The Role of Perceived Voluntary Group Cohesion on Participation in Voluntary Groups.

Dissertation

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Abstract

The social contract is one of the primary mechanisms for explaining how civil society forms and maintains itself over time (Hobbes, 1651/1996; Locke, 1689/1980; Rousseau, 1762/1997). This dissertation follows Keeley (1988) in applying Social Contract Theory to voluntary groups. Specifically, it employs perceived voluntary group cohesion (PVGC) as a means of explaining the strength of the individual’s commitment to a contract created with a voluntary group.

PVGC is grounded in a Lockeian (1689/1980) view of the social contract and is an expansion of Festinger, Schachter, and Back’s (1950) conceptualization of group cohesion. PVGC is a measure of an individual’s assumptions and comprehensions about his or her cognitive, emotional, and communicative attachment to a bound collective with which he or she voluntarily interacts to achieve a goal or goals not attainable through individual action. In a previous study a 9-item PVGC scale received support of its reliability and validity (Geidner, 2010). This dissertation seeks to expand on this earlier study. Specifically, the goals of this dissertation are to replicate the model fit of the proposed higher-order factor structure of PVGC in a new sample and to further define the relationships between PVGC and some of its antecedents (e.g., size and procedural justice), correlates (e.g., perceived cohesion), and consequences (e.g., future commitment.
to the voluntary group, public participation associated with the voluntary group, and willingness to impose sanctions on group members who break group rules).

To accomplish these goals, primary data from a national cross-sectional survey were examined. The survey (\(N = 1,032\)) probed participants’ history with and feelings toward a voluntary group to which they were members (e.g., a church group, a sports club). The 9-item PVGC measure did not display good model fit. Instead, an 8-item version of the PVGC measure showed good model fit and was employed in all analyses. The majority of hypotheses in this dissertation were confirmed demonstrating the validity of the PVGC concept. Through a number of analyses, it was also demonstrated that PVGC accounts for variance in the criterion variables in this dissertation even after controlling for the effect of a similar concept, perceived cohesion (Bollen & Hoyle, 1990). These findings demonstrate the importance of the PVGC measure and the contractual view of voluntary group membership. Specifically, communication connectedness, a lower-order factor nested within PVGC, was found to be crucial in understanding individuals’ commitment to their social contracts with groups.

In the final chapter, the long-term effects of PVGC on group survival are explored. A series of computer simulations, using Agent-Based Modeling (ABM), are employed to demonstrate the possible long-term process of voluntary group membership. Finally, the application of PVGC to specific areas of communication science and PVGC’s larger implications on our understanding of human action within groups are discussed.
Dedication

This volume is dedicated to Shelby Geidner and Mary Wargo for their love and support.
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**Fields of Study**

Major Field: Communication
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Chapter 1: Theoretical Justification

Introduction

Voluntary groups play an integral role in American society (see Burns, Scholzman, & Verba, 2001; Putnam, 2000; Tocqueville, 1835/2003; Verba, Scholzman, & Brady, 1995). Because of the popularity of voluntary groups, America has been described as a nation of joiners for most of its history (Tocqueville, 1835/2003). This legacy continues today with 62.5% of American adults being members of some type of voluntary group, according to the 2004 General Social Survey (GSS)\(^1\) (Davis & Smith, 2004; see Curtis, Grabb, & Baer, 1992 for comparisons between America and other countries). Voluntary groups allow individuals to accomplish goals (Carron & Brawley, 2000; Keeley, 1988), define their identity (Brewer, 2007; Brewer & Gardner, 1996), and build social capital (Paxton, 2002; Putnam, 2000). Further, voluntary groups benefit democracy by acting as a check against majority power and integrating individuals into the larger society (Madison, 1787/2008; Tocqueville, 1835/2003). Therefore, it is

\(^1\) This refers to the MEMNUM item in the 2004 General Social Survey. The participants were asked to select the groups to which they were members from the following list: fraternal group, service group, veteran group, political club, labor union, sports club, youth group, school service, school fraternity, nationality group, farm organization, literary or art group, professional society, church group, or any other group. Of the participants in 2004, 22.2% were involved in one voluntary association, 14.4% were involved in two, and 25.9% were involved in three or more.
imperative to grasp how individuals operate in voluntary groups to truly understand how people function in society.

For at least 60 years scholars across a wide range of social scientific fields have argued that group cohesion is the key variable in understanding human action within groups (for sociology see Bollen & Hoyle, 1990; Friedkin, 2004; Gross & Martin, 1952; for social psychology see Horne, 2001; Lott & Lott, 1965; for military science see Griffith, 1988; Shils & Janowitz, 1948; for sports and leisure studies see Carron & Brawley, 2000, Hoigaard, Safvenbom, & Tonnessen, 2006). Unfortunately, our collective understanding of group cohesion has been muddled by "confusion, inconsistency, and almost inexcusable sloppiness with regard to defining the construct" (Mudrack, 1989, p. 45). The many conceptualizations and operationalizations of group cohesion offered to date have been inconsistent, atheoretical, and sometimes seemingly contradictory within and across studies (Bollen & Hoyle, 1990; Cota, Longman, Evans, Dion, & Kilik, 1995; Friedkin, 2004; Mudrack, 1989; Piper, Marrache, Lacroix, Richardsen, & Jones, 1983).

In an effort to clarify our understanding of individuals' relationships with groups, this research employs Perceived Voluntary Group Cohesion (PVGC) as a theoretically derived, individual-level measure of a member's strength of group cohesion to a given voluntary group (Geidner, 2010). PVGC is defined as an individual's assumptions and comprehensions about his or her cognitive, emotional, and communicative attachment to a bound collective with which he or she voluntarily interacts to achieve a goal or goals not attainable through individual action. PVGC is grounded in contractual theory (Keeley, 1988; Locke, 1689/1980) and derived from Festinger, Schachter, and Back’s
(1950) definition of group cohesion. It is argued that by understanding the relative levels of cognitive, emotional, and communicative connection individuals have to a voluntary group, communication theory could generate a greater understanding of individual action within voluntary groups and the processes that result in the creation of stable voluntary groups within the society.

This dissertation further validates the PVGC measure and demonstrates the importance of the concept in understanding individual action in voluntary groups. It also demonstrates that individual-level group cohesion can result in outcomes affecting the public sphere (e.g., recruiting new members for a group). A national cross-sectional survey was conducted probing individuals’ relationships with voluntary groups to which they are members. Specifically, the relationship between PVGC and various antecedents (e.g., group size and procedural justice), correlates (e.g., perceived cohesion), and consequences (e.g., future commitment to the voluntary group, public participation associated with the group, and willingness to impose sanctions on other group members who break group rules) will be examined within the context of the survey. In an exploratory fashion, the relationship between the lower-order factors (i.e., perceived utility, affective evaluation, and communication connectedness) and the various outcomes will also be probed. The possible long-term effects of PVGC on group survival and longevity will also be discussed. A non-linear process of group maintenance and survival based on PVGC will be demonstrated through a series of computer simulations. Finally, possible future applications of PVGC to communication research will be explored.
The Importance of Voluntary Groups

Voluntary groups have effects on both the individual and society as a whole. First and foremost, individuals gain direct benefits from membership (Fine & Holyfield, 1996; Keeley, 1988; Wilson, 1973). Specifically, groups provide tangible benefits and services to members. For example, membership in an academic organization grants the member access to the journals published by that organization, while membership in a bowling league provides the member opportunities to bowl. Beyond materials benefits, voluntary groups also give members access to new social ties (Putnam, 2000; Verba et al., 1995). Festinger et al. (1950) argue that social connection is one of the primary motivators of group membership. Increased social ties can be beneficial in many ways (Granovetter, 1973; Putnam, 2000). For example, researchers have found that voluntary group membership can broaden an individual’s perspective (Bellah, Madsen, Sullivan, Swidler, & Tipton, 1985) and increase political tolerance (Hooghe, 2003).

Individuals also benefit by using their voluntary group memberships to help shape and define their self-identity. Specifically, Brewer and Gardner (1996) state, "...individuals seek to define themselves in terms of their immersion in relationships with others and with larger collectives and derive much of their self-evaluation from such social identities" (p. 83). It has been argued that there are three levels of identity: self, interpersonal, and collective. Both interpersonal and collective are types of social identity. Interpersonal identity is “derived from intimate dyadic relationships such as parent-child, lovers, and friendship, but they also include identities derived from membership in small, face-to-face groups that are essentially networks of dyadic
relationships" (p. 83). Collective identities are derived from groups, and personal relationships are not required among members. An example of this type of collective identity could be thinking of one’s self as a “southerner.” Individuals’ relationships with voluntary groups could be described through either interpersonal or collective identities depending on the nature of the group. Regardless, voluntary group membership plays an important role in defining the individual’s social identity, which in turn affects how the individual behaves in public (e.g., Brewer, 2007). Not only do voluntary groups affect the individual, they also help shape the society as a whole.

There is little question that voluntary groups play an important role in democracy (Kim & Ball-Rokeach, 2006; Madison, 1787/2008; Putnam, 2000; Wilson, 2000), yet the valance (i.e., positive or negative) of the effect has been widely debated. For example, the founders of Social Contract Theory (i.e., Locke and Rousseau) had competing views of the effect of associations on the commonwealth. Rousseau viewed “secondary associations as divisive forces, endangering equality and detracting from allegiance to the democratic state by promoting conflicting loyalties” (Maccoby, 1958, p. 524). As will be discussed below, Rousseau viewed any lower-level loyalties (e.g., voluntary groups) as corrupting the will of the society and its ability to govern itself. On the other hand, Locke (1689/1980) viewed voluntary associations as “cohesive forces, promoting liberty and the democratic society by serving as intermediate sources of influence between the individual and the state” (Maccoby, 1958, p. 524). This dissertation follows in the view of Locke (i.e., seeing groups as a positive and necessary part of a functioning democracy), while acknowledging that in specific cases voluntary groups can be destructive forces (e.g.,
intercity gangs). Specifically, this research differentiates itself from the work of Rousseau by arguing that lower-level loyalties (e.g., a relationship with a voluntary group) are non-destructive in any case where the larger society provides higher-level goals (e.g., survival) than the nested group (e.g., voluntary groups).

The positive role of voluntary groups in American democracy has been discussed since early in its formative years. Specifically, Tocqueville (1835/2003) argued that voluntary groups provide an invaluable service to the society by allowing members to practice deliberation and civic participation (Klein, 1999). This preparation, in turn, leads to the individual being more likely to participate in the larger society. This argument was more recently made by Verba et al. (1995) who stated, “the non-political institutions of adult life – the workplace, voluntary associations, and churches – function in several ways to enhance citizen activity in politics” (p. 309). Specifically, they found 79% of respondents were involved in a voluntary association though either membership or financial contributions (p. 62). They also found that associational membership allowed individuals to learn civic skills (e.g., attend a meeting where decisions are made, make a speech or presentation, see p. 312). Possessing civic skills, in turn, was found to be a significant predictor of political participation.

Putnam (2000) also argues for a path from voluntary association membership to civic participation, but stresses that the path is mediated of social capital. Putnam (1995) defines social capital as, “features of social life – networks, norms, and trust – that enable participants to act together more effectively” (pp. 665-666). This view argues that social capital is the result of a mutually reinforcing spiral between generalized trust and civic
engagement (i.e., the virtuous circle). In his research, Putnam has found voluntary group membership is a key element of social capital and argues that social capital directly affects levels of political participation within the society. This argument runs parallel to Tocqueville (1835/2003) in that both argue that a healthy set of voluntary groups within the society is a necessary, but not sufficient condition for a successful and vibrant democratic society.

A third proposed mediator between voluntary group membership and political participation is political discussion (Erickson & Nosanchul, 1990; Sobieraj & White, 2004; Walker, 2008). In a study of Canadian bridge clubs, Erickson and Nosanchul (1990) found that apolitical clubs could lead to political participation. The authors argue that voluntary group membership allows apolitical members to interact with politically active members. This interaction results in political discussion occurring, which in turn influences political participation. Sobieraj and White (2004) state, “it is not simply generic association involvement that supports political life but rather the exposure to and involvement in political dialogue that appears critical” (p. 758). Whether the path is through learning civic skills, building social capital, discussing politics, or some combination of all three, these views all argue that group membership positively affects political participation.

It has also been found that the specific type of group and the sociodemographics characteristics of individual members affect levels of civic participation. For example, Pollock (1982) found that membership in an explicitly political group influences all types of political participation (e.g., working for a campaign, writing a letter to the editor, and
voting), while membership in an apolitical group influences only passive forms of political participation (e.g., voting). In a study examining small groups, Macello and Perrucci (2009) found that members of small religious groups were less likely to engage in civic activities than members of secular groups of the same size. With regard to sociodemographics, Miller (2010) has suggested that voluntary groups exaggerate the participation gap between privileged (i.e., high income, high education, whites) and non-privileged (i.e., low income, low education, minorities) classes within a society. He argues that privileged classes are both more likely to be recruited to voluntary groups and more likely to benefit from voluntary group membership.

Through their influence on political participation, voluntary groups can act as a check against majority opinion. Specifically, voluntary groups allow for like-minded individuals to come together and discuss a topic (Locke, 1689/1980; Tocqueville, 1835/2003). Group members can discuss a topic in the safety and security of the group, regardless of the acceptance of the opinion in mainstream society (Burns et al., 2001). For example, the Flat Earth Society is a voluntary group comprised of 263 members (“Membership Register”, n.d.). The goal of the group is “to promote and initiate discussion of Flat Earth theory” (“About the Flat Earth Society”, n.d., para. 1). Specifically, the Flat Earth theory refers to the set propositions which elucidate the claim that the Earth is in fact flat. The mission and theory are almost laughable to most individuals in modern society and is clearly and unquestionably contradictory to existing public opinion. Arguably, an individual who believes that the world is flat would be unable to discuss that opinion in a public setting without being placed in a negative light.
Albeit a rather extreme example, The Flat Earth Society, a homogenous voluntary group, allows for individuals with a minority opinion to come together and discuss their opinions in a safe environment.

When thinking about the Flat Earth Society, the importance of voluntary groups for acting as a check against the majority might not be appreciated. This underappreciation can easily be changed by thinking of groups that were in the minority and have since become the majority view, as opposed to a group likely stay in the minority. There is a recurring shift in majority opinion on a variety of issues over the course of American history (e.g., groups fighting for voting rights for African-Americans or women, group fighting for prohibition and then groups fighting to repeal the 18th amendment, groups fighting for a withdraw from Vietnam). All these groups represent collectives where like-minded individuals came together to discuss their opinions.

Through the homogenous nature of these groups, the opinions of individual members became polarized (see Isenberg, 1986; Myers & Lamm, 1976; Stoner, 1968). With increased attitude strength and certainty, the members became more likely to become politically active in the public sphere (Matthes, Morrison, & Stromer, 2010). Public activity (e.g., protests, membership recruitment) can then influence the opinions of other individuals in the society and can ultimately lead to minority opinion becoming majority opinion. Because of the important benefits voluntary groups add to a society, it is necessary to understand the complex relationships individuals have with these groups.

This dissertation argues that PVGC can be used to understand individuals’ relationships

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2 The group can be considered homogenous on the basis of everyone’s belief in the minority opinion (i.e., Flat Earth Theory).
with voluntary group and their willingness to engage in numerous group related activities affecting the public sphere (e.g., discussing group philosophies with non-members). In this role, it is argued that PVGC is a primary mediator in allowing minority opinions to transfer from the group to the general public.

**Social Contract Theory**

For over 400 years political theorists have used the social contract as a metaphorical and theoretical explanation of the formation and maintenance of civil society. Three key texts act as the basis of Social Contract Theory – Hobbes’ (1651/1996) *Leviathan*, Locke’s (1689/1980) *Second Treatise of Government*, and Rousseau’s (1762/1997) *The Social Contract*. Each text presents a slightly different view of the social contract and its implications on society. In its simplest form, the social contract entails individuals giving up rights to gain benefits unattainable individually (e.g., security or liberty). Individuals give up these rights to a governmental structure. The ideal governmental structure ranges across theories. Hobbes’ (1651/1996) argues for a totalitarian monarchy, while Locke (1689/1980) and Rousseau (1762/1997) discuss the plausibility of democracy. The respective authors primarily concern being legitimizing a governmental structure in the eyes of citizens. Voluntary consent to the contract is the primary mechanism in which the authors legitimize the governmental structure.

Social Contract Theory involves two sets of assumptions. The first class pertains to human nature; the second involves the nature of the state. The latter set of assumptions can be seen as a derivative from the former, but distinct in many important ways. For

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3 Specifically, Locke’s (1689/1980) treatises were written with the express purpose of legitimizing the accession of William III through the Glorious Revolution.
example, one could agree with Rousseau’s assumptions about human nature (i.e., that social institutions create greed in humans), while simultaneously disagreeing with his views on the nature of the state (i.e., the only way a society can work is through complete submission of an individual’s will to society’s will).

