the impacts between variables was composed of two stages. In the first, single-level models presenting relationships between variables were calculated using SEM analysis. In the second stage, an analysis combining HLM and SEM was applied to examine multi-level dependencies. Next, the two models were compared based on the likelihood function, using two criteria to assess the quality of their model matching: Akaike's AICA information criterion (AIC) and the Bayesian information criterion (BIC). RMSEA (Root Mean Square Error of Approximation), TLI (Tucker-Lewis Index) and CFI (Comparative Fit Index) indicators have also been calculated for both models, which are commonly used indicators allowing the researchers to assess the correctness of model fit. The following ratios indicate a good fit: RMSEA < 0.05; CFI > 0.9, TLI > 0.9. Due to limited space, only multi-level models are shown. In each case, they have obtained a better fit than the models which do not take the multi-level nature into account. Data was processed by means of MPlus.

The results of the research are part of a project financed by Narodowe Centrum Nauki (National Science Centre, Poland), grant no. N N115 426040 and were originally presented by the Author [88]

4. Results

Data was first analyzed through descriptive statistics before the assumed relationships were tested through structural equation modelling (Table 1).

Table 1. Descriptive statistics.

	Mean	D	St.D.	Min	Max	Percentiles		
						Q25	Q50	Q75
Orientation towards competition								
Network level	3.41	4	1.85	1	7	2	4	5
Organizational level	2.86	1	1.67	1	7	1	3	4
Individual level	3.02	1	1,70	1	7	2	3	4
Orientation towards cooperation								
Network level	5.53	6	1.32	1	7	5	6	7
Organizational level	5.04	6	1.37	1	7	4	5	6
Individual level	5.61	7	1.34	1	7	5	6	7

Subsequently, the reconciliation of contradictions was calculated. In analyzing the distribution of answers regarding the individual level, it can be stated that 19.8% of answers can be placed in the danger zone and 13% in the security zone. Referring to the contradictions at the network level, only 5.3% of responses are in the danger zone and 16.4% in the safety zone, but in this case significant differences between the reconciliation of particular contradictions can be observed. The conflict between flexibility and stability in terms of the division of roles between partners is best balanced, while the worst reconciliation refers to the contradiction inherent in the ability to achieve benefits for oneself as opposed to mutual benefits.

Models showing the impact between variables are presented below. Due to the low number of respondents and the low degree of model saturation, no joint analysis of the relationships between variables was made, but instead dependencies were calculated as presented in the hypotheses. Only statistically significant models were presented.

Hypotheses 1a,1b suggested mutual influence between orientation towards cooperation at the individual level and orientation towards cooperation at the network level, and the moderating effect of orientation towards cooperation at the organizational level. For both models presenting the influence between individual and network levels, the models were well fitted and the regression parameter was significant. For the model presented in Figure 1, the value of the regression coefficient (1.312) means there is a strong influence of orientation towards cooperation at the individual level on the orientation towards cooperation at the network level. The reverse influence between variables (Figure 2) is weaker (0.762) yet still can be regarded as strong. Hence, hypotheses 1a and 1b can be supported. For the models testing hypotheses 1c and 1d, the regression parameter was statistically insignificant, which is why they have not been presented, although it is worth noting that the moderating effect of organizational culture was observed.

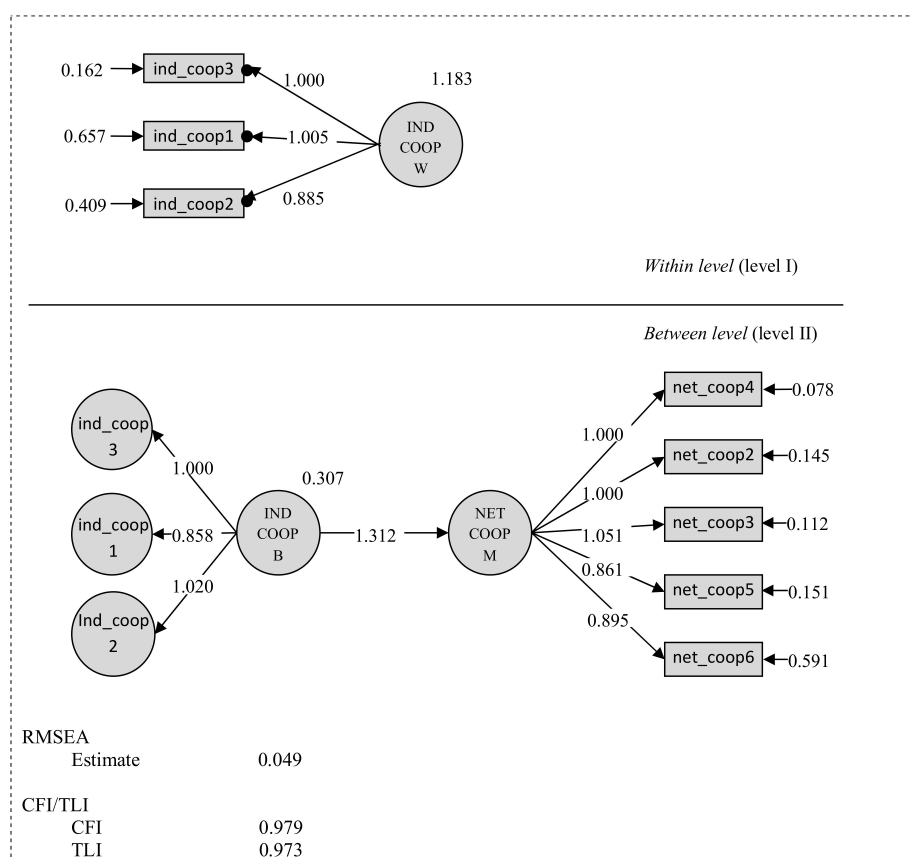


Figure 1. Results of the calculation of the multilevel analysis for H1a (impact of cooperation at the individual level on cooperation at the network level).

Similar results were obtained for the analyses carried out for the purposes of the verification of hypotheses H2a and H2b. The value of the regression parameter for the influence of orientation towards competition at the individual level on orientation towards competition at the network level is 1.736 (Figure 3) and for the opposite influence 0.576 (Figure 4). The regression parameter for the models verifying hypotheses H2c and H2d was not statistically significant. Thus, the results provided support for Hypothesis 2a and 2b, but not 2c and 2d.

An assessment of the parameter values of models, both taking into account the multi-level nature of the phenomenon and without, shows that both models are very well-matched and that the multi-level model explains the phenomenon to a greater extent than the model which does not take the multi-level nature into account. The regression parameter is 1.264, which means that the impact is strong. Thus, hypothesis H3a is supported by the research (Figure 5).