The first set of assumptions begin with the generally agreed upon proposition that humans in the state of nature are equal and free. From this assumption, Hobbes (1651/1996) and Locke (1689/1980) argue that humans are guided by reason, although the rules humans derive from reason vary between authors. Specifically, Hobbes (1651/1996) argues that individuals are motivated by “a perpetual and restless desire of power after power, that ceaseth only in death” (p. 70). The rational conception of human interest is present in hundreds of years of philosophy and theory (e.g., Downs, 1957; Hardin, 1968; Smith, 1776/1991). Motivated by self-interest and fear of a violent death at the hands of another, human nature leads to quarrels over power, diffidence, and glory. Conflict leads to more conflict and natural society collapses into a state of war, “where every man is enemy of every man” (p. 88). To get out of this state of war, people enter into a commonwealth where they give up their natural freedom in order to preserve their life.

In Locke’s (1689/1980) view, natural law, which humans can derive via reason, is guided by an individual’s knowledge that life is a gift from God. From that assumption, Locke argues that people are bound to protect their lives and not destroy God’s other creations (e.g., other people and the Earth). Locke argues that while in the state of nature everyone has a duty to punish any individual who violates natural law. This requirement
results in an inherent flaw in the state of nature. Locke accepts that individuals cannot reasonably be expected to be an impartial judge in their own case. Because of this circumstance and since all are equal in the state of nature, there is no common judge who can settle disputes. Thus, the “inconveniences” of the state of nature lead individuals to form collectives bound by a social contract (p. 72).

Rousseau (1754/1997) agrees that humans in the state of nature are free and morally equal, but argues that human nature does not allow for reason. In this state prior to reason, Rousseau’s “savage man” only knows self-preservation and pity. In his Second Discourse, Rousseau speaks of the natural state longingly. He argues that humans were naturally strong and guided by amour de soi – an instinctive desire to stay alive. “Savage man” was not worried by curiosity, fear of the future (including death), or amour proper – care of the opinions of others concerning one’s self. Rousseau argues that in the state of nature humans lived happy, carefree lives. In The Social Contract, Rousseau (1762/1997; 1762/2009) admits that this natural state either never existed or lasted for a very short period. He states, “man was/is born free, but everywhere else is in chains” (p. 41; p. 49). Rousseau (1762/1997) argues that the chains are self-imposed due to obstacles inherent in the state of nature:

4 The translation of this line is not clear. Some translations use “is” (e.g., Rousseau, 1762/1997), some use “was” (e.g., Rousseau, 1762/2009). The meaning of the sentence shifts when one word is used instead of the other. When “is” is used, the sentence reads as if Rousseau believes all people are born free and then the “chains” of society are imposed on them. When “was” is used, the sentence reads as if Rousseau believes that the state of nature only existed at some time before modern society emerged. This small shift changes the constitution of modern society under a Rousseauian view. Specifically, under the “is” translation humans can have complete freedom from the constraints of modern society, while in the “was” translation modern humans can never be truly free.
I suppose men to have reached the point at which the obstacles in the way of their preservation in the state of nature show their power of resistance to be greater than the resources at the disposal of each individual for his maintenance in that state. That primitive condition can then subsist no longer; and the human race would perish unless it changed its manner of existence (p. 49).

This unavoidable position leads humans to form collectives guided by the mutual relinquishing of rights.

From each of these views of human nature the authors derive the foundations of the social contract people form with the state. Hobbes’ (1651/1996) view of man, as guided completely by self-interest, leads to a call for a strong, totalitarian leader. The individual, in nature, has no protection from others and there is no common judge; therefore, it is rational to turn over all rights to a sovereign as long as others are willing to do the same. Upon entering a commonwealth, Hobbes argues that the sovereign should have near absolute power.\(^5\) Hobbes’ view of the sovereign prevents further application of his view of Social Contract Theory to voluntary group involvement. In his view, the sovereign is the sole judge of right and wrong within the commonwealth. Therefore, to question the sovereign’s wisdom would be irrational and “absurd.” In a Hobbesian view, individual group members would not be able to exit voluntarily from the contract and could not have individual goals or aspirations for the group.

The views of Locke (1689/1980) and Rousseau (1762/1997) are more applicable to voluntary group membership. Of particular interest to this dissertation is that their

\(^5\) Hobbes does acknowledge that the sovereign cannot justly ask a citizen to harm him or herself. Short of that, Hobbes argues for the absolute power of the sovereign.
competing views of the nature of the state can be directly linked to competing views of voluntary groups. Locke (1689/1980) argues that individuals enter the social contract in order to avoid the inconveniences of the state of nature and to maximize life, liberty, and property. He argues that a commonwealth is formed only by unanimous consent. Once the state is formed, decisions (e.g., type of government) are made by majority consent (i.e., the majority provision). Individual members should accept the ruling of the majority because each entered into the commonwealth freely and upon entering accepted the majority provision. In a Lockeian social contract, legislative authority is limited in numerous ways to prevent unjust use of the majority provision: (1) laws must be for the public good and non-arbitrary, (2) legislative power is subject to its own laws, (3) there can be no taxation without public consent, and (4) a legislature cannot transfer its power to another authority. Above and beyond these limitations on legislative power, Locke also gives the individual power to exit the social contract at anytime. This radical, individual power runs contrary to Hobbes’ (1651/1996) and Rousseau’s (1762/1997) arguments. Specifically, Locke (1689/1980) believes no one can ever be limited in decisions about his or her ultimate salvation; therefore, if an individual feels the legislative power is breaking God’s law he or she is always just in exiting the contract.

Where Locke’s (1689/1980) view focuses on the individual’s continued rational consent, Rousseau’s (1762/1997) view focuses on the individual’s submission to the general will – the best interest of the collective. Rousseau, like Locke (1689/1980), argues that “a people” is created only through unanimous consent. However, he differs from Locke by arguing that the only way a commonwealth is just is if individuals under
the social contract remain as free as they were before entering the contract. Rousseau (1762/1997) believes the individual is no less free within the social contract than outside of it only in cases where the individual agrees with the restrictions being placed on his or her rights. For example, if an individual believes murder is morally wrong and will in no circumstance commit murder, he or she could enter a social contract limiting the right to murder. In this case, the individual would be restricted in the same manner (i.e., not allowed to commit murder) whether under the social contract or not. The only way a just state can emerge is by the individual submitting his or her particular will to the general will. In Rousseau’s view, ultimate authority rests in the absolute popular sovereignty of the people. As he states, “Whoever refuses to obey the general will shall be constrained to do so by the entire body: which means nothing other than that he shall be forced to be free” (p. 53).

A key difference between Rousseau’s and Locke’s respective social contracts is "whether or not social collectives have aims and interests of their own" (Keeley, 1988, p. 31). Keeley argues that one school of thought, the biological or functional view (e.g., Durkheim, 1893/1984; Noelle-Neumann, 1993; Parsons, 1937; Rousseau, 1762/1997), believes that collectives do have goals of their own, above and beyond that of the individual members. The other school of thought, which Keeley (1988) defines as the individual or contractual view (e.g., Downs, 1957; Granovetter, 1978; Locke, 1689/1980), believes that collectives do not have their own life force or goals; they are instead made up of the individual members’ goals. These competing views lead to different conceptions of the nature of the state. Rousseau (1762/1997), relying on the
biological view of society, believes that the general will, otherwise thought of as a societal-level goal, is the most important aspect of the society. Locke (1689/1980), on the other hand, takes the contractual view and focuses on the goals of individuals within society. These competing views of the constitution of society affect current theorizing on how individuals interact within voluntary groups.

**Social Contracts in the Context of Voluntary Groups**

In all views of the social contract, the individual actor works with others to gain benefits which are not individually attainable (e.g., security, liberty, convenience, property rights). In the case of the state, one of the major reasons for entering, specifically for Hobbes (1651/1996) and Rousseau (1762/1997), is for the preservation of life. Once the preservation of the life is secured, the individual tries to maximize glory and benefits (Rousseau, 1762/1997). One way individuals seek to maximize their benefits is through joining voluntary social groups. For example, an individual might join a professional voluntary group related to his or her job. The reason for joining could be to get better at his or her profession, to gain new friends, or to expand his or her prestige within the given field (to name but a few reasons). To join the collective, the individual must give up some rights. For example, the individual might have to give up the right to some property in the form of dues. There might also be other membership requirements, such as attendance at monthly meetings, wearing a specific uniform, or performing a specific task. If the individual does not follow the membership requirements, then a sanctioning body within the voluntary group can punish the individual up to and including kicking the individual out of the collective.
This type of social contract might seem fickle and not comparable to the social contract an individual forms with the state, but it could also be argued that while the benefits differ (e.g., preservation of life versus maximizing gains) the process remains largely the same (Keeley, 1988). In a society or a voluntary group the individual member agrees to give up rights to a collective to gain benefits. It is only through the collective agreement of the distribution of rights and responsibility across members (i.e., social contract) that a society or voluntary group can survive. With that said, two initial limitations must be addressed. First, contracts with voluntary groups are only possible when security is ensured. As Hill and Fukita (2003) argue, "Belonging is first and foremost protection from violence and, without the protection of a nation-state, no other form of belonging is secure" (p. 209). This argument could be seen as similar to Maslow’s (1943) hierarchy of needs. Individuals need security before they can seek to maximize glory and property. Second, the application of Social Contract Theory to voluntary groups only applies to collectives with which the individual can communicate. A contract is formed through the implicit or explicit agreement of the individual with other individuals (Locke, 1689/1980; Rousseau, 1762/1997). Potential members of the group need to understand the rights they are giving up and the benefits they are gaining through the contract. Therefore, the creation of a valid contract is only possible through the continued communication of rights and responsibilities.

This is not to say group identity devoid of communication cannot impact human action (see Kollock, 1998; Brewer, 2007). Instead, the mechanism which drives identity-based action is different from that of the social contract. The formation of group identities
and the formation of social contracts can be seen as two processes which motivate humans to cooperate in groups. The key distinction between the two views lies in how group participation is motivated. Social Identity Theory argues that group participation is motivated by the individual’s desire to define his or her self through group membership (Brewer & Gardner, 1996; Brewer, 2007), whereas contractualism deals with the process by which individuals give up rights to a collective to gain particular benefits. Understandably, there is some overlap in these two types of motivations. The act of entering into a contract might enhance an individual’s sense of group identity. Conversely, an individual might be willing to give up more rights to a collective with which an identity has been formed. Yet, these two processes need not overlap. Research on the minimum group effect has shown that individuals will give higher rewards to in-group members even in the absence of any personal identification with other group members (Tajfel, Billig, Bundy & Flament, 1971). For example, just by telling a subject they are in Group A and without any personal contact with other Group A members, the individual will give greater rewards to in-group members than out-group members (i.e., members of Group B). The minimum group effect research demonstrates that a collective identity can be present without a social contract being in place.

In the opposite case, a shared goal or collective identity is not a necessary precondition of a contractual-based voluntary group. Following the Lockeian view of society, Keeley (1988) argues that each individual in a group has distinct goals associated with his or her group membership. For example, in a non-profit organization the CEO and the once-a-month volunteers might have different goals associated with the group.
Instead of a shared vision or organizational goal, Keeley (1988) argues group participation and cooperation is grounded in the rights and responsibilities assigned to group members. The rights and responsibilities vary between members.

For multiple reasons, a Lockeian (1689/1980) social contract will be used in this dissertation to describe the relationship individuals have with voluntary groups. First, the social contract theories of Hobbes (1651/1996) and Rousseau (1762/1997) both discourage lower-level loyalties. Specifically, Rousseau argues that lower-level loyalties lead to a distortion of the general will, which dissolves the society and leads back to the state of nature. Second, the Lockeian view of the social contract takes an individualistic view of society. This view runs contrary to Rousseau’s functionalist or biological view.

In the biological view, the organization is thought to have a life force above and beyond the individual members (Keeley, 1988). An example of this view can be seen through the idea of organizational goals (e.g., McCarthy & Zald, 1977; Thompson, 1967). From a Lockeian perspective, organizational goals are the individual goals of members of the organization. The goals for the organization can vary between actors within the organization. Using a Rosseauian contract, a higher-order shared organizational goal, synonymous to the general will, would have to be defined.

A Lockeian view also allows for contracts to exist on multiple levels. An individual can seek certain goals from Group A and other goals from Group B. All the lower-level groups remain nested within the larger society which provides security. This view also allows for competition between lower-level groups. Competition between groups is settled, in part, through a prioritization of goals and the relative levels of benefit
derived from each group. A biological view of the contract does not allow for nested
groups. In this view, groups are instead guided and defined by one shared goal (i.e., the
general will). Lower-level units have no autonomy and no unique goals.

Finally, the lifecycle of societies can be directly applied to the creation and
maintenance of social groups. Locke (1689/1980) argues that there are three phases of the
state – creation, operation, and dissolution. These stages can also describe the phases of
social groups. For simplicity and building off the well-known work of Putnam (2000), the
running example used to elaborate on this point will be the prototypical bowling league.
The first phase, creation, only happens by unanimous consent. Alternatively, this phase
can be thought of as every individual has the right to join (or not join) the
commonwealth. In the bowling example, if I decided to start a league I would begin by
telling my friends about it. Every individual would have complete power to decide
whether to join the league. Once there were enough voluntary members, we would have
unanimous consent to create the bowling league. The individuals who decided to join
would have to be willing to give up some rights to be involved in the group (e.g., money
via dues and time via having to show up for scheduled matches). They would only be
willing to give up these rights if they understood there to be some kind of benefit (e.g.,
better bowling scores, comradery).

In a Lockeian contract, the perceived benefits can vary between members. As
Keeley (1988) states, "The 'purpose' as well as binding element of social organization is
the satisfaction of diverse individual interests” (p. 32). For example, Actor A could join
to gain social benefits, while Actor B could join for utilitarian benefits (e.g., becoming a
better bowler). In this view, a shared outcome of action is not necessary. All that is necessary is an agreement to engage in the shared action in the first place (i.e., create a bowling league).

The second phase of the state is operation. In this phase, decision making within the state is made by a majority vote of the citizens of the commonwealth (Locke, 1689/1980). Keeping with the bowling league example, once the league is created a number of other decisions would have to be made: a schedule would have to be created, a dues structure would have to be set, and statistics would have to be kept of bowling scores within the league across time. These decisions could be made by a majority vote; the outcome of which would be binding for all members of the league. The group, by majority decision, could also assign these duties to individuals or a subgroup of the league (i.e., different types of government structures could be created). A majority decision could also be used to give an individual the prerogative to make executive decisions when needed (e.g., decide between red shirts and blue shirts). The league, as a whole, would have the right to punish individuals who do not follow the rules created through the legislative structure.

This phase entails the assignment of rights and responsibilities. According to Keeley (1988), "Virtually all organizational participants have rights (if not always in equal measure). They act accordingly. And the general structure of an organization can be outlined entirely in terms of who has rights to which things" (p. 16). For example, a normal member of the bowling league might have the right to bowl three games every Tuesday night, while a planning committee member might have the right to bowl three
games on every Tuesday night and to assign teams to different lanes. The ability to define the rights of each member of the group is a necessity of the social contract. Further, rights are social constructions. Therefore, each claim of rights is “associated with a correlative obligation or expectation on the part of someone else” (p. 90). For a bowling league member, the right of Tuesday night bowling is associated with the obligation of paying dues. If the benefits derived from the rights do not exceed the costs associated with the obligations, it is unlikely the individual will remain a member of the group (Fine & Holyfield, 1996; Mahoney, Huff, & Huff, 1994).

The final phase of a state is dissolution. In this phase, the society breaks up and all rules created by the commonwealth cease to be binding. Locke (1689/1980) points to three reasons why a society would dissolve. These are external forces, the supreme executive leaving, and the people deciding to dissolve society. For the bowling leagues, an external force could be the bowling alley management kicking the league off its lanes. The society could also dissolve if the person who was handing all the executive and administrative operations of the league (e.g., paying the bowling alley, setting the schedule) retired. Lastly, the bowling league could dissolve if the members all decided at the end of the season that they weren’t being served well by the league and decided to not sign up for next season.

Locke’s (1689/1980) description of the life cycle of a commonwealth can also be applied to the creation and maintenance of voluntary groups. Further, it can be argued the mechanism (i.e., rights and obligations derived from a social contract) could also be the same. By viewing the contracts we enter with social groups as similar to the contracts we
enter with the state, a better understanding of how groups affect individuals and how
individuals affect groups can be attained.

**The Negative Side of the Contractual View of Voluntary Groups.** While
taking a contractual view of voluntary groups is helpful for our understanding of the
actions taken within voluntary groups, it is also important to acknowledge how this view
could have a negative effect on democratic society. Voluntary groups, as discussed,
follow the same mechanism as the larger society and are nested within the society. The
larger society (e.g., the United States of America) offers security to individual members.
Lower-level groups operate under the society and offer other benefits (e.g., increasing
glory or reputation). This arrangement sets up a dangerous and potentially destructive
situation for the society. The key problem being that groups don’t always stay nested
within the society. When a group removes itself from within the larger society (e.g., the
nation), the voluntary group exits the social contract it had with rest of the state. This
process can be seen through radical militias, cults, or intercity gangs. As stated above,
voluntary groups can only occur when people feel they are safe from bodily harm and
death (Hill & Fukita, 2003). The group offering the security acts as the highest-level
contract. For most people, the state offers security, but in some cases (e.g., the streets of
Michoacan, Mexico or East Los Angeles) it could be argued that the state does not
provide adequate security (or are even seen as the source of the conflict). In these cases,
the individual has to turn to another group (e.g., a gang) for security. The gang becomes
the primary source of security for its member and is no longer nested within the nation.
Specifically, the gang has become a commonwealth outside of the nation. It inevitably
enters a state of war with the nation, because they are both in competition for people, property and other goods (Venkatesh, 1997). The fight for scarce resources can result in radical, anti-national actions by the new commonwealth (i.e., the gang).