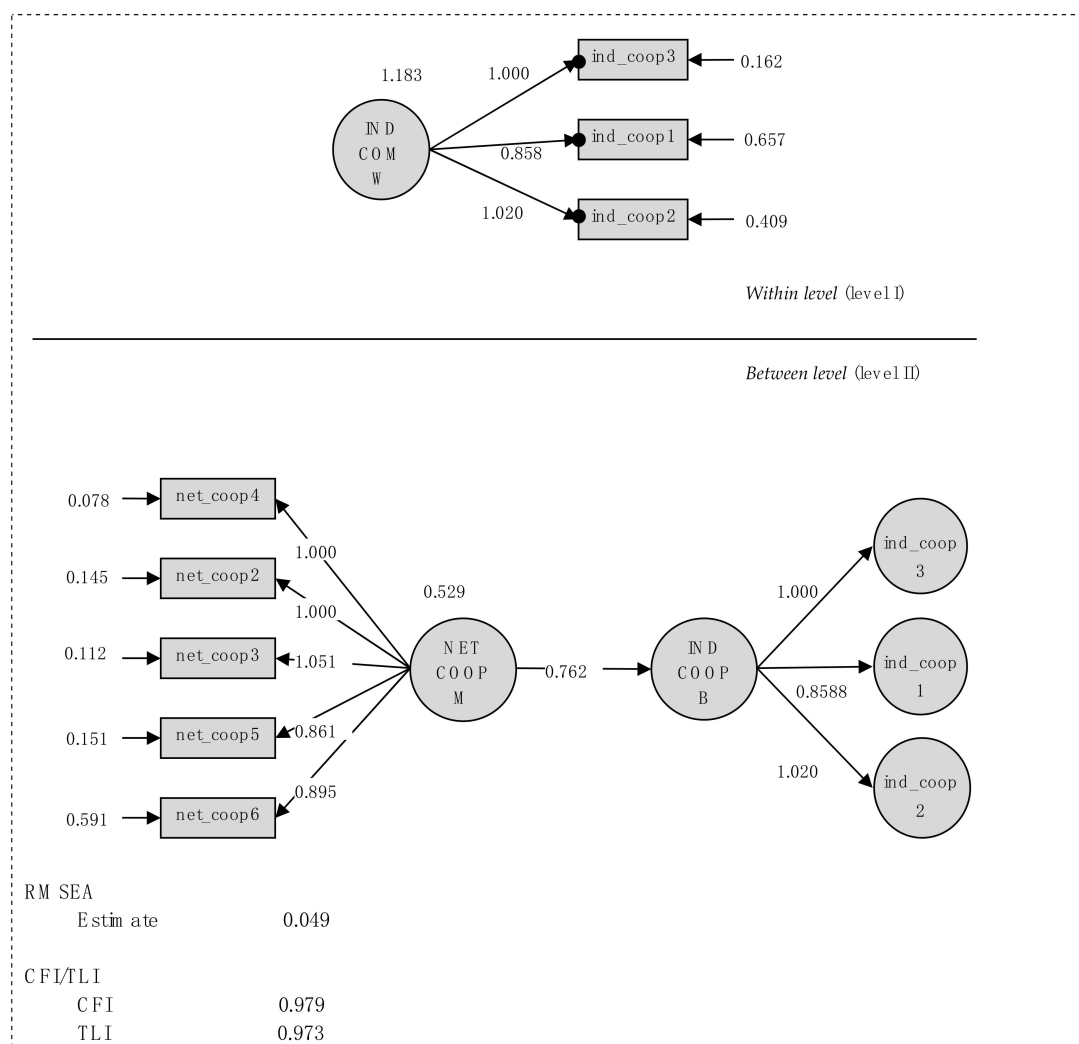


Figure 2. Results of the calculation of the multilevel analysis for H1b (impact of cooperation at the network level on cooperation at the individual level).

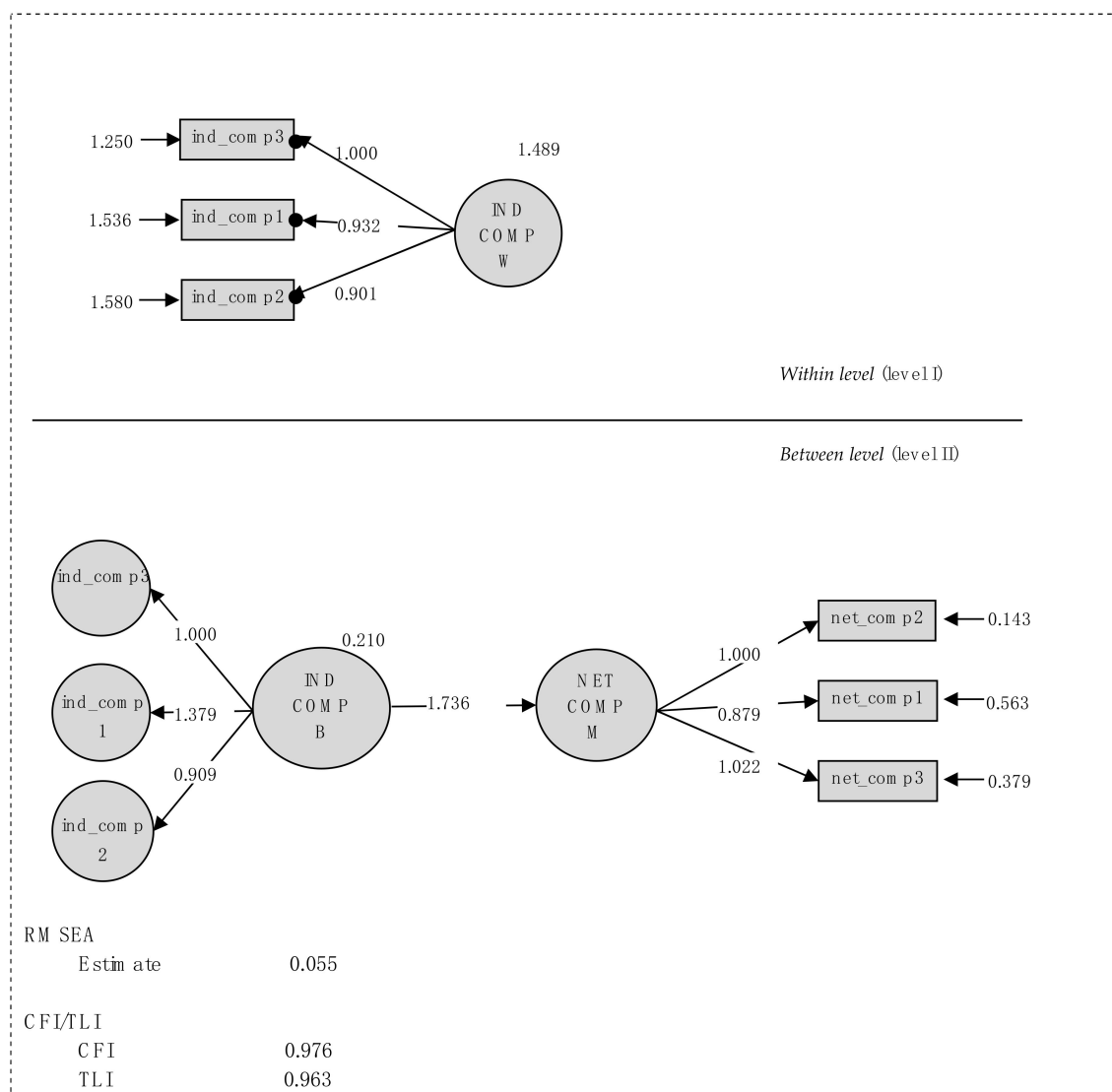


Figure 3. Results of the calculation of the multilevel analysis for H2a (impact of competition at the individual level on competition at the network level).

In the case of Hypothesis H3b, an analysis of the adjustment measures of the single-level and multi-level models allows us to state that, similarly to the model for hypothesis H3a, they are adjusted to a high degree. The regression parameter is 0.791 (Figure 6), which means that the hypothesized impact is moderate. Therefore, hypothesis H3b can be supported.