This circumstance is a necessary possibility of the Lockeian social contract. By allowing the individual to exit the social contract, there is the possibility that a group, traditionally nested within a society, could rise up against the larger society. Locke (1689/1980) and Madison (1787/2008) agree that this form of contract allows for factions to form, but they argue there are formal measures in place (e.g., petition, majority vote) to prevent the ultimate destruction of society that could stem from such action.

**Perceived Voluntary Group Cohesion (PVGC)**

Using the Lockeian social contract as a basis, this dissertation focuses on PVGC. It is theorized that PVGC provides a measure of the strength of the individual’s commitment to his or her contract to a given voluntary group. PVGC can also be seen as an extension of Festinger et al.’s (1950) definition of group cohesion - “the total field of forces which act on the members to remain in the group” (p. 164). Specifically, this work advances Festinger et al.’s (1950) work by formally defining the forces acting upon the individual to keep the individual in the group and to prevent the individual from defaulting on his or her contract with the group. By understanding PVGC, communication research can have a better understanding of individual-level action within voluntary groups. Specifically, PVGC is an individual-level attitudinal variable, which can be defined as *an individual’s assumptions and comprehensions about his or her cognitive, emotional, and communicative attachment to a bound collective with which he*
or she voluntarily interacts to achieve a goal or goals not attainable through individual action. PVGC is theorized to follow a higher-order factor structure with three lower-order factors: Perceived Utility (PU), Affective Evaluation (AE), and Communication Connectedness (CC) (see Figure 1). The conceptual definitions and justifications for the lower-order factors will be described below. First, the terms voluntary group and group cohesion will be discussed in greater detail. Several of the antecedents and consequences of PVGC will also be discussed in order for the PVGC concept to be properly bounded in larger processes of influence (Carless, 2000; Cota, Longman et al., 1995).

![Figure 1. Proposed higher-order factor structure of PVGC](image)

**Voluntary Groups Defined.** PVGC is situated within a Lockeian view of society. Therefore, the definition of voluntary group must follow a Lockeian view as well. A voluntary group in this view is any bound collective\(^6\) with which an individual freely

\(^6\) A collective is defined as more than two sociometrically connected individuals.
interacts to achieve a goal or goals not attainable through individual action (Cartwright & Zander, 1968; Keeley, 1988; Lewin, 1951). This definition is simultaneously broader than some previous definitions of groups and more restrictive than others. It is broader than definitions of groups that include a shared goal as a necessary attribute (see Durkheim, 1893/1984; Madison, 1787/2008; Rousseau, 1762/1997; Simon, 1957). For example, Carron and Hausenblas (1998) define a group as a

...[cluster] of two or more individuals who possess a common identity, have common goals and objectives, share a common fate, exhibit structure patterns of interaction and modes of communication, hold common perceptions about group structure, are personally and instrumentally interdependent, reciprocate interpersonal attraction and consider themselves to be a group (pp. 13-14).

Based on a Lockeian view of voluntary groups, Carron and Hausenblas’s (1998) definition is inappropriate in that it requires shared common goals and interpersonal attraction between members.

The proposed definition is also more limiting than definitions, such as Festinger et al.’s (1950), which states that a group is “a number of interacting and sociometrically connected people” (p. 58). A more restrictive definition of voluntary groups allows for the exclusion of groups with which the individual does not feel he or she voluntarily entered (e.g., the family). It also dismisses groups where there is no interaction, such as a set of people in a movie theatre or a purely identity-based group (e.g., indentifying as a southerner or the group identity primed in minimum group effects research; see Tajfel et al., 1971). Finally, a motivation for interacting with the group must be to achieve some
self-defined goal, which is not individually attainable. In the contractual view, the reason the individual is willing to give up rights is to gain some goal that he or she doesn’t have the ability to gain alone. Therefore, the groups studied using PVGC must also be associated with at least one individual-level goal.

Further, the definition of voluntary groups used in this research is similar to that of previous researchers. For example, Booth and Babchuck (1969) define voluntary associations as “…formal groups embodying continuity, rules governing eligibility, goals, and prescribed rights and obligations of members” (p. 179). This definition is similar to the proposed definition in that it defines a voluntary group as a bound, formal grouping which is associated with the attainment of goals. It goes further than the proposed definition by stating that there are “prescribed rights and obligations” (p. 179). Although within the current research the rights and obligations associated with group membership are seen as an important part of understanding the interworking of the group, they are not seen as a defining characteristic of a voluntary group. Instead, the individual-level goal attainment associated with the voluntary group acts as the defining characteristic (Keeley, 1988). A group is created by a number of people coming together to achieve individual-level goals. Rights and obligations are then defined to allow members to achieve those individual-level goals.

Group Cohesion. Research in many fields (e.g., communication, sociology, social psychology, urban studies) has sought to understand individuals’ attachment to various groups and collectives. For example, researchers have been interested in individuals’ integration into their communities (e.g., Cho & McLeod, 2007; Kim & Ball-
Rokeach, 2006; McLeod et al., 1996; Timpone, 1998), adolescents’ attachment to their peer and school groups (e.g., Atkinson, Richard, & Carlson, 2001; Ellickson & Hayes, 1992; Oetting, Donnermeyer, & Deffenbacher, 1998), athletes’ connection to their teams (e.g., Carron & Brawley, 2000; Li & Hammer, 1996) and employees’ relationship with work groups (e.g., Mueller & Lawler, 1999; Warner & Lunt, 1941). Throughout the previous research, the concept used to explain group-level attachment has varied greatly. For example, McLeod et al. (1996) relied on the concept of community integration to explain individuals’ attachment to their community. Timpone (1998), on the other hand, used the concept of social connectedness to look at the same relationship. The one concept which has been used consistently across disciplines to define individuals’ relationships with collectives is group cohesion (for reviews see Friedkin, 2004; Hogg, 1992; Lott & Lott, 1965; Mudrack, 1989). Unfortunately, the concept’s name is the only thing consistent across studies (Bollen & Hoyle, 1990; Cota, Evans, Dion, Kilik, & Longman, 1995; Chang & Bordia, 2001; Piper et al., 1983). As Bednar and Kaul (1978) wittily stated, there is little cohesion to be found in group cohesion research.

**History of Group Cohesion.** Definitions of group cohesion date back to at least 1937, when Moreno and Jennings described it as “the forces holding the individuals within the groupings in which they are” (p. 371). Festinger et al. (1950), in their study of social interactions within the Westgate housing project, provide the first formal explication of the concept. They defined group cohesion as “the total field of forces which act on the members to remain in the group” (p. 164). Festinger et al. identified two dimensions of group cohesion. First, the attractiveness of the group, defined as “the
extent to which the group is a goal in and of itself and has valance” (p. 165). The second is means control, which is “the extent to which the group mediates goals which are important for the members” (p. 165). They identified two specific types of goals important to members: social interactions and specific goals of the individual.

The inconsistency and confusion associated with both the conceptualization and operationalization of group cohesion began immediately with Festinger and his colleagues. Within the Westgate study, Festinger et al. (1950) defined group cohesion as “the total field of force” acting upon the individual, yet their measurement of group cohesion did not even attempt to identify or measure these forces (Mudrack, 1989). Instead, Festinger et al. (1950) measured group cohesion by asking a single question regarding whom in the community the individual talked to most. The researchers then combined the data from all individuals and examined the overlap within and between groups. It could be argued that these researcher’s sociometric measure accounts for some social pressure associated with group membership, but it does not address other major pressures such as means control or goal attainment (Cota, Evans, et al., 1995). This early error in operationalization led to many scholars focusing on the interpersonal attraction dimension of group cohesion at the cost of the means control dimension (e.g., Lott & Lott, 1965; Terborg, Castore, & DeNinno, 1976; for reviews see Hogg, 1992; Cota, Evans et al., 1995).

Beyond the operational issues, Festinger added further confusion by changing slightly the conceptual definition of group cohesion. In an article published in the same year as the Westgate book (i.e., Festinger et al., 1950), Festinger (1950) defines group
cohesion as “the resultant of all forces acting on members to remain in the group” (p. 274). The difference between the definitions is small, but has led to additional confusion over the specific forces to be studied (Mudrack, 1989). As Bollen and Hoyle (1990) state, “the original definition proposed by Festinger et al. (1950) focused on the causes of cohesion (forces acting upon group members); the revised definition proposed by Festinger (1950) focuses on the effects of cohesion (the resultant of forces)” (p. 481). This conceptual confusion has resulted in some scholars focusing on outcomes while purporting to be studying group cohesion. For example, Carron (1982) defines group cohesion as “a dynamic process that is reflected in the tendency to stick together and remain united in the pursuit of its goals and objectives” (p. 124). The current research, harkening back to the Festinger et al. (1950) definition, views the likelihood of continued group membership to be an outcome of the combined pressure or forces acting on the individual (i.e., group cohesion). Therefore, the measurement of group cohesion must be accomplished through the measurement of forces internal to the group cohesion construct, as opposed to the measurement of outcomes (e.g., future commitment to the group) that are a consequence of the construct.

Multidimensional Views of Group Cohesion. Like most recent conceptualizations of group cohesion (e.g., Beal, Cohen, Burke, & McLendon, 2003; Bollen & Hoyle 1990; Carron & Brawley, 2000; Griffith, 1988; Yukelson, Weinberg, & Jackson, 1984), the current study treats group cohesion as a multidimensional concept. In previous studies, the dimensions making up group cohesion have varied greatly. For example, Griffith (1988), looking at Army units, described group cohesion as having four
dimensions: quality of instrumental and affective relationships with other members, quality of instrumental and affective relationships with leaders, internalization of Army values, and confidence in weaponry and leaders. While Yukelson et al. (1984) argue that the primary dimensions of group cohesion are: Attraction to the group, utility of purpose, quality of teamwork, and feelings of value derived from an individuals role in the group.

The conceptualizations of group cohesion have also varied in their level of measurement, with some being applied to the group-level (e.g., Carron & Brawley, 2000) and others applied to the individual-level (e.g., Bollen & Hoyle, 1990). Finally, the measurement perspective has also varied across conceptualizations, with some arguing for objective measures (e.g., Festinger et al., 1950) and others arguing for perceptual measures (e.g., Bollen & Hoyle, 1990).

Currently, two multidimensional views of group cohesion are popular in the literature. The first is Carron, Widmeyer, and Brawley’s (1985) view of group cohesion, which was originally applied to sports groups and measured using the Group Environmental Questionnaire. The second is Bollen and Hoyle’s (1990) conceptualization and operationalization of perceived cohesion. These two views of group cohesion represent the major differences between how group cohesion can be viewed (i.e., group versus individual and objective versus perceptual).

The Group Environmental Questionnaire (GEQ). After the initial discussion of group cohesion in the 1950’s, the concept did not gain popularity until it was used in the sports science literature in the 1980’s (Hogg, 1992). Out of this literature emerged Carron et al.’s (1985) view of group cohesion and their 18-item Group Environmental
Questionnaire (GEQ) aimed at measuring group cohesion. Derivative of Carron’s (1982) definition, Carron, Widmeyer, and Brawley (1998) define group cohesion as "a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of members' affective needs” (p. 213). They argue that group cohesion is composed primarily of two dimensions: Group Integration (GI) and Attraction to the Group (ATG). Group integration is defined as “a member’s perceptions of the group as total” (Hoigaard et al., 2006, p. 219); ATG is defined as “a member’s personal attraction to the group” (p. 219). Further, Carron and Brawley (2000) argue that both GI and ATG are composed of a task and social component. The task (T) component deals with goal attainment and collective performance, whereas, the social (S) component deals with relationships within the group. A measure was created based on the four subdimensions – GI-T, GI-S, ATG-T, and ATG-S. The full measure is provided in Appendix A (see pp. 162-164).

The GEQ has been validated in numerous studies examining sports groups (see Brawley, Carron, & Widmeyer, 1987; Hoigaard et al., 2006; Li & Hammer, 1996). Unfortunately, studies which have attempted to apply the GEQ to non-sports groups have been less successful in validating the measure (see Carless, 2000). For example, when studying groups of college students, Chang and Bordia (2001) found the full scale to be inconsistent and lacking predictive validity with only the GI subscales (task and social) predicting key outcome variables like group performance.

Beyond the limited application of the GEQ to non-sport groups, group cohesion as described by Carron et al. (1998) is a group-level construct. It is the tendency of a
group to stick together and not the tendency of an individual to stay in the group. The group-level view of group cohesion is used by some other researchers (Beal et al., 2003; Carless, 2000; Gross & Martin, 1952; Mudrack, 1989), but it is less relevant to the current study. Specifically, the current study is based on a contractual view of groups (Keeley, 1988). In this view, the individual members’ goals and obligations are key in explaining their actions within the group. The pattern of goals and obligations across the group can then be used to understand the macro-level group processes. Therefore, by conceptualizing group cohesion as an individual-level variable, there can be greater understanding of how voluntary groups emerge and maintain themselves in a complex society in which there are numerous groups and competition between those groups (Booth & Babchuk, 1969; Popielarz & McPherson, 1995).

**Perceived Cohesion.** Through their creation of the concept of perceived cohesion, Bollen and Hoyle (1990) present an abstract measure that exists at the individual-level of analysis. They state, "perceived cohesion encompasses an individual's sense of belonging to a particular group and his or her feelings of morale associated with membership in the group" (p. 482). They argue that belonging represents a cognitive component, while morale represents an affective component. From these two dimensions, the authors constructed a 6-item measure. The full scale is provided in Appendix B (see p. 164). In their initial study, Bollen and Hoyle (1990) examined individuals’ relationships with two groups: a college and a city. Using confirmatory factor analysis (CFA), they had limited support for the multi-dimensional structure of their measure. In the college group, they found no significant difference between a single-factor solution
and the theorized dual-factor solution. In the city group, the dual-factor solution did fit the data significantly better than the single-factor solution, but the correlation between the factors was still very high \((r = 0.92)\). In a small group setting, Chin, Salisbury, Pearson, and Stollak (1999) had similar findings in which the belonging and morale dimensions were highly correlated (i.e., \(r > 0.90\)) in all samples examined.

Beyond the questionable nature of the factor design of their measure, other limitations prevent the perceived cohesion measure from being used in the current study. First, there has been limited validation of the perceived cohesion scale. In the original study, Bollen and Hoyle’s (1990) only validity argument was based on the comparison between the two groups they studied (i.e., a school and a community). Their confirmed hypothesis was that the school group would have higher levels of perceived cohesion than the larger city group. A more recent study provided some predictive validity for the measure by demonstrating a relationship between perceived cohesion and voluntary group participation (Paxton & Moody, 2003).

Even with further validation, the perceived cohesion measure would still be an inherently flawed operationalization for understanding group cohesion at the individual-levels, and therefore predicting participation in voluntary groups. As Paxton and Moody (2003) state, perceived cohesion “requires that people want to be members of the group; that they are happy and enthusiastic to be members" (p. 35). Satisfied members are not always the case with voluntary groups. A begrudging member is still a member of the group and can participate. Further, Bollen and Hoyle (1990) state that the belonging dimension is nearly identical to identification (Brewer & Gardner, 1996). As stated
above, the current research uses a contractual view, as opposed to an identity-based lens, to understand individuals’ relationships with groups. Like the Rousseauian contract can be seen as falling into the functional view, the perceived cohesion measure can be seen as representing the identity view as opposed to the contractual. Its guiding philosophy is in explaining group relationships through understanding the emotional connection the individual has with the group and the way in which the individual defines him or herself through group membership. This explanation varies greatly from the contractual view, which focuses on the distributions of benefits and responsibilities.

With these limitations noted, Bollen and Hoyle’s (1990) view of group cohesion is important to the current research in that it takes a perceptual view of group cohesion. Dating back to the beginning of group cohesion research, there has been disagreement on whether the measurement of the concept should be based on objective or perceptual indicators. For example, Festinger et al. (1950) used sociometric data to measure group cohesion within the Westgate housing project, while Gross and Martin (1952) argued that perceptual measurement was superior for understanding the total field of forces acting on the individual. This debate continues within group cohesion research (for perceptual see Carron & Brawley, 2000; Holtz, 2004; Piper et al., 1983; for objective see Dimock, 1986; Lott & Lott, 1965; Wasserman & Faust, 1994). The current study relies on the perceptual view. It is argued that a better understanding of individual-level group participation can be gained through understanding individuals’ perceptions about the forces or pressures associated with the given group. Specifically, it is argued that individuals’ perceptions guide their action. Perceptions are shaped by numerous variables, including objective
truths. For example, both the actual number of members in a group and the number of other member with which the individual can interact, based on the structure of the given group, affect an individual’s perceptions of the number of members within the group. By taking an objective view, the measurement of group-related variables is inherently missing information individuals use to make decisions.