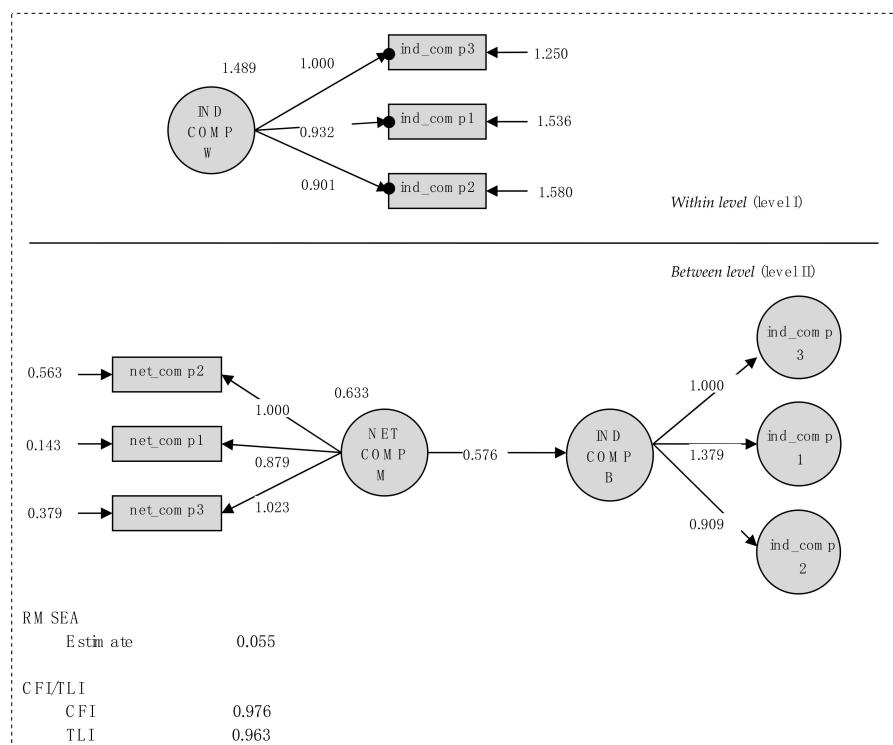


Figure 4. Results of the calculation of the multilevel analysis for H2b (impact of competition at the network level on competition at the individual level).

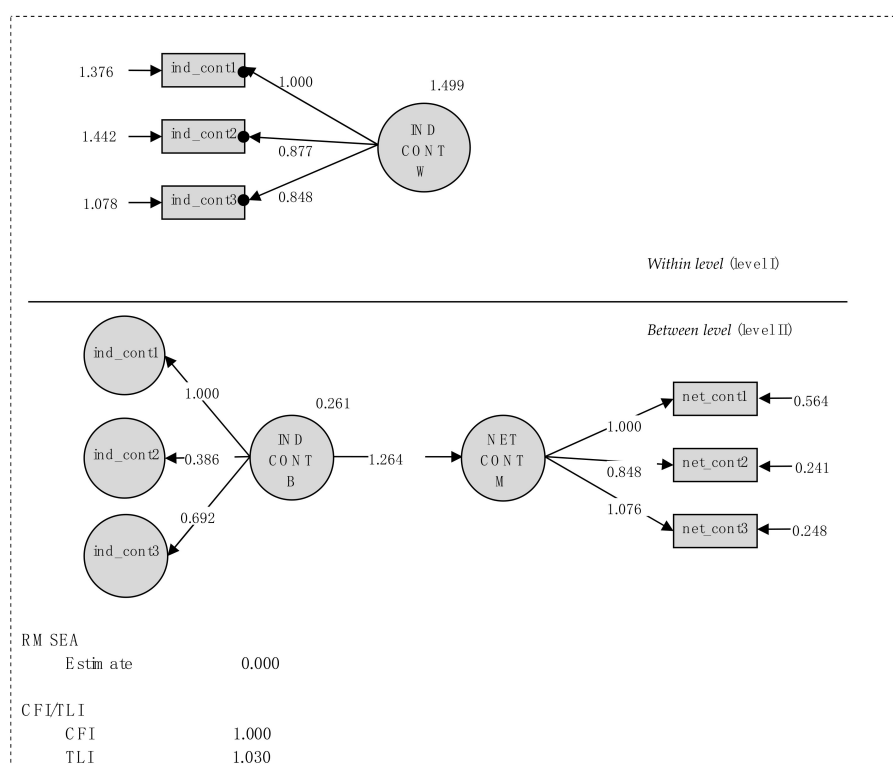


Figure 5. Results of the calculation of the multilevel analysis for H3a (influence of reconciliation of the contradictions between orientation towards cooperation and orientation towards competition at the individual level on reconciliation of the contradictions between orientation towards cooperation and orientation towards competition at the network level).

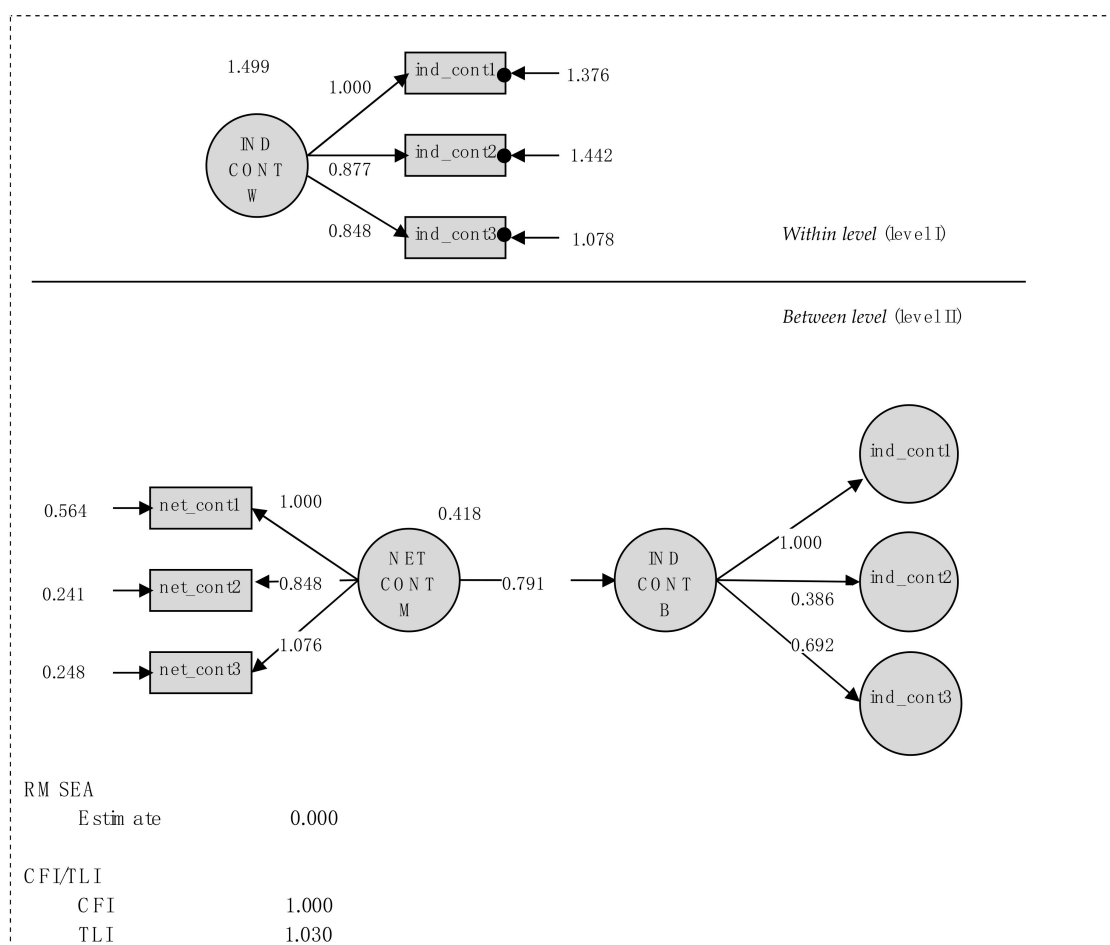


Figure 6. Results of the calculation of the multilevel analysis for H3b (influence of reconciliation of the contradictions between orientation towards cooperation and orientation towards competition at the network level on reconciliation of the contradictions between orientation towards cooperation and orientation towards competition at the individual level).