**PVGC Dimensions – Measurement.** Due to the inconsistency and confusion associated with the conceptualization and operationalization of group cohesion, a new multidimensional concept is being proposed to focus more squarely on individuals’ perceptions about the “field of forces” affecting their relationship with a given group. It is argued that this concept quantifies individuals’ commitment to the social contracts created with voluntary groups. PVGC is proposed to be a higher-order factor, with three lower-order factors: perceived utility (PU), affective evaluation (AE), and communication connectedness (CC) (see Figure 1, p. 25). These lower-order factors represent the key forces affecting the individual’s relationship with the voluntary group being studied. PVGC is currently bound to voluntary groups (i.e., groups the individual freely enters to achieve some goal). Following the calls of many previous researchers (e.g., Bollen & Hoyle, 1990; Carless, 2000; Carron & Brawley, 2000; Gross & Martin, 1952; Piper et al., 1983), the items in the PVGC measure are intentionally abstract. Therefore, the measure can be used across numerous voluntary groups, where the nature of goals, benefits, and emotional connections could vary greatly. It has also been argued that individuals’ goals associated with a voluntary group change over time (Fine & Holyfield, 1996). For example, when one joins a voluntary group a goal could be to gain

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knowledge. After being in the group for a sufficient amount of time, an individual’s goals could shift to educating others. The PVGC measure was created abstractly enough to include both types of goals. The full PVGC measure is reported in Appendix C (see p. 165).

**Perceived utility (PU).** The conceptual definition of PU is *an individual’s perceptions about the costs and benefits of membership in a given voluntary group*. In a contractual framework, this factor can be said to be judging the individual’s perceptions of the ratio of rights lost to benefits gained (Keeley, 1988). As discussed earlier, the individual enters the group to gain some individual-level benefit. To gain the benefit, the individual is willing to relinquish some rights. To understand an individual’s ongoing commitment to the contract it is important to understand if the individual believes he or she is gaining through group membership. Otherwise stated, it is important to understand if the individual is benefitting through the relinquishing of rights.

Previous research has also seen utility as a primary motivator for individuals’ entrance into the contract. As Fine and Holyfield (1996) state, "one reason why people participate in leisure organizations is simple: they receive benefits that outweigh the costs of participation, and this ratio is more favorable than that for nonparticipation" (p. 23). This factor is similar to Festinger et al.’s (1950) proposed dimension of means control and is meant to allow for all perceived benefits of group membership. Numerous other conceptualizations of group cohesion have also argued that the attainment of benefits is a key dimension of the concept (e.g., Beal et al., 2003; Holtz, 2004; Horne, 2001). Further, perceived utility is grounded in the rational actor view of human motivation, which has
been theorized for hundreds of years (e.g., Downs, 1957; Granovetter, 1978; Smith, 1776/1991).

The measurement of PU has been accomplished through three self-report items: (PU01) “This group allows me to accomplish a lot,” (PU02) “I gain a lot from being involved in this group,” and (PU03) “I gain a lot from communication with this group.” These items measure the relative level of benefit the individual receives through group membership. In data collection 1 of Geidner (2010), numerous cost-related items were included in the initial battery of PVGC items. The cost-related items were not included in the final measure because of the substantial error and inconsistency they added, while adding little theoretical or explanatory value. Further, it is the desire for some benefit, which leads the individual to group participation. The rights, which the member relinquishes, are negotiated. Therefore, the measurement of perceived benefits is seen as more important to the understanding the members commitment to the contract.

Affective evaluation (AE). AE is defined as the individual’s emotional evaluation of the specific group being examined. AE is similar to the attractiveness to the group dimension of previous group cohesion research (e.g., Beal et al., 2003; Carron & Brawley, 2000; Festinger et al., 1950; Hogg, 1992; Lott & Lott, 1965). In these earlier studies, it was argued that attractiveness to the group was the primary predictor of continued involvement in a voluntary group. As discussed above, numerous studies have empirically demonstrated the connection between an emotional connection to a group and future participation within that group (e.g., Carron & Brawley, 2000; Beal et al., 2003).
Therefore, an affective dimension should be included in the current measure in order to address this important association.

Beyond group cohesion research, other theories examining group relationships have also found the emotional dimension to be important. For example, Choice-Process Theory has argued that affective attachment is a primary motivator of group commitment (Lawler, 1992). The role of an affective tie in encouraging bonding and attachment to a group has also been argued for in research on community integration (McLeod et al., 1996) and family and school bonding (Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; Oetting et al., 1998).

Affective evaluation might not be seen as fitting directly into the contractual view. Rational thought is generally thought to rule in contractualism and would usually be true in cases of life or death (e.g., the initial contract with the state). In the lower-level contracts with voluntary groups, greater choice and competition between groups increases the need for strong emotional attachments (Mueller & Lawler, 1999; Popielarz & McPherson, 1995).

The measurement of AE has been accomplished though the self-reported level of agreement with the following three statements: (AE01) “When I think about this group I feel happy,” (AE02) “When I think about this group I feel compassion,” and (AE03) “When I think about this group I feel relief.” The items represent three positive discreet emotions. Numerous items associated with negative discreet emotions were included in the initial battery of PVGC items (i.e., data collection 1 of Geidner, 2010). The negative items had low variation and a strong positive skew. Only the positive discreet emotions
were retained because they had sufficient variation and still quantified the individual’s level of emotional attachment to the group.

**Communication connectedness (CC).** Communication connectedness can be conceptually defined as *an individual’s perceived ability to send and receive communication within the group.* This concept does not refer to communication directly; it refers to individuals’ perceptions about their ability to communicate, similar to self-efficacy (Bandura, 1993). Communication connectedness is based on the individual feeling that they have a voice within the voluntary group and can communicate or receive communications when the need arises. Specifically, an individual could be high in CC, while not communicating within the group at all. In this case, the individual would believe they have the ability, but choose not to communicate.

Based on the contractual view, it is important that the individual can enter the contract voluntarily and can continuously negotiate the rights and obligations associated with the contract (Locke, 1689/1980; Keeley, 1988). It is also important for necessary communication to be received by individual members bound by the contract. For example, a collective through the majority provision can give rule-making ability to a subset of the group (i.e., create a government; Locke, 1689/1980). If the empowered subset changes a group rule, individual members must know about that rule change.

Communication connectedness allows individuals to have increased control over their contract with the voluntary group. Lawler (1992) argues group commitment is enhanced when the individual gains a feeling of self-control through group membership. For example, a political interest group could give members a sense of control over the
political landscape (e.g., by giving the individual the perception of power to help change a law or elect an individual), which would enhance commitment to that group. In discussing self-control, Lawler generally refers to control over the environment, but the individual must also feel a sense of self-control within the voluntary group. Individuals have self-control in a voluntary group when they can actively negotiate their rights and responsibilities associated with membership (Keeley, 1988). This research proposes that individuals gain a sense of control over the specifics of their contractual relationship through the perceived ability to send and receive communication within the group. Alternatively, it can be viewed that the ability to actively negotiate an individual’s contract with the group acts as a force upon the individual resulting in the individual having increased commitment to his or her contract with the voluntary group.

Previous group cohesion research hints at the need for a communication based dimension. For example, Holtz (2004) found that when individuals were able to communicate freely in a group they had higher levels of perceived group cohesion than when communication between members was restricted. The current study argues that communication connectedness is not just an antecedent of group cohesion, but is in fact an endogenous dimension of the concept. Outside of the group cohesion research, scholars have found that an individual’s ability to communicate in a collective is related to community bonding and civic participation (e.g., Kim & Ball-Rokeach, 2006).

The measurement of CC has been accomplished through the self-reported level of agreement with the three following statements: (CC01) “I find it hard to communicate with this group,” (CC02) “People in this group have a hard time contacting me,” and
(CC03) “Communication within this group is easy.” The items for the CC measure reflect one item judging ability to send communication (i.e., CC01), one item judging the ability to receive information (i.e., CC02), and one general question related to the ease of communication within the group (i.e., CC03). By following this measurement strategy, it is believed CC taps into individuals’ ability to negotiate and gain information about their contract with the given voluntary group. This ability is essential in understanding the relative strength of the individual’s commitment to their contract (i.e., PVGC).

**Previous Studies.** The PVGC measure received some support for its validity and reliability in an initial study (Geidner, 2010). The research was composed of three studies, each utilizing a unique sample. The first data collection consisted of an online survey distributed to communication and psychology students at The Ohio State University ($N = 302$). The students were asked to think about a voluntary group or club they were currently involved in at the university. They listed the club and then answered a battery of questions about their involvement in that club. The battery of items included questions about the amount of time they devote to the club, the strength of collective identity as it relates to the club, and a host of PVGC-related items. The data from Study 1 was used to pair the measure down to the final nine items – three items for each subdimension (see Appendix C, p. 165).  

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7 The initial battery of items included 40 items: 17 for PU, 11 for AE, and 12 for CC. Through examining the four moments of all items, inter-item correlations, and exploratory factor analysis results, the 9-item PVGC scale was derived.
To begin the process of validating the measure, a subset from the first data collection was contacted a week after the initial survey ($N = 82$). The students were asked to list the same voluntary group they listed the previous week and then were asked a number of questions associated with that voluntary group, including the 9-item PVGC measure. Based on previous theorizing on group cohesion (e.g., Festinger et al., 1950; Carron & Brawley, 2000), it was hypothesized that PVGC should be fairly stable in the short-term; therefore, the two PVGC data points should be highly correlated (i.e., retain high test-retest reliability). It was found that the PVGC scale from the two waves of data collection had a 0.86 correlation ($p < .001$) with each other. The respective within-factor correlations across the two time points were as follows: $PU_r = 0.83, p < .001$, $AE_r = 0.72, p < .001$, and $CC_r = 0.71, p < .001$. These findings supported the strong test-retest reliability of the PVGC measure.

The second and third data collections replicated the finding of the first study and bolstered the validity of the measure by linking the concept to other related concepts. For the second data collection another online survey was distributed to communication students at The Ohio State University ($N = 189$). The students were asked about their involvement in a voluntary group on campus. Using confirmatory factor analysis (CFA), the 9-item hypothesized PVGC measure (see Figure 6, p. 87) was found to fit the data well: $\chi^2 (df = 24) = 59.5$; Confirmatory Fit Index (CFI) = 0.97; Root Mean Square Error

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8 The total number of participants contacted for the second wave was approximately 200. Of these, 141 completed the survey. Fifty-nine respondents were dropped because they could not be properly matched with data from the first wave.

9 Participants were matched on both their university e-mail address and the name of the group they listed. This was done to confirm PVGC was being measured for the same group at each time point.
of Approximation (RMSEA) = 0.09 (90% C. I., 0.06 to 0.12); Standardized Root Mean Square Residual (SRMR) = 0.05.\textsuperscript{10} This model had a significantly better fit than an alternative single-factor theoretical model, $\Delta \chi^2 (df = 3) = 119.2, p < .001$. Data collection 2 also included a number of validity checks, all of which were confirmed. PVGC did not correlate with either sensation seeking ($r = 0.05, p = .472$) or need for cognition ($r = -0.10; p = 0.19$). As hypothesized, PVGC was found to correlate positively and in a statistically significant fashion with both collectivist outlook ($r = 0.30; p < .001$) and collective identity to the group ($r = 0.70; p < .001$). Finally, in a regression model with length of membership, frequency of previous involvement, and collective identity included as predictor variables, PVGC was found to be the strongest predictor of future commitment to the voluntary group, accounting for 14.1\% of the variance (see Table 1, p. 45).

\textsuperscript{10} The cutoff points used to define acceptable model fit were: CFI > 0.95, RMSEA < 0.09, and SRMR < 0.06 (for further discussion of model fit within SEM see Holbert & Stephenson, 2002). These are the same cutoff points that are used to define acceptable model fit in this dissertation.
A third data collection utilized a random sample of registered voters in the state of Ohio \((N = 151)\). The participants were asked to name a voluntary group to which they belonged (e.g., a book group). They were then asked a series of questions associated with their membership in that club, including the PVGC scale. Again, the proposed model was found to fit the data: \(\chi^2 (df = 24) = 37.9\); CFI = 0.96; RMSEA = 0.06 (90% C.I., 0.02 to 0.10); SRMR = 0.05. This model had a significantly better fit than an alternative single-factor theoretical model, \(\Delta \chi^2 (df = 3) = 41.5, p < .001\). As with the second data collection, all validity checks included in the study were confirmed. Interest in the group
and group knowledge \((r = 0.47, p < .001)\) were found to positively correlate with PVGC. Also, participants who felt other group members were similar to themselves were likely to have high levels of PVGC \((r = 0.52, p < .001)\). Finally, PVGC was again included in a regression model predicting future commitment to the voluntary group. This time feelings of similarity to other group members, length of membership, and previous involvement in the group were included in the model as predictor variables. PVGC was found to be the strongest predictor of future commitment to the voluntary group, accounting for 6.3% of the total variance (see Table 1, p. 45).

**Current Study**

The goal of the current study is to expand on the earlier PVGC research, further validate the PVGC measure, and demonstrate its importance in understanding numerous types of participation in voluntary groups. In articulating and validating a concept, an important step is defining the concept’s relationship to other concepts (Carless, 2000; Mudrack, 1989). Cota, Evans, et al. (1995) state, “researchers should be careful to distinguish cohesion from its antecedents, consequences, and correlates" (p. 577). Carless (2000) adds to this by stating, “in particular, there is a need to conceptually differentiate between cohesion and related concepts and empirically examine the extent of overlap" (p. 113). In an effort to heed these calls, the current study will theoretically and empirically articulate the relationship between PVGC and a number of concepts believed to be its antecedents (e.g., group size, procedural justice), correlates (e.g., perceived cohesion), and consequences (e.g., future commitment, public participation, willingness to impose sanctions).
**Group size.** Across the history of group cohesion research, it has been theorized consistently that group size should affect the level of group cohesion an individual feels toward a group (see Carron, Brawley, & Widmeyer, 1990; Hogg, 1992; Rovio, Eskola, Kozub, Duda, & Lintunen, 2009). Specifically related to the PVGC conceptualization of group cohesion, Mullen and Cooper (1994) argue that individuals will have less emotional attachment – equivalent to the AE dimension of PVGC – to a group as the size of the group increases. They argue that individualization occurs in large organizations, which results in the group becoming less important to the individual. Individualization is not to be confused with or seen as contradictory to the process of deindividuation associated with crowds (see Festinger, Pepitone, & Newcomb, 1952; LeBon, 1896/2006). In the case of crowds, individuals feel anonymous in a large group and due to the emotionally charged atmosphere follow the temporary group norms (e.g., smashing windows) instead of established societal norms (e.g., maintaining a respect for personal property). On the other hand, voluntary groups mimic normal society. Occasionally, the members of a voluntary group can turn into one of LeBon’s (1896/2006) crowds, but generally members are identifiable and not in a state of high emotional arousal. In a large organization, the individual has less emotional connection to the group and less control of the group, which leads the person to focus on individual-level benefits as opposed to group-level benefits (Mullen & Cooper, 1994).

In a meta-analysis, Mullen and Cooper (1994) found that as group size goes up the overall performance of the group decreases. Performance was operationalized as “an objective indicator (either actual productivity or performance ratings made by someone
who was not a group member)” (p. 215). Although the contractual view of groups argues for individual-based goals, it can still be argued that if a group is not performing key tasks well an individual’s level of perceived utility would be negatively affected. Paxton and Moody (2003) had a similar finding when studying group life in a sorority. They found commitment to the subgroups (i.e., cliques) within the sorority was higher than commitment to the sorority as a whole. Research on Choice-Process Theory (see Lawler, 1992; Mueller & Lawler, 1999) would also predict higher levels of PVGC in smaller groups. Mueller and Lawler (1999) argue, “actors form the strongest affective attachments to those groups which give them the greatest generalized sense of control” (p. 326). Individual members can have more control in smaller groups than in larger groups (Lawler, 1992; Mueller & Lawler, 1999). Based on this previous research and these broader theoretical rationales, it is believed that as group size goes up individual-level PVGC will go down. Thus, the following hypothesis is offered:

\[ H1: \text{Group size negatively affects individual-level PVGC.} \]

**Procedural Justice.** The reason for creating a contract in Locke’s (1689/1980) view is that society is too large and complex for individuals to operate without a collective agreement. Voluntary groups have the same problems and can compensate for increasing size by introducing democratic decision-making principles into organizational structures. In discussing work groups, Mueller and Lawler (1992) argue that organizations that follow democratic principles (e.g., election of leaders, formalized mechanism for members to petition the group) give individual members a greater sense of control. The increased sense of control positively affects an individual’s affective bond
to the organization. Previous research using group cohesion has argued that democratic leadership can increase cohesion in groups (Rovio et al., 2009). For example, in an experimental setting, Holtz (2004) created two types of groups – one with autocratic leadership and one with democratic leadership. He then measured perceived cohesion using a 5-item scaled, which included items such as: “I felt that I was a member of a well-functioning group” and “People in this group didn’t really trust each other judgment enough” (p. 117). Holtz found levels of perceived cohesion were significantly higher in the democratic groups than the autocratic groups. Although the measure of perceived cohesion is different from PVGC (e.g., it does not include any question dealing with emotional or communicative attachment to the group), a number of the items are similar to items for the PU dimension of PVGC.

Underlying PVGC is the assumption that voluntary groups are guided by a Lockeian (1689/1980) social contract; therefore voluntary groups are democratic in nature (i.e., decision-making is based on the majority provision). A concept central to understanding the perceived legitimacy of a democratic institution is procedural justice (see Besley & McComas, 2005; Colquitt, 2001; Rhoades, Eisenberger, & Armeli, 2001; Thibaut & Walker 1975; Tyler & Blader, 2000). Procedural justice can be defined as the fairness of processes leading to decisions in a group (Colquitt, 2001). In the contractual frame, procedural justice can be viewed as the individual’s perceptions regarding the fairness of the group’s decision-making processes, which determine the distribution of benefits and responsibilities.
Although it is assumed voluntary groups are democratic, individual perceptions regarding the fairness of the decision-making processes vary between members (Thibaut & Walker 1975). Previous research has found that perceptions of procedural justice within a group positively affects organizational commitment and negatively affects intentions to quit an organization (Ayee, Budhwar, & Chen, 2002; McFarlin & Sweeney, 1992; Meyer & Allen, 1997; Ponnu & Chuah, 2010; Rhoades et al., 2001). Rhoades et al. (2001) found that procedural justice has both a direct and indirect effect on affective commitment to the organization (operationalized as feelings of belonging and identification to the organization), with the indirect effect being mediated through perceived organizational support. Similarly, Aryee et al. (2002) found procedural justice to have both direct and indirect effects on organizational commitment. They found trust in the organization to partially mediate the relationship. Besley and McComas (2005) explicitly call for survey research to investigate the link between procedural justice and organizational commitment (p. 428). They hypothesized that exposure to relational frames, or frames that help individuals understand where they fit within a given organization, will enhance procedural justice, which, in turn, positively affects organizational commitment. Although future research should look at the effect of intragroup communication on procedural justice, this dissertation will only look at the relationship between individuals’ perceptions of procedural justice and their relationship with the voluntary group (i.e., PVGC). This research demonstrates the importance of just procedures for distributing benefits and responsibilities within a voluntary group. Further, it demonstrates the need for explicit contracts within voluntary groups, so members...
clearly understand the decision-making procedures. The following hypothesis will be tested:

\( H2: \) Perceived procedural justice positively affects individual-level PVGC.

**Perceived cohesion.** When validating a concept (e.g., PVGC), it is important to relate the concept to other similar concepts. In the literature, the concept most closely related to PVGC is Bollen and Hoyle’s (1990) perceived cohesion. Like PVGC, their concept also refers to an individual’s perceptions regarding the level of attachment to a group, but how that attachment is created and measured vary between the concepts. Perceived cohesion is composed of two subdimensions (i.e., sense of belonging and the morale associated with group membership), while PVGC focuses on PU, AE, and CC. Because both concepts purport to be studying the level of attachment an individual feels to a group, it is hypothesized that the concepts will be positively correlated.

Bolstering confidence in this hypothesis is the relative similarity between perceived cohesion and collective identity. Specifically, Bollen and Hoyle (1990) argue that the belonging dimension of perceived cohesion is nearly identical to feelings of group identification. In the previous PVGC study (Geidner, 2010), collective identity was found to highly correlate with PVGC (data collection 2 \( r = 0.70, p < .001 \)). Being that PVGC and collective identity are positively correlated and perceived cohesion and collective identity are positively correlated, PVGC and perceived cohesion should also be positively correlated (i.e., achieving a state of balance, see Heider, 1958).

\( H3a: \) PVGC and perceived cohesion are positively correlated.
The relationship between perceived cohesion and PVGC will help demonstrate the convergent validity of PVGC, but it might also suggest that these two concepts are redundant. If this is true, the new measure, PVGC, might not be necessary for understanding an individual’s attachment to a group. Therefore, it is also important to distinguish the two concepts empirically. Separating the concepts will demonstrate that PVGC isn’t just a redundant measure of perceived cohesion (i.e., achievement of unidimensionality) and demonstrate the discriminant validity of PVGC. Based on the differences in the subdimensions of the concepts, it is hypothesized that PVGC is a necessary explanatory variable and is not redundant with perceived cohesion. Thus, the following is offered:

*H3b:* PVGC and perceived cohesion are empirically distinct concepts.

The relationship between AE and perceived cohesion will be further examined to demonstrate an inherent flaw in the conceptualization of perceived cohesion. Specifically, it is believed that both the belonging and morale dimensions of the perceived cohesion scale tap into an individual’s emotional connection to a given group. Bollen and Hoyle (1990) argue that the belonging dimension is a cognitive dimension. However, as the items for this scale make evident (see Appendix B, p. 164), the belonging dimension doesn’t just tap into the cognitive or rational aspects of an individual’s relationships with a voluntary group. For example, it is not clear that the following belonging item addresses only cognitive attachment: “I *feel* a sense of belonging to [group name].” This is further evidenced by the fact that in all samples the correlations between the two dimensions was extremely high – over 0.90 in all samples.
(Bollen & Hoyle, 1990; Chin et al., 1999). With this in mind, it is believed that perceived cohesion would be most closely related to the AE dimension of the PVGC measure given that this element of the larger PVGC is that which focuses on affect.

\textit{H4:} The correlation between the perceived cohesion scale and AE will be higher than the correlations between perceived cohesion and either PU or CC.

\textbf{Future commitment to the voluntary group.} In general, for a voluntary group to survive it needs to maintain members. Group members need to show up at meetings, pay dues, and take care of everyday tasks in order for the group to exist. Further, long-term members add stability to the group, which ultimately affects the success of the group (Griffiths, 1988). Future commitment to the voluntary group refers to an individual-level intention to engage in internal group activities (e.g., attend meeting, maintaining membership) at a later time. It is theorized that individual-level PVGC would affect an individual’s future commitment to a voluntary group and therefore affect the ultimate success or failure of the group.

Specifically, PVGC attempts to refocus group cohesion research to more closely match Festinger et al’s (1950) view of cohesion as opposed to its more recent conceptualizations (e.g., Bollen & Hoyle, 1990; Carron et al., 1988). As stated earlier, Festinger et al. (1950) defined group cohesion as “the total field of forces which act on the members to remain in the group” (p. 164). In the current study, the forces are defined as communicative, emotional, and rational. It is theorized that these forces act to keep members in groups and therefore should enhance individual-level feelings of commitment to the voluntary group. In Geidner (2010), PVGC was included in regression
analyses predicting future commitment. In both samples (i.e., data collections 2 and 3), PVGC was found to be the single largest predictor of future commitment to the voluntary group (data collection 2 $b = 0.69$, $SE = 0.073$, $p < .001$; data collection 3 $b = 0.25$, $SE = 0.077$, $p < .001$; see Table 1, p. 45).

Outside of Festinger et al.’s (1950) view of group cohesion, numerous other conceptualizations of group cohesion have been linked to future commitment to the voluntary group (e.g., Bollen & Hoyle, 1990; Paxton & Moody, 2003; Piper et al., 1983). For example, in his study of U.S. Army units, Griffith (1988) found feelings of group cohesion – conceptualized in part as quality of instrumental and affective relationships with others – were correlated with future commitment to the Army. Based on the previous research and in order to replicate the previous finding associated with PVGC, it is predicted that PVGC would increase an individual’s level of future commitment to a voluntary group.

$H5$: PVGC positively affects future commitment to the group.

In addition to examining the relationship between the full PVGC scale and future commitment, a research question will ask how the individual lower-order factors of PVGC affect future commitment. This assessment will allow for an understanding of any disparate effects between the three dimensions and will further establish the necessity of each part of the PVGC measure.

Of special importance to this dissertation is demonstrating the necessity of the CC dimension of PVGC. The CC factor represents the largest departure from previous group cohesion research (see Hogg, 1992; Lott & Lott, 1965). Specifically, the current research
proposes a contractual view of individuals’ relationships with groups, based on a Lockeian (1689/1980) social contract. Under this view the individual must be able to understand and negotiate his or her contract with the given voluntary group. Without this ability, the individual is not truly free and is instead in the “chains” of the voluntary group. Understanding the individual’s freedom within the voluntary group is the key characteristic of PVGC.

Perceived cohesion, on the other hand, takes an identity-based view of group relations (Bollen & Hoyle, 1990). Specifically, it focuses on the individual’s emotional connection with the group and the way he or she uses the group to define one’s self. The key difference between these views is communication. The identity view is based upon perceptions of the in-group (Brewer, 2007); the contractual view is based on the explicit or implicit communication of a social contract, which allows collectives to achieve benefits any single individual couldn’t gain alone (Keeley, 1988).

Future commitment to the group represents one way in which the individual honors his or her ongoing contract with the voluntary group. By understanding the explanatory power of each of the lower-order factors in predicting future commitment, when controlling for perceived cohesion and the other lower-order factors of PVGC, a strong case can be made for each of the lower-order factors and the contractual view as a whole. Further, if CC accounts for additional variance once all other variables are controlled, then CC can be said to play an important part in understanding individuals’ commitment to their social contract with a given group (i.e., PVGC). This, in turn,
demonstrates that communication and feelings of communication efficacy play a central role in understanding group participation.

*RQ1: How do the individual lower-order factors of PVGC (i.e., PU, AE, CC) affect future commitment to the voluntary group?*

**Public participation.** Future commitment to the voluntary group refers to internal participation. Public participation, on the other hand, refers to group related activities, which a member engages in while in a non-group setting. One example of public participation is recruitment (Cohn, Barkan, & Halteman, 2003). For most groups, recruitment is imperative for the survival of the voluntary group. Beyond its effects on the group, public participation associated with a voluntary group can also affect society at large. For example, talking to a non-member about the group or its ideologies is another form of public participation (Cohn et al., 2003). Public participation, through discussion, allows for group views to trickle into the public sphere (Tocqueville, 1835/2003). It is through this process that the voluntary group can act as a check against the majority voice.

Research on social movement organizations, a specific type of voluntary group, is particularly interested in public participation (see McCarthy & Zald, 1977; Snow, Zurcher, & Ekland-Oldson, 1980). When studying the social movement organization Bread for the World, Cohn et al. (2003) examined the motivations for numerous types of participation. They found both types of public participation – lobbying and outreach – were predicted by commitment to the group. In their study, commitment was operationalized through a 6-item scale, which had items addressing the individual’s level
of bonding to the group, general affective reaction to the group, and the amount the individual cares about the group. The bonding and affective items can be seen as similar to the PVGC scale, specifically the AE subdimension. Somma (2010) also found that across members of a social movement organization psychological attachment to the organization can positively affect an individual’s willingness to engage in public protest. Psychological attachment, defined by Somma as “the feelings, emotions, and beliefs that members have about the organization” (p. 385), is also believed to correlate with the AE dimension of PVGC. Therefore, the following hypothesis is predicted.

\[ H6: \text{PVGC positively affects willingness to engage in public forms of participation (i.e., outreach activities) associated with the voluntary group.} \]

Like with Hypothesis 5, a research question is asked regarding the unique effect of each of the low-order factors of PVGC. The examination of the research question will allow for a greater understanding of any disparate effects between the dimensions and display any possible suppression effects related to combining PU, AE, and CC into one composite measure.

The lower-order CC factor is of special interest to this research. CC represents the primary benefit PVGC adds to the group cohesion research. Specifically, it demonstrates the importance to the contractual view. CC measures the ability of individuals to actively have voices in the voluntary group and to have control over their contracts. By looking at the effects of the lower-order factors separately, it can be understood whether an individual’s ability to negotiate their contract is important in understanding public
participation in association with the voluntary group. This finding would act to bolster confidence in the contractual view of group participation.

**RQ2:** How do the individual lower-order factors of PVGC (i.e., PU, AE, CC) affect public participation associated with the group?

**Willingness to impose sanctions.** Locke (1689/1980) argues that humans in the state of nature are compelled to punish anyone who violates the natural law. The individual under the social contract is still charged with this responsibility. The primary difference being that while under a social contract the commonwealth, as opposed to the individual, acts as the judge and has the power to punish. Like a society, the survival of a voluntary group is affected by individual members’ willingness to uphold the group rules in themselves and others.

It is believed that group cohesion would affect an individual’s willingness to impose sanctions on other group members for rule violations. Previous research on group cohesion has theorized that cohesive groups exhibit a high amount of social control (see Hogg, 1992; Mudrack, 1989, Rovio et al., 2009). In an experimental study, Horne (2001) manipulated the benefits individuals received from the group (high-reward verse low-reward). She argued that her experimental design manipulated the perceived cohesion of the members of the groups (i.e., utility gained from group membership affects group cohesion). Based on that assumption, she found, "Cohesion increases the rewards given to those who punish deviance. In particular, it increases the difference between the size of rewards given to those who do not. This increase in rewards, in turn, encourages sanctioning" (p. 264).
Based on the Horne (2001) finding, it is predicted that individuals high in PVGC feel greater pressure to protect the security of the group through sanctioning. The process can be explained as follows: If PVGC is high, it is predicted that the individual would want to stay in the group. To stay in the group, the individual would have to follow the rules created by the group. Further, the individual would want others to follow the rules as well; therefore, the individual would be more willing to punish other group members that break the rules. This could be based on reciprocity motivations (i.e., I follow the rules, so you should too), self-interest motivations (i.e., the group being good helps me in the long run), altruistic motivations (i.e., making the group better), or numerous other reasons. Based on Horne’s finding and the previous theorizing, it is predicted the PVGC would increases an individual’s willingness to impose sanctions on other members of the group. Thus, the following hypothesis was offered:

**H7:** PVGC positively affects an individual’s willingness to impose sanctions on other members of the group.

Finally, a research question is presented regarding the effects of the individual lower-order factors of PVGC on individual’s willingness to impose sanctions on other group members. By understanding the individual relationships between the lower-order factors and the outcome variable a greater defense can be made regarding the need for each of the three dimensions within the PVGC measure.

Again, the relative effect of CC will be of special interest. Festinger et al. (1950) described group cohesion as the total field of forces acting upon the individual to stay in the group. They described group cohesion as being composed of a utility-based
dimension (e.g., means control) and an emotion-based dimension (e.g., attachment to
group). The PVGC concept adds to Festinger et al.’s (1950) conceptualization by adding
a communication dimension. Specifically, CC refers to individuals’ abilities to negotiate
their contract with the group. In doing this, it is argued that PVGC quantifies the
individual’s commitment to his or her contract with the voluntary group. An individual’s
willingness to impose sanctions is beyond the scope of Festinger et al.’s (1950) original
concept, being that it was limited to explaining continued membership to the group.
PVGC, on the other hand, can predict this outcome because an individual’s willingness to
impose sanctions is, in fact, the individual’s willingness to uphold the contract. By
demonstrating that CC accounts for variance above and beyond all other controlled
variables, it can be said that an individual’s ability to negotiate his or her contract is
important in understanding the individuals’ willingness to uphold the contract. Again,
this finding would act to bolster confidence in the contractual view of group participation.

*RQ3*: How do the individual lower-order factors of PVGC (i.e., PU, AE, CC)
affect an individual’s willingness to impose sanctions on other members of the
group?
Chapter 2: Method

This dissertation relies on a survey completed online using Qualtrics survey software \((N = 1,034)\). Before fielding the survey, the procedures in this dissertation were determined to be exempt from human subjects review by The Ohio State University’s Institutional Review Board.\(^{11}\) The sample for the survey was then recruited using Survey Sampling International (SSI). SSI advertised the questionnaire to a census-balanced sample (based on the variables of gender, geographical location, age, and household income) of their opt-in online panel. As Baker et al. (2010) report, opt-in or voluntary online panels are not the best when attempting to make population inferences. They argue that probability-based samples (e.g., Knowledge Networks’ online panel) are more appropriate; however, they also state that online probability-based samples could be systematically different (e.g., education, household income) than offline samples (e.g., phone). Due to the vast difference in cost (i.e., at least $19,000 for a probability-based sample compared to approximately $5,000 for an opt-in sample) and the limited resources available for this research (roughly $5,000), an opt-in voluntary panel was used. To limit the problems associated with this type of data collection, the respondents were drawn from a census-balanced sample of the SSI’s opt-in panel. Specifically, SSI uses their proprietary Dynamix methodology for recruiting participants (see Cape &

\(^{11}\) Ohio State University Institutional Review Board protocol number 2011E0153.
Cavallaro, 2010). In order to induce participation, SSI offers the participants incentives for completing questionnaires. There are two types of incentives. Participants receive 300 points, equal to about $3, to complete a survey. All participants who complete a survey are also entered in a quarterly drawing for $25,000. The data for this dissertation were collected between March 30, 2011 and April 1, 2011.