5. Discussion

This study confirms the relatively strong link between individual and network levels of orientation towards competition and orientation towards cooperation in the context of collaborative networks. First, in the present study, it is assumed that strategic actions taken by partners in a network (network level) are related to the network members' perception of cooperation or competition (individual level). These studies also reveal an influence in the opposite direction: experience of cooperation or competition affects the perception of individuals. Stronger "bottom up" (rather than "top down") dependence was observed while analyzing the relationship between orientation towards cooperation/competition at the individual level and at the network level. The strategic mindset of managers shapes the organization's strategy; therefore the obtained research results confirm the existing state of knowledge. Importantly, the influence of a phenomenon at a higher level of analysis on a phenomenon at a lower level was also revealed. Thus, the strategy pursued in relation to partners, which might be defined as a pattern of activity over a longer period, translates to the perception of cooperation and competition. What is more, the results of the research also allowed the researchers to conclude that there is a positive mutual influence in terms of reconciling the contradictions between orientation towards competition and orientation towards cooperation at the individual level, and reconciling the contradictions between orientation towards competition and orientation towards cooperation at the network level.

No evidence was found to support the moderating nature of orientation towards cooperation/competition. Although the analyses carried out showed a relatively low impact of this variable on the relationship between orientation towards cooperation/competition at the individual/network level, it was statistically insignificant in every case. This may be due to the characteristics of the sample. Another reason is that the public networks surveyed usually consisted of individual members of the organizations in which they are employed. These organizations, as entire entities, are not involved in the operation of the network; therefore organizational culture has no impact on the relationship between the network level and the individual level.

Although the amount of research attempting to capture the multi-level nature of both cooperation and competition in public networks is growing [68,89], to my knowledge, this is the first quantitative study of this topic. The research presented contributes to the field in several ways.

First, taking into account the specificity of the paradox of cooperation and competition in public networks, consideration of these phenomena in this particular context using orientation towards cooperation and orientation towards competition was proposed. Looking at cooperation and competition through the prism of trust and distrust enabled the researchers to extend the conceptualization of these phenomena in the context of public networks. Hence, orientation towards competition assumes that self-orientation, independence, and risk avoidance dominate the partner's mindset, the culture of their organizations, and strategy towards partners within networks. Conversely, orientation towards cooperation relates to other-orientation, interdependence, the risk-taking mindset of partners, organizational culture, and strategy towards other partners within networks.

Second, despite growing interest in applying the multilevel perspective in the context of public networks, few researchers [90–92] investigating the tensions between individual persons and organizations have employed a multilevel approach so far. Referring to the analysis of competition and cooperation, previous studies (the majority of them concerning alliances) focused solely on the network level. However, according to a multi-level approach, it seems that a full grasp of a given phenomenon requires the consideration of its relationship with phenomena at other levels of analysis. As actors cognitively assess the consequences of cooperation and label it as beneficial or harmful [84], cooperation and competition with network partners are thus dependent on the individual partners' mindset. On the other hand, past experiences (actions taken towards partners in a network) also shape the attitude towards cooperation/competition. So far empirical research has focused more on top-down processes rather than bottom-up processes, suggesting that the larger context is more likely to influence lower-level variables than the opposite [93]. This research shows that upward processes determine downward (contextual) processes. In this instance, it is in line with expectations, since many phenomena in an organization have their origins in the phenomena occurring at a lower level of analysis.

To sum up, the results allowed for confirmation of the multilevel nature of competition and cooperation, which was suggested, among others, by Bedwell et al. [46] and Kilduff et al. [53]. The results of the research are in line with the proposal of Gnyawali et al. [75], according to which the challenges and tension in inter-firm relationships generally start at the individual level and manifest at the upper levels.

The presented study has certain practical implications. Individual beliefs about cooperation or competition translate into further action taken by the organization in relation to its partners. In other words, if the members of a network are convinced that cooperation makes sense, it is more likely that the organizations will collaborate with partners in the network. Conversely, if the members are more focused on competition, the result is that the actions which the organizations in the network take towards their partners are competitive in nature. This results in two conclusions. Since people learn through action as well, network members can shape each other's perception of reality. If individuals come across behaviors geared to cooperation, there is a high probability that they will perceive cooperation as beneficial in the future. The same applies to competition. Network actors who experience more competitive than cooperative behaviors in the network may perceive cooperation as

unprofitable. For the education system, this requires an appropriate shaping of public specialists and managers' beliefs about cooperation and competition which they would translate into future strategy towards the partners in the network. Although our knowledge of cooperation and competition is still limited, public sector specialists should be able to understand different patterns of behavior towards partners and the possible positive and negative consequences, and be able to monitor the situation and react when a partnership is underperforming due to problems in this area.

The main limitations of the research relate to three areas: the design of the study, the research sample, and the operationalization of variables. The study was conducted based on the research model which assumes the existence of dependence within the constructs of orientation towards cooperation and orientation towards competition, as well as the relations between them. Both constructs could be operationalized using other variables and scales. Additional research is required to fine-tune the measurement. Restrictions also apply to the research sample. The first aspect of this limitation relates to the representativeness of the sample. The number of all partnerships operating in Poland in the area of solving social problems is not known. A request to complete the questionnaire was sent to all registered partnerships, but it is difficult to determine the level of sample representativeness. The second aspect concerns the design of multi-level studies. The respondents were asked to assess the phenomena at the level of the organization or the network. However, their responses did not reach a high level of homogeneity. There are two reasons for this, the first of which is related to the sampling procedure. In order to obtain the most objective picture of the situation, the partnership leaders were asked to identify partners for further contact, namely partners with whom they cooperate most and least successfully. The replies of these partners differed, which lowered the internal correlation, but increased the level of objectivity of the data. The second reason is the size of the groups, in this case the networks. If there had been several or a dozen respondents from each network, rather than just three, the opportunity to obtain satisfactory results in this respect would have been greater. Next, when studying the relationship between an organization and a network, the unit of analysis is the organization, and the researcher can gather data from many organizations, both within a single network as well as several networks. When studying inter-organizational networks to capture the full picture (in order to take the multi-level approach into account), one should consider the views of all participants, or at least a significant number of them, which would certainly multiply the costs of research.

Future research could focus on improving our confidence in the results provided by such research and overcoming its limitations. Additional research is required to fully understand the compound nature of trust and distrust in the context of networks, as "trust determines long-term (and in this sense sustainable) exchange relationships between two organizations" [94]. Further measurement of collaboration and competition based on the concept of trust is needed. I also suggest conducting longitudinal studies, allowing researchers to study the dynamics of cooperation and competition in networks and explain their specifics. Is the intensity of orientation towards cooperation/competition changing over time? If so, what are the trajectories of this process?

Cooperation and competition can arguably be viewed as a multi-level paradox. The paradox mindset denotes the extent to which one is accepting of and energized by tensions. The acceptance of tensions enables an awareness of the capabilities of fully capturing ambiguous and complex configurations of reality. Individuals with a paradox mindset are able to unlock the potential of everyday tensions and achieve higher results [71]. Parties may both trust and distrust one another, and individuals may fight an internal struggle in terms of beliefs about competition and cooperation. According to the paradox theory, it allows them to benefit from cooperation while maintaining vigilance and autonomy. The results of presented research show, that so far, only very small numbers of examined network actors are able to reconcile conciliations to a high extent. To provide more detailed conclusions for the practitioners, further research on reconciling the paradox of cooperation and competition is needed. It could help to determine a suitable relationship between cooperation and competition which is necessary for the positive effects of partnerships. In other words: does

reconciliation of this contradiction really produce positive results for the network? Or would another configuration perhaps be more beneficial? It is worth noticing, that overwhelming majority of research refers to strategic alliances. Our knowledge on the topic in the context of public network is still limited.

The above considerations are focused on collaborative public networks, although the conceptualization of orientation towards cooperation and orientation towards competition in the multilevel context seems to be universal, taking into consideration different types of public networks. In addition to the need to provide evidence of the benefits of reconciling contradictions in cooperative networks, it is certainly worth examining the idea of reconciling contradictions between orientation towards cooperation/competition in policy and governance networks.

Funding: This research was funded by the National Science Center (Narodowe Centrum Nauki), grant number N N115 426040

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

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