Individuals’ relationships with groups are of primary importance to this study. Therefore, in order to attain a more accurate view of the role of PVGC within voluntary groups, the survey was designed to increase the variance in the type of groups and types of relationships being examined. The participants were initially asked to select from a list the clubs or voluntary groups with which they are currently members. The list was similar to the list used in the General Social Survey (discussed on p. 2). It included 15 different types of club or groups (e.g., church groups, fraternal organizations; see Appendix D, p. 166 for full list) and a final category for clubs that didn’t fall in any other group. The list did not include any workplace-based clubs or groups: PVGC is currently bound to groups which the individual freely joins. Work groups could violate this assumption of freedom because an employee might not feel he or she can freely exit the work group without severe punishment (e.g., being fired or a docking of wages). After participants selected all the groups to which they are currently members, the Qualtrics survey software was programmed to randomly selected one of the groups. The participants’ history with the group and their current feelings toward the randomly selected group were probed.
The strategy outlined above for choosing a reference group was followed for two reasons. First, this study is seeking to understand the nature of perceived cohesion in voluntary groups. Therefore, it is important to look across groups (i.e., asking participants about different voluntary groups as opposed to looking at PVGC within the membership of a single voluntary group). As Carron and Brawley (2000) argue, “if only a relatively homogenous sample of groups is tested or, more importantly, if all groups are tested at one point in their history, it is largely a question of chance whether the factor structure will be confirmed” (p. 101). By sampling groups in the proposed manner, the groups should vary in type, history, and size (to name just a few dimensions). This method should give a clearer picture of the nature of perceived cohesion in voluntary groups. Second, the participants were asked to name multiple groups and then one group was randomly selected. In previous studies, the participants only listed one group. Because of this methodological tactic, it is believed that individuals identified groups to which they were highly connected. This is evidenced by the previous PVGC study (Geidner, 2010), where the PVGC scale was negatively skewed (e.g., data collection 2 mean PVGC was 5.06 on a 7-point scale; the data collection 3 PVGC mean was 4.16 on a 7-point scale). Randomly selecting one group from a list first generated by the participant should introduce more variance in the PVGC measure. Although it should be noted, this method is limited in that the random selection only occurs when a participant identifies membership in more than one group type. With that limitation noted, this method still should introduce more variance in the PVGC measure than previous samples. After a group was randomly selected, the individual was asked to list the name of the club and
was asked a battery of questions having to do with the group and their membership within the group. The measures used are discussed below.

**Group Membership Within the Sample**

Within the full sample ($N = 1,032$), 65.5% of people indicated involvement in at least one type of club or voluntary group. This is similar to previous studies. For example, the 2004 General Social Survey found 62.5% of people were involved in at least one group or club. In the current sample, 11.6% were members of two clubs, 6.6% were involved in three clubs, and 6.1% were involved in four or more clubs. The distribution of group memberships was positively skewed ($M = 1.17$, $SD = 1.46$, $SK = 2.97$, $KU = 15.46$) as can be seen in Figure 2.

*Figure 2. Frequency of group memberships within the sample.*
The single most popular type of club or group was church-related clubs. Of individuals with any club or group membership, 40.1% (N = 271) were involved in a church group. Church group membership was followed by veteran group membership (13.0% or 93 people) and sport group membership (12.1% or 82 people) in popularity. The “catch all” category, labeled “any other group outside of the workplace,” was also popular with 33.9% of participants listing a club that they thought did not fall into any of the 15 categories. Some examples of clubs listed in this area include: Alcoholics Anonymous and other support groups, informal regular meetings of friends (e.g., “informal group of gardeners” and “a group of retirees”), and a number of groups that probably should have been placed in one of the other categories (e.g., “Mopar club” should have been a hobby club and “basketball league” should have been a sports club). The full breakdown of club memberships can be found in Figure 3.
Figure 3. Distribution of types of group memberships within the sample.

Refined Sample

The full survey is part of a larger research project from which this dissertation is one study. Therefore, the full sample includes some participants who are not of interest to this particular dissertation (e.g., individuals who are not a member of any voluntary group). The procedures used to create the final sample employed in this dissertation will now be described. This dissertation is interested in individuals’ relationships with voluntary groups; therefore, all participants who were not members of any club or group were dropped from subsequent analyses. This reduced the sample size to 676.
The predictions associated with PVGC are bound to voluntary group membership. Membership in labor unions and some other groups can sometimes be compulsory of employment; therefore, participants were asked if they were required to be a member of the group they listed because of their employment. Individuals who were required to be a member of the group they listed were dropped from subsequent analyses, resulting in a sample of 622.

In looking at the names listed for clubs associated with the “any other club outside of the workplace” selection, it was realized that numerous participants were selecting this option even if they were not involved in any club. For example, a participant selected “any other club outside of the workplace” and then listed “not involved in any group” as the name of the group. After 141 participants had completed the questionnaire, it was realized that this error was occurring. Extra instructions were added to the survey encouraging participants to not select anything if they were not a member of any clubs or groups. Even with the additional instructions numerous participants selected “any other club outside the workplace” and then said they were not involved in a club. Individuals who did this were dropped from all analyses. This resulted in a sample of 571.

Finally, due to the nature of the data collection (i.e., online opt-in survey) some participants were dropped from the analysis due to lack of engagement with the survey instrument (see Baker et al., 2010). These individuals were identified based on the comparatively low amount of time it took them to completely the survey or because of
the lack of variability in their responses. First, all individuals who took less than three minutes to complete the full, 98-item survey were dropped from the analyses. The average completion time (removing the outliers of over an hour) for the survey was 13 minutes with a standard deviation of 5 minutes. Therefore, the individuals who took less than three minutes were two deviations below the mean. Second, individuals who showed no variation (e.g., selected all “Strongly Disagree” or “Strongly Agree”) in their responses within both the scales with reverse coded items in the group membership section of the survey were dropped from the analyses. In most cases, these individual showed no variation in response within and across numerous scales; the reverse-coded items provided the most systematic way to remove this low quality data. This resulted in another 47 participants being dropped from the analyses.

The final sample, which will be used for all subsequent analyses, was composed of 524 respondents. The sample had slightly more males (50.3%) than females (49.7%) and was composed of primarily Caucasians (75.4%), with Black or African Americans representing 13.9% of the sample, Asians representing 2.1%, Hispanic or Latinos making up 5.2% of the sample, and 3.4% listed “Other.” The average age of the sample was 48.0 years old, with a standard deviation of 17.6 and range of 18 to 89. Participants generally

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12 Baker et al. (2010) identified both methods for identifying low engagement with the survey instrument used in this dissertation as common strategies to accomplish this task (pp. 50-51).

13 The refined sample was older, more educated, had higher household income, and was more composed of more males than the group of participants who were dropped. All differences were significant at the 0.05 level. These differences were expected. As Miller (2010) argued privileged classes (i.e., high income, high education whites) are more likely to get recruited for voluntary organizations. Therefore, the refined sample, which includes only admitted group members, should favor high income, high education whites.
had some college education ($M = 3.22, SD = 1.02; asked on a 5-point scale with 1 being equal to some high school and 5 being equal to post graduate education) and a majority of the sample had a household income of between $25,000 and $74,999 ($M = 2.47, SD = 1.3; asked on a 6-point scale in $25,000 increments from 1 being “Below $25,000” to 6 being “Over $125,000”). See Table 2 for a comparison of the demographics between the full sample and the refined sample. For comparison purposes the table also includes demographics found by the United States Census Bureau in the American Community Survey 5-year estimates.
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</tr>
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*Table 2. Demographics variables.*

\(^{14}\) Data from the American Community Survey 2005-2009 5-year estimates.

\(^{15}\) Age in the American Community Survey includes individuals less than 18 years of age. These individuals, who make up 17.7% of the population, were barred from taking the survey for this dissertation. This limitation explains the over 10-year age difference.
**Measures**

**Group size.** Group size was assessed with a single item asking participants to estimate the number of members within the voluntary group they identified earlier in the survey. The item was answered on a 5-point scale, with the following responses: 1 (Under 25 members), 2 (25 to 49 members), 3 (50 to 74 members), 4 (75 to 99 members), and 5 (Over 100 members). Within the sample, the item had a mean of 3.27 (SD = 1.74).

**Procedural justice.** Procedural justice refers to the fairness of the decision-making processes within a group or society. Colquitt’s (2001) overarching organizational justice scale includes a 7-item procedural justice subscale which was employed in this study. The items were derived from earlier studies of procedural justice (see Leventhal, 2000; Thibaut & Walker, 1975). Colquitt (2001) validated the measure over multiple samples and it has been used in numerous other studies (e.g., Simons & Robertson, 2003). The scale includes items such as, “To what extent have those procedures upheld ethical and moral standards?” and “To what extent have those procedures been based on accurate information?” One item was dropped from the scale. The item read, “To what extent have you been able to express your views and feelings during those procedures?” Since procedural justice is being used to predict PVGC and PVGC has items dealing with an individual’s perceptions about their ability to communicate with the group, there were tautological concerns with leaving the item in the procedural justice scale. The full scale can be seen in Appendix F (see p. 169). Participants rated their level of agreement with each item on a 7-point scale, ranging from 1 (Strongly Disagree) to 7 (Strongly Agree).

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16 A correlation matrix containing all variables in this study is provided in Appendix E (p. 156).
The mean score for the 6-item scale was 4.61 with a standard deviation of 1.29. Within this sample, the scale was found to be reliable (Cronbach’s $\alpha = 0.85$).

**Perceived cohesion.** Bollen and Hoyle (1990) stated "perceived cohesion encompasses an individual's sense of belonging to a particular group and his or her feelings of morale associated with membership in the group" (p. 482). They created a multidimensional scale composed of six items – three items for the belonging dimension and three items for the morale dimension (see Appendix B, p. 164). Participants in the current study were asked to rate their level of agreement, on a 7-point Likert scale, ranging from 1 (Strongly Agree) to 7 (Strongly Disagree), for all six perceived cohesion items. This scale has been used with some success in previous studies (e.g., Chin et al., 1999; Paxton & Moody, 2003), yet the multidimensional factor structure has not been consistently supported. Therefore, the factor structure was examined using SEM-based CFA before employing the full measure. In all SEM models missing data were replaced with the mean value of the item.\(^{17}\) In this sample, the dual-factor solution was found to fit data: $\chi^2 (df = 8) = 130.6; \text{CFI} = 0.96; \text{RMSEA} = 0.17 (90\% \text{ C. I., } 0.14 \text{ to } 0.20); \text{SRMR} = 0.03.$ It also fit significantly better, $\Delta \chi^2 (df = 1) = 205.0, p < .001,$ than a single-factor model: $\chi^2 (df = 9) = 335.6; \text{CFI} = 0.90; \text{RMSEA} = 0.26 (90\% \text{ C. I., } 0.21 \text{ to } 0.32); \text{SRMR} = 0.04.$ With the two-factor solution being supported and the only one of two tested which fit these data, the perceived cohesion scale was broken in to its two components and both were entered in all analyses (belonging $M = 5.40, SD = 1.53$; morale $M = 5.59$, \footnote{Across the 15 items used in SEM models in this dissertation, the number of missing responses per items ranged from 4 to 10. On average 7.0 responses were missing per item representing 1.3\% of the total sample.}
Both scales were found to be reliable (belonging Cronbach’s $\alpha = 0.94$; morale Cronbach’s $\alpha = 0.92$).

**Perceived voluntary group cohesion.** The conceptualization of PVGC was described earlier. PVGC refers to an individual’s assumptions regarding his or her cognitive, emotional, and communicative attachment to a given voluntary group. It was operationalized through a 9-item scale, which has been shown to be valid and reliable in an earlier study (Geidner, 2010). The scale is comprised of three items for each of the three subdimensions – perceived utility, affective evaluation and communication connectedness. The full measure can be seen in Appendix C (see p. 165). Participants were asked to rate their level of agreement on a 7-point Likert scale, ranging from 1 (Strongly Agree) to 7 (Strongly Disagree). Being that testing the fit of the theoretical PVGC model is an important component of this dissertation, the discussion of its model fit and descriptive statistics will be covered at length at the beginning of the results section (see p. 86).

**Future Commitment.** Another central variable in this study is future commitment to the voluntary group. This concept measures an individual’s willingness to engage in group activities at a later date. The scale was composed of five items. The participant were asked to rate their level of agreement on a 7-point Likert-scale, ranging from 1 (Strongly Agree) to 7 (Strongly Disagree), with items such as “I am going to be involved in this group for as long as I can” and “During the upcoming six months, I will attend the majority of this group’s meetings” (see Appendix G for full scale, p. 170). This scale was used in the previous PVGC studies (Geidner, 2010) and found to be reliable
In the current study, future commitment was found to be reliable (Cronbach’s $\alpha = 0.89$, $M = 5.51$, $SD = 1.36$).

**Public participation.** An individual group member’s willingness to engage in public acts of participation was measured through a 3-item behavioral scale derived from Cohn et al. (2003). Using exploratory factor analysis, Cohn et al. identified two types of public participation – lobbying and outreach. The lobbying dimension includes activities such as contacting public officials. The outreach dimension includes activities such as speaking about the group to non-members. Recruitment cross-loaded on both factors. The outreach dimension, including recruitment, makes up the public participation scale. The participants were asked to identify how likely they would be, on a 7-point scale ranging from 1 (Not at all likely) to 7 (Very likely), to engage in the following activities: recruit new members for the group, speak to non-members about the group, and write a letter or e-mail to a non-member about the group. The three item scale ($M = 4.14$, $SD = 1.73$) was found to be reliable (Cronbach’s $\alpha = 0.82$).

**Willingness to impose sanctions.** The participants also answered two questions regarding their willingness to impose sanctions on group members that break group rules. The first item taps into how likely the individual is to punish another group member. Specifically, the item read, “If it were up to me, I would punish members of the group that break group rules.” The second item taps how strongly the individual would punish someone who breaks the rule. It read, “I believe members who break group rules should be harshly punished.” The participants were asked to rate their level of agreement with
the statements on a 7-point Likert-scale, ranging from 1 (Strongly Agree) to 7 (Strongly Disagree). The responses for these two items were averaged and resulted in a mean within the sample of 2.88 ($SD = 1.73$). The two sanctioning items were highly correlated (zero-order $r = .77$, $p < .001$).\textsuperscript{18}

**Control variables.** A number of variables will be used as controls to limit the possibility of Type I error caused by a spurious association between the dependent and independent variables (Hayes, 2005).

In all regression analyses standard demographic controls (i.e., *age, gender, income, race*, and *education*) were included. The descriptive statistics for the demographic variables were outlined earlier (see p. 70). Based on the previous PVGC study (i.e., Geidner, 2010), a number of additional controls were also included. As stated above, collective identity is closely related to PVGC. *Collective identity* is seen as another mechanism that enhances individuals’ relationships with groups and motivates participation within groups. Therefore, collective identity could influence both an individual’s PVGC and individual-level participation in the group. In the previous PVGC study (Geidner, 2010), collective identity was found to correlate strongly and positively with PVGC (zero-order $r = 0.70$, $p < .01$) and was found to be a significant predictor of future commitment to the voluntary group ($b = 0.16$, $SE = .05$, $p < .01$). Collective identity was measured using a four-item scale based on Luhtanen and Crocker’s (1992) work (see Appendix H, p. 171). The scale has been used in previous research to explain

\textsuperscript{18} Cronbach’s $\alpha$ is offered as a measure of internal reliability for all scales with more than two items. Zero-order correlations are offered for all scales composed of only two-items. This method is in following the suggestion of Carmines and Zeller (1979).
group participation (Stumer, Simon, & Loewy, 2008) and was found to be reliable in the previous PVGC study (Geidner, 2010). In the current sample, Luhtanen and Crocker’s scale (\(M = 4.31, SD = 1.33\)) was again found to be reliable (Cronbach’s \(\alpha = 0.69\)).

Another variable that could affect individuals’ relationships with voluntary groups is feelings of similarity to other group members. Individuals are more likely to interact with people similar to themselves (Berelson, Lazarsfeld, & McPhee, 1954). This is also true when interacting with groups (Popielarz & McPherson, 1995). Individuals also experience stronger emotional bonds with groups composed of people similar to themselves (Hogg, 1992; Lott & Lott, 1965). In the previous PVGC study (Geidner, 2010) similarity was found to correlate with PVGC (zero-order \(r = 0.52, p < .01\)) and was found to be a marginally significant predictor of future commitment to the group (\(b = 0.10, SE = 0.56, p < .10\)). Feelings of similarity were measured using the same three-item scale (see Appendix H, p. 171), which was found to be reliable in the previous PVGC study (Geidner, 2010). The three-item scale was found to be reliable (Cronbach’s \(\alpha = 0.86, M = 4.82, SD = 1.41\)).

An individual’s previous involvement with the group was also controlled in all regression analyses. The amount of group participation in which the individual has engaged in the past was measured in both a proportional manner (i.e., percent of group activities participant engaged in over the last 6 months) and as an actual amount of time.

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\(^{19}\) The reverse-coded items in the collective identity measure resulted in some error in the measurement. This is made evident by the inter-item correlations. Specifically, within like direction items the correlations were relatively high (CC01 to CC03: \(r = 0.40\); CC02 to CC04: \(r = 0.73\)), but across non-like items the correlations were much lower (CC01 to CC02: \(r = -0.23\); CC01 to CC04: \(r = -0.28\); CC03 to CC02: \(r = -0.26\); CC03 to CC04: \(r = -0.24\)).
spent (i.e., hours spent engaged in group activates during the average month). These measures were used in the previous PVGC study (Geidner, 2010) and were found to be significant predictors of future commitment to the group (data collection 2 $b = 0.16$, $SE = 0.05$, $p < .01$; data collection 3 $b = 0.09$, $SE = 0.03$, $p < .01$). The proportional question was answered on a 6-point scale, ranging from 1 (none) to 6 (all), and the mean response was 3.37 ($SD = 1.74$). The time question was answered on a 5-point scale, ranging from 1 (I have spent no time on tasks associated with this organization) to 5 (I have spent 9 or more hours). The mean response was 2.72 ($SD = 1.41$). These items highly correlate (zero-order $r = 0.57$, $p < .001$). Because these items were answered on different scales, the responses were standardized and then averaged to create the final past involvement variable ($M = -0.003$, $SD = 0.89$). Participants were also asked how long they had been a member of the given group. Numerous group cohesion researchers have argued that length of membership is related to group cohesion (e.g., Festinger et al., 1950; Griffith, 1988). Length of membership was answered on a 5-point scale, 1 (Less than 6 months), 2 (6 to 11 months), 3 (12 to 17 months), 4 (18 to 23 months) and 5 (24 months or more). All possible responses reflected differences in six-month increments. The mean response for this item was 3.89 ($SD = 1.52$).

Finally, strength of collectivistic outlook was controlled in the analyses predicting PVGC (i.e., H1 and H2). It is believed that individuals who favor the collective over the individual should feel a stronger than average bond to the collectives to which they belong (see Hofstede, 1991; Triandis, 1994). In the previous PVGC study (Geidner, 2010), collectivist outlook was found to correlate with PVGC (zero-order $r = 0.30$, $p <$
Collectivistic outlook was assessed using the interdependent subscale from Leung & Kim’s (1997) self-construal scale (see Appendix H, p. 171). The subscale consists of seven questions and was found to be reliable in the previous PVGC study. In the current study, the 7-item scale was found to be reliable (Cronbach’s $\alpha = 0.81$) and had a mean of 4.97 ($SD = 1.01$).

**Survey Design**

The online survey was designed using Qualtrics survey software. The survey was composed of three branches based on the participant’s membership in voluntary groups (e.g., current group membership, recently quit voluntary group, no voluntary group membership). The branch for current group members was used for all analyses within this dissertation. Within that branch, the participants were asked all the above variables plus the following variables not used in the current study: extroversion, shyness, generalized trust, media use, affinity for political humor, political participation, and political discussion. Items on the survey were grouped by variable and randomized within those groupings.

**Analytical Strategy**

Hypotheses 1, 2, 5, 6, and 7 and RQ 1, 2, and 3 will be assessed using OLS linear regression analysis. Hypotheses 1 and 2 will be assessed using a single regression predicting PVGC. The following items will be statistically controlled for in the analysis: general demographics (i.e., age, sex, education, income, and race), previous relationship with the group (i.e., past involvement in the group and length of membership in the
group), and variables with which have been correlated with PVGC in other studies (i.e., collective identity, collectivist cultural outlook, and feelings of similarity to the group).

Hypotheses 5, 6, and 7 will be initially assessed using three regression models: (1) predicting future commitment, (2) predicting public participation, and (3) predicting willingness to impose sanctions on other group members. In all three models the following controls will be used to limit the possibility of Type I error: general demographics (i.e., age, sex, education, income, and race), previous relationship with the group (i.e., past involvement in the group and length of membership in the group), and variables with which have been correlated with various types of group participation in previous studies (i.e., collective identity and feelings of similarity to the group). For comparison purposes, a second OLS linear regression models will be run for each criterion variable with the dimensions of perceived cohesion (e.g., belonging and morale) replacing PVGC in the model.

A third set of regression models will include both the dimensions of perceived cohesion and PVGC. PVGC will be entered in the last block of a hierarchical regression model with belonging and morale being previously entered. A hierarchical model is being used to prevent concerns about multicollinearity resulting in inaccurate beta weights and inaccurate conclusions (for information regarding collinearity statistics see Appendix I, p. 173). The change in $R^2$ between the two models – with and without PVGC – will be compared. If the change in $R^2$ is significant when PVGC is added to the model, it can be said PVGC explains variance in the outcome variable beyond that of perceived cohesion.
This will bolster confidence in Hypotheses 5, 6, and 7 and further demonstrate the importance of PVGC as an explanatory concept.

Research questions 1, 2, and 3 will be answered by running two additional series of regression analyses. The first set of hierarchical regression will not include the dimensions of perceived cohesion as a control variable; the second set will include belonging and morale. For each of the outcome variables – future commitment to the voluntary group, public participation, and willingness to impose sanctions – six additional hierarchical regression models will be constructed and tested. In the first three models, all control variables listed above will be entered into the model in an initial block. Two of the lower-order factors of PVGC will be entered into as a second block. Finally, the third dimension of PVGC will be entered into the model. For example, in a model predicting public participation all the control variables will be entered. Then, PU and AE will be entered into the model. Finally, CC will be entered into the model. The change in $R^2$ between models – with and without CC – can be compared. If the change is significant, it can be said CC explains a significant portion of the variance in the outcome variable above and beyond the other dimensions of PVGC. This process will be repeated with each of the other dimensions being entered last into the model (i.e., three permutations). This process will provide a firm understanding of how the dimensions of PVGC vary in their effect on the outcome variables. This process will be repeated with the dimensions of perceived cohesion entered in to the model as an additional predictor variable. This series of analyses will demonstrate exactly how PVGC is different from the dimensions of perceived cohesion.
Hypotheses 3a, 3b, and 4 all look at the relationship between PVGC and perceived cohesion (see Bollen & Hoyle, 1990). Based on the factor structure of perceived cohesion discussed above, the two dimensions of perceived cohesion – sense of belonging and feelings of morale – will be treated separately in all analyses employing the concept. Hypothesis 3a states that PVGC and perceived cohesion should be correlated; therefore looking at the zero-order correlation between the two dimensions of perceived cohesion and PVGC will assess H3a and demonstrate the convergent validity of the measure.

Hypothesis 3b, on the other hand, states that the concepts, in spite of being similar, are in fact unidimensional. This will demonstrate the need for PVGC and bolster claims for its discriminant validity. To assess this hypothesis, this dissertation will use SEM-based confirmatory factor analysis (CFA). By using CFA, a model that treats PVGC and either belonging or morale as a single factor can be compared to a model which treats the concepts as distinct. If the scales are truly redundant, the single-factor structure model will fit the data better than the multi-factor model.

Specifically, three models will be ran and compared in AMOS 19 (see Figure 4, p. 82). As described earlier, missing data was replaced with the mean value for the item in all SEM models.
The first model will allow the covariance between the three constructs – PVGC, belonging, and morale – to freely vary. This model treats all three variables as being distinct, yet correlated, concepts. Two additional models will be estimated and compared to the first model. One model will constrain the covariance between PVGC and belonging to 1; the other will constrain the covariance between PVGC and morale to 1. By
constraining the covariance to 1, the model is being estimated with the assumption of PVGC and either belong or morale being a single factor. By creating the models in this manner, the models are nested and can be compared using a $\chi^2$ difference test based on the one degree of freedom change between the models (i.e., the freely constrained model and the constrained models). Previous scholars (e.g., Hayes, Glynn, & Shanahan, 2005) have used this method of establishing discriminant validity of communication concepts, and it follows the guidelines for comparing hierarchical models using the $\chi^2$ difference test set forth by Kline (2005). Kline does warn that the most complex of the models – or in this case the model that allows the covariance between the three constructs to freely vary – should show good model fit. Kline states, “it makes little sense to compare the relative fit of two hierarchical models neither of which adequately explains the data” (pp. 146-147).

Hypothesis 4 states that perceived cohesion should correlate more strongly with the lower-order factor AE than with the other two lower-order factors, PU and CC. Like in Hypothesis 3a and b, the relationships associated with each of the two dimensions of perceived cohesion will be examined. To assess this hypothesis, a number of structural equation models will be examined. Similar to Hypothesis 3b, an initial baseline model will be run (see Figure 5, p. 84). Then a number of additional models, in which the covariance between latent constructs is constrained, will be estimated and then compared to the baseline model using a $\chi^2$ difference test.
In the baseline model, the covariance between each pair of the five constructs – PU, AE, CC, belonging, and morale – will be allowed to freely vary. The variance of the latent constructs will be set to 1. By doing this, the covariance of any two latent
constructs (e.g., PU to morale) will be equal to their correlation. This results in six relationships of interest: PU to belonging, PU to morale, AE to belonging, AE to morale, CC to belonging, and CC to morale. The baseline model will estimate a correlation for each of the relationships of interest. It is then possible to test if one correlation is significantly different than another by setting the covariance of one set of constructs to the covariance of another set of constructs. For example, if in the baseline model the covariance of PU and belonging is .50 and the covariance of AE and belonging is .90, in another model the covariance of PU and belonging could be constrained to be equal to that of AE and belonging (i.e., .90). The $\chi^2$ value of the two models can then be compared based on the one degree of freedom change. If there is a significant change in the $\chi^2$ statistic it can be said there is a statistically significant difference between the two correlations (i.e., .50 and .90). This process will be repeated for each of the six relationships – covariance of PU and belonging set to covariance of AE and belonging, covariance of PU and morale set to covariance of AE and morale, covariance of PU and belonging set to covariance of CC and belonging, covariance of PU and morale set to covariance of CC and morale, covariance of AE and belonging set to covariance of CC and belonging, and covariance of AE and morale set to covariance of CC and morale. For the hypothesis to be supported, AE must have significantly higher correlations with belonging and morale than either PU or CC.
Chapter 3: Results

Model Fit of Proposed PVGC Model

The key variable of interest in this dissertation is PVGC. In the previous research examining PVGC, Geidner (2010) employed three samples – two student samples and one representative sample of Ohio voters. In all samples, the proposed higher-order factor model was found to fit the data. Further, it was found to fit the data significantly better than a single-factor solution. One goal of this dissertation is to replicate the performance of the proposed model in a different sample.

Initially, the proposed PVGC model was examined using CFA in AMOS 19. The proposed model – a higher-order factor structure with three indicators for each of the three lower-order factors (see Figure 6, p. 87) – did not fit the data: $\chi^2 (df = 24) = 238.2$; CFI = 0.93; RMSEA = 0.13 (90% C. I., 0.12 to 0.15); SRMR = 0.11. Upon further examination, it was found that the reverse-coded item within the communication connectedness subscale (i.e., CC03) was introducing a great deal of error into the model.\(^{20}\) It is believed that the nature of the survey and the survey sample (i.e., opt-in online survey) led to some response set and the subsequent production of additional error in the measurement, most noticeably in the reverse-coded items. Because it was believed

\(^{20}\) There were 10 potential modifications with modification index parameters of between 81.0 and 16.9 associated with CC03. The highest non-CC03 modification index parameter was 17.8.
that the error is purely measurement in orientation and not theoretical, the problematic item (i.e., CC03) was dropped from proceeding analyses and the revised model was assessed for fit.

![Figure 6. PVGC 9-item measurement model with standardized estimates.](image)

After dropping CC03 another model was run using CFA. The model was found to fit the data: $\chi^2 (df = 17) = 87.6$; CFI = 0.97; RMSEA = 0.09 (90% C. I., 0.07 to 0.11); SRMR = 0.03. This model also fit significantly better, $\Delta \chi^2 (df = 3) = 119.2$, p < .001, than a single-factor solution: $\chi^2 (df = 20) = 532.6$; CFI = 0.81; RMSEA = 0.22 (90% C. I., 0.21 to 0.24); SRMR = 0.11. To create the final scale, means were derived for each of the lower-order factors (PU $M = 5.08$, $SD = 1.50$; AE $M = 5.13$, $SD = 1.44$; CC $M = 5.6$,
SD = 1.51), each of which demonstrated internal reliability (PU Cronbach’s α = 0.81; AE Cronbach’s α = 0.88, CC zero-order r = 0.65). The mean value across the three lower-order factors was used as the value for PVGC. The full scale had a mean value of 5.27, (SD = 1.16, SK = -0.52, KU = .22; see Figure 7 for a histogram of the PVGC scale in the sample).

Figure 7. Histogram of PVGC scale in sample.

Group Size and Procedural Justice

Hypothesis 1 predicted that group size would positively affect PVGC, and H2 predicted that procedural justice would positively predict PVGC. Using OLS linear regression it was found that H1 was not supported, while H2 was supported. Specifically, after controlling for age, sex, education, household income, race, previous involvement
with the group, length of membership in the group, collectivist outlook, collective identity, and feelings of similarity, the size of the group was found to be non-significant in the model ($b = 0.033, SE = 0.026, p = 0.20$) and procedural justice, as predicted, was found to be a significant, positive predictor of PVGC ($b = 0.22, SE = 0.038, p < .001$). The full model accounted for 49.3% of the variance in PVGC, with procedural justice adding 4.6% of the variance within PVGC (see Table 3, p. 90).
<table>
<thead>
<tr>
<th>Variable</th>
<th>Unstandardized Beta</th>
<th>Standard Error</th>
</tr>
</thead>
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<tr>
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<td>0.000 (.003)</td>
<td></td>
</tr>
<tr>
<td>Gender (Male)</td>
<td>-0.34 (.081)***</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>-0.089 (.041)**</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>-0.039 (.032)</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td>-0.034 (.044)</td>
<td></td>
</tr>
<tr>
<td>Previous Involvement</td>
<td>0.24 (.051)***</td>
<td></td>
</tr>
<tr>
<td>Length of Membership</td>
<td>0.027 (.030)</td>
<td></td>
</tr>
<tr>
<td>Collectivist Outlook</td>
<td>0.067 (.041)</td>
<td></td>
</tr>
<tr>
<td>Collective Identity</td>
<td>0.22 (.036)***</td>
<td></td>
</tr>
<tr>
<td>Feelings of Similarity</td>
<td>0.14 (.036)***</td>
<td></td>
</tr>
<tr>
<td>Size of Group</td>
<td>0.033 (.026)</td>
<td></td>
</tr>
<tr>
<td>Procedural Justice</td>
<td>0.22 (.038)***</td>
<td></td>
</tr>
</tbody>
</table>

\[ R^2 = .493*** \]

*Table 3. Regression model predicting PVGC. Entries are unstandardized beta coefficients. Parentheses are standard errors. *** p < .01, ** p < .05, * p < .10

**Perceived Cohesion**

To address Hypothesis 3a and 3b, a number of SEM models were constructed and analyzed (for a correlation matrix of PVGC and perceived cohesion items see Appendix J, p. 175). An initial model was used to test Hypothesis 3a and will be used as a point of comparison against which Hypothesis 3b will be judged. The initial model is an unconstrained measurement model with PVGC and both dimensions of perceived
cohesion – belonging and morale – (see Figure 4, p. 82). In this model, the relationships between all three concepts were allowed to freely vary. This model was found to fit the data: $\chi^2 (df = 71) = 364.7; \text{CFI} = 0.96; \text{RMSEA} = 0.09 (90\% \text{ C. I., 0.08 to 0.1}); \text{SRMR} = 0.05$. The estimates from the unconstrained model can be used to test Hypothesis 3a.

Hypothesis 3a predicted that PVGC and perceived cohesion would be correlated. Based on the factor structure of perceived cohesion, as discussed above, it is more appropriate to look at the correlation between PVGC and the two dimensions of perceived cohesion – belonging and morale. As expected, this hypothesis was supported. PVGC is correlated with both belonging (zero-order $r = 0.74, p < .001$) and morale (zero-order $r = 0.83, p < .001$).

Being that the PVGC measure and the dimension of perceived cohesion are highly correlated, it is important to demonstrate that these concepts are empirically unique. Hypothesis 3b predicted that this would be true. By using CFA to compare the unconstrained model to two nested models, which constrained the covariance between either PVGC and belonging or PVGC and morale to one, respectively, H3b was supported.

When comparing models, the unconstrained model, which treated PVGC, belonging, and morale as distinct concepts, fit the data significantly better than the models that treated either PVGC and belonging, $\Delta \chi^2 (df = 1) = 167.4, p < .001$, or PVGC and morale, $\Delta \chi^2 (df = 1) = 119.2, p < .001$, as a single-factor (i.e., covariance constrained to 1). Also, all model fit statistics examined were found to be closer to the ideal values (e.g., CFI = 1.00; RMSEA = 0.00; SRMR = 0.00) in the unconstrained model, $\chi^2 (df = 71) = 364.7; \text{CFI} = 0.96; \text{RMSEA} = 0.09 (90\% \text{ C. I., 0.08 to 0.1}); \text{SRMR} = 0.05$. The estimates from the unconstrained model can be used to test Hypothesis 3a.

Hypothesis 3a predicted that PVGC and perceived cohesion would be correlated. Based on the factor structure of perceived cohesion, as discussed above, it is more appropriate to look at the correlation between PVGC and the two dimensions of perceived cohesion – belonging and morale. As expected, this hypothesis was supported. PVGC is correlated with both belonging (zero-order $r = 0.74, p < .001$) and morale (zero-order $r = 0.83, p < .001$).

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71) = 364.7; CFI = 0.96; RMSEA = 0.09 (90% C. I., 0.08 to 0.1); SRMR = 0.05, than in either of the models that treated PVGC as a redundant concept – PVGC and belonging single-factor solution: $\chi^2 (df = 72) = 532.2; CFI = 0.93; RMSEA = 0.11 (90\% C. I., 0.1 to 0.12); SRMR = 0.08; PVGC and morale single-factor solution: $\chi^2 (df = 72) = 470.2; CFI = 0.94; RMSEA = 0.10 (90\% C. I., 0.09 to 0.11); SRMR = 0.07. These comparisons demonstrate that although the concepts are related, PVGC and the two dimensions of perceived cohesion should be treated as distinct concepts. These findings bolsters claims in support for the discriminant validity of PVGC (see Geidner, 2010).

Hypothesis 4 sought to further examine the relationship between PVGC and perceived cohesion. Specifically, the hypothesis states that perceived cohesion would be more closely related to the AE dimension of PVGC than to the PU or CC dimensions. Again based on the factor structure of perceived cohesion, this hypothesis will be applied to each of the two dimensions of perceived cohesion – belonging and morale. As described earlier, the comparison of numerous CFA models was used to assess this hypothesis. Initially, a baseline model was created and examined (see Figure 5, pg. 84). This model, which allowed the covariance between all latent constructs – PU, AE, CC, belonging, and morale – to freely vary, was found to fit the data, $\chi^2 (df = 67) = 338.0; CFI = 0.96; RMSEA = 0.09 (90\% C. I., 0.08 to 0.1); SRMR = 0.04. In this model, the variance of the latent constructs was set to one; this results in the covariance of any two latent constructs being equal to their correlation. Therefore, this model also provided correlation values for the various relationships (see Table 4, p. 93).
Based on the results of the initial model, six additional nested models were run. In each model, the covariance of a given relationship was fixed to be equal to that of another relationship. For example, in the first additional model the covariance between PU and belonging was fixed to be equal to the covariance between AE and belonging in the initial model (i.e., 0.66). This constrained model was then compared to the base model (e.g., model with free variance). If there is a significant difference between the $\chi^2$ values for the models it demonstrates that the correlations are significantly different. There was no significant change in the $\chi^2$ value from the base model to the first nested model, $\Delta \chi^2 (df = 1) = 0.15, p = .697$. This demonstrates that there is no significant difference in the correlations between PU and belonging (zero-order $r = 0.67$) and AE and belonging (zero-order $r = 0.66$). Over the six additional models (see Table 5, p. 94), it can be seen that the correlations between CC and both perceived cohesion dimensions are significantly lower than the correlations between either of the other two PVGC dimensions and each of the perceived cohesion dimensions. It can also be seen that the correlations between AE and the dimensions of perceived cohesion are not significantly

<table>
<thead>
<tr>
<th></th>
<th>Belonging</th>
<th>Morale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Utility</td>
<td>.67</td>
<td>.76</td>
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<tr>
<td>Affective Evaluation</td>
<td>.66</td>
<td>.73</td>
</tr>
<tr>
<td>Communication Connectedness</td>
<td>.46</td>
<td>.46</td>
</tr>
</tbody>
</table>

Table 4. Correlations between PVGC lower-order factors and dimensions of perceived cohesion. All correlations are statistically significant at the 0.01 level.
different than the correlations between PU and the dimensions of perceived cohesion.

Based on these results, it can be said that Hypothesis 4 is partially supported. The dimensions of perceived cohesion are more closely related to AE than CC, but AE is not more closely related to either of the dimensions of perceived cohesion than PU.

<table>
<thead>
<tr>
<th></th>
<th>( \chi^2 )</th>
<th>( \Delta \chi^2 )</th>
<th>CFI</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconstrained Model</td>
<td>338.0</td>
<td>-</td>
<td>.96</td>
<td>.088</td>
<td>.038</td>
</tr>
<tr>
<td>PU to Belong set to AE to Belong</td>
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<td>.039</td>
</tr>
<tr>
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<td>.041</td>
</tr>
<tr>
<td>PU to Belong set to CC to Belong</td>
<td>377.9</td>
<td>39.9***</td>
<td>.95</td>
<td>.093</td>
<td>.087</td>
</tr>
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<td>PU to Morale set to CC to Morale</td>
<td>430.9</td>
<td>92.9***</td>
<td>.94</td>
<td>.101</td>
<td>.119</td>
</tr>
<tr>
<td>AE to Belong set to CC to Belong</td>
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<td>30.5***</td>
<td>.95</td>
<td>.092</td>
<td>.078</td>
</tr>
<tr>
<td>AE to Morale set to CC to Morale</td>
<td>398.7</td>
<td>60.8***</td>
<td>.95</td>
<td>.096</td>
<td>.101</td>
</tr>
</tbody>
</table>

*Table 5. \( \chi^2 \) and model fit statistics for SEM model estimating relationships between PVGC lower-order factor and perceived cohesion dimensions. ***p < .01, **p < .05, *p < .10*
Future Commitment to the Voluntary Group

Hypothesis 5 and RQ 1 examine the relationship between PVGC and future commitment to the voluntary group. In the hypothesis it was predicted that PVGC would positively affect future commitment to the voluntary group. The research question sought to understand the differential effects of the lower-order factors of PVGC on future commitment. To answer the hypothesis, three regression models were run. In the first model, PVGC was found to be a significant predictor of future commitment \((b = 0.63, SE = 0.047, p < .001)\), after controlling for age, sex, education, household income, race, previous involvement with the group, length of membership in the group, collective identity, and feelings of similarity. The total model accounted for 64.8% of the variance in future commitment to the voluntary group, while PVGC uniquely accounted for 16.0% of the variance in future commitment (for full model see Table 6, p. 96). These results lend support for Hypothesis 5. For comparison purposes a second model was created. This model was identical to the first model except the dimensions of perceived cohesion were entered without PVGC being entered in to the model. In this model, both belonging \((b = 0.29, SE = 0.042, p < .001)\) and morale \((b = 0.40, SE = 0.045, p < .001)\) were found to be significant predictors of future commitment. This model accounted for 73.9% of the variance in future commitment to the organization.
<table>
<thead>
<tr>
<th></th>
<th>PVGC only</th>
<th>PC only</th>
<th>PVGC and PC</th>
<th>PVGC Factors without PC</th>
<th>PVGC Factors with PC</th>
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<tr>
<td>Age</td>
<td>.006 (.002)**</td>
<td>.006 (.002)***</td>
<td>.006 (.002)***</td>
<td>.007 (.002)***</td>
<td>.007 (.002)***</td>
</tr>
<tr>
<td>Gender (Male)</td>
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<td>-.007 (.069)</td>
<td>.054 (.068)</td>
<td>.022 (.080)</td>
<td>.049 (.067)</td>
</tr>
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<td>-.054 (.033)</td>
<td>-.030 (.040)</td>
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<td>-.002 (.026)</td>
<td>-.001 (.031)</td>
<td>.000 (.026)</td>
</tr>
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<td>-.040 (.037)</td>
<td>-.037 (.036)</td>
<td>-.082 (.043)*</td>
<td>-.040 (.036)</td>
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<td>.277 (.044)***</td>
<td>.235 (.043)***</td>
<td>.327 (.050)***</td>
<td>.221 (.043)***</td>
</tr>
<tr>
<td>Membership</td>
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<td>.019 (.027)</td>
<td>.013 (.024)*</td>
<td>.050 (.028)*</td>
<td>.014 (.023)</td>
</tr>
<tr>
<td>Length</td>
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<td>-.002 (.031)</td>
<td>-.035 (.030)</td>
<td>-.012 (.036)</td>
<td>-.034 (.030)</td>
</tr>
<tr>
<td>Collective</td>
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<td>-.002 (.031)</td>
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<td>-.034 (.030)</td>
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<td>Identity</td>
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<td>.039 (.030)</td>
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<td>.033 (.030)</td>
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<td>.256 (.041)***</td>
<td>-</td>
<td>.264 (.041)***</td>
</tr>
<tr>
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<td>.286 (.046)***</td>
<td>-</td>
<td>.268 (.047)***</td>
</tr>
<tr>
<td>PU</td>
<td>-</td>
<td>-</td>
<td>.322 (.041)***</td>
<td>.182 (.037)***</td>
<td>-</td>
</tr>
<tr>
<td>AE</td>
<td>-</td>
<td>-</td>
<td>.155 (.041)***</td>
<td>.035 (.036)</td>
<td>-</td>
</tr>
<tr>
<td>CC</td>
<td>-</td>
<td>-</td>
<td>.148 (.029)***</td>
<td>.068 (.025)***</td>
<td>-</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>.648***</td>
<td>.739***</td>
<td>.758***</td>
<td>.658***</td>
<td>.762***</td>
</tr>
</tbody>
</table>

*Table 6.* Regression models predicting future commitment to the group. Entries are unstandardized beta coefficients. The coefficients for the third, fourth, and fifth models are from the last block of the hierarchical model. Parentheses are standard errors. ***\( p < .01 \), **\( p < .05 \), *\( p < .10 \)
To further bolster the support for Hypothesis 5 and to demonstrate the importance of PVGC as an explanatory variable, a third regression model was run. The dimensions of perceived cohesion – belonging and morale – were added as control variables in this model. Since PVGC is highly correlated with belonging and morale, a hierarchical regression model was run with PVGC being entered alone in the last block of the model. By structuring the model in this manner, the incremental $R^2$ value for the model associated PVGC can be compared to the model without it. If the model with PVGC has a significantly higher $R^2$ value, it can be said that PVGC accounts for significant amount of variance in future commitment to the voluntary group after controlling for the effects of the dimensions of perceived cohesion (and all other control variables). It was found that adding PVGC to the model did significantly increase the amount of variance accounted for in future commitment to the voluntary group, $\Delta R^2 = .022; p < .001$. In the final block, PVGC ($b = .28, SE = 0.048, p < .001$), belonging ($b = .26, SE = 0.041, p < .001$), and morale ($b = .29, SE = 0.046, p < .001$) were all statistically significant predictors of future commitment. This further demonstrates that PVGC and perceived cohesion are distinct concepts, with PVGC accounting for a slightly different portion of the variance in the criterion outcome variable of interest to this research project.

To address the research question associated with future commitment, two additional series of hierarchical regression models were run (see Table 6, p. 96). In these models, the three lower-order factors of PVGC – PU, AE, and CC – were entered separately into a hierarchical regression model. In the first series of models, the lower-order factors of PVGC were entered without controlling for the effects of perceived
cohesion. In these models, all three lower-order factors were found to separately account for a significant amount of variance in future commitment to the organization, PU ($\Delta R^2 = .053, p < .001$), AE ($\Delta R^2 = .013, p < .001$), and CC ($\Delta R^2 = .023, p < .001$). In the second set of models, the factors of PVGC were entered, while controlling for perceived cohesion. It was found that PU did explain a significant amount of the variance in future commitment ($\Delta R^2 = .015, p < .001$), even after controlling for AE, CC, belonging, and morale. Affective evaluation did not explain a significant amount of the variance in future commitment ($\Delta R^2 = .001, p = .32$), after controlling for the other dimensions of PVGC and perceived cohesion. Although slight, CC also accounted for a significant amount of additional variance in future commitment ($\Delta R^2 = .005, p < .01$). In all models, the beta weights for all five variables associated with PVGC and perceived cohesion remained positive.

**Public Participation**

Hypothesis 6 and RQ 2 examine the relationship between PVGC and public participation in relation to the voluntary group (e.g., recruitment activities). The same process followed for H5 and RQ1 was followed for the current hypothesis and research question. Initially, a regression model predicting public participation and controlling for age, sex, education, household income, race, previous involvement with the group, length of membership in the group, collective identity, and feelings of similarity was run. In this model, PVGC was found to be a significant predictor of public participation ($b = 0.42, SE = 0.086, p < .001$). The total model accounted for 32.4% of the variance in public participation, while PVGC uniquely accounting for 4.0% of the variance in public
participation. These results lend support for Hypothesis 6 (see Table 7, p. 100). Like in
for future commitment, a second model was created. In this model, the dimensions of
perceived cohesion (e.g., belonging and morale) were entered in to the model as
predictors, while PVGC was not. In this model, both belonging ($b = 0.24, SE = 0.088, p < .01$) and morale ($b = 0.21, SE = 0.094, p < .05$) were found to be significant predictors of
future commitment. This model accounted for 34.8% of the variance in future
commitment to the organization.
<table>
<thead>
<tr>
<th></th>
<th>PVGC only</th>
<th>PC only</th>
<th>PVGC and PC</th>
<th>PVGC Factors without PC</th>
<th>PVGC factors with PC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>-.016 (.004)*****</td>
<td>-.015 (.004)*****</td>
<td>-.016 (.004)*****</td>
<td>-.013 (.004)*****</td>
<td>-.013 (.004)*****</td>
</tr>
<tr>
<td><strong>Gender (Male)</strong></td>
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<td>.009 (.145)</td>
<td>.038 (.147)</td>
<td>-.001 (.147)</td>
<td>.019 (.145)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>.102 (.073)</td>
<td>.069 (.072)</td>
<td>.081 (.072)</td>
<td>.085 (.072)</td>
<td>.064 (.072)</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td>.013 (.057)</td>
<td>.013 (.057)</td>
<td>.017 (.057)</td>
<td>.026 (.057)</td>
<td>.025 (.056)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td>-.068 (.079)</td>
<td>-.039 (.078)</td>
<td>-.042 (.078)</td>
<td>-.079 (.078)</td>
<td>-.052 (.078)</td>
</tr>
<tr>
<td><strong>Previous Involve</strong></td>
<td>.325 (.093)*****</td>
<td>.260 (.093)*****</td>
<td>.238 (.095)*****</td>
<td>.278 (.092)*****</td>
<td>.198 (.094)***</td>
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<tr>
<td><strong>Membership Length</strong></td>
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<td>-.090 (.051)*</td>
<td>-.081 (.051)</td>
<td>-.053 (.051)</td>
<td>-.077 (.051)</td>
</tr>
<tr>
<td><strong>Collective Identity</strong></td>
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<td>.086 (.065)</td>
<td>.062 (.066)</td>
<td>.077 (.066)</td>
<td>.064 (.065)</td>
</tr>
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<td><strong>Similarity</strong></td>
<td>.271 (.062)*****</td>
<td>.207 (.064)*****</td>
<td>.183 (.065)*****</td>
<td>.240 (.061)*****</td>
<td>.161 (.064)</td>
</tr>
<tr>
<td><strong>PVGC</strong></td>
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<td>-</td>
<td>.185 (.103)*</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Belonging</strong></td>
<td>-</td>
<td>.238 (.088)*****</td>
<td>.214 (.089)***</td>
<td>-</td>
<td>.238 (.088)*****</td>
</tr>
<tr>
<td><strong>Morale</strong></td>
<td>-</td>
<td>.207 (.094)***</td>
<td>.149 (.101)</td>
<td>-</td>
<td>.090 (.101)</td>
</tr>
<tr>
<td><strong>PU</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.403 (.075)*****</td>
<td>.325 (.079)*****</td>
</tr>
<tr>
<td><strong>AE</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-.019 (.075)</td>
<td>-.096 (.077)</td>
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<tr>
<td><strong>CC</strong></td>
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<td>-</td>
<td>-</td>
<td>.024 (.053)</td>
<td>-.025 (.054)</td>
</tr>
</tbody>
</table>

| $R^2$                | .324***** | .348***** | .354***** | .351***** | .354***** |

*Table 7.* Regression models predicting public participation associated with the voluntary group. Entries are unstandardized beta coefficients. The coefficients for the third, fourth, and fifth models are from the last block of the hierarchical model. **p < .01, *p < .05, *p < .10
The dimensions of perceived cohesion – belonging and morale – were then added to the model as an additional control. The change in $R^2$ after adding PVGC was approaching statistical significance ($\Delta R^2 = .005, p = .07$). When examining public participation, PVGC is a significant, positive predictor, but its explanatory power does not exceed that of the two dimensions of perceived cohesion.

Addressing the research question provides a greater understanding of why PVGC did not explain variation in public participation, beyond that of perceived cohesion. To examine this relationship, two series of hierarchal regression models were constructed. The first included the lower-order factors of PVGC, without controlling for the effect of the dimensions of perceived cohesion on public participation. In these models, PU ($\Delta R^2 = .047, p < .001$) was the only lower-order factor accounting for a significant amount of variance in public participation, AE ($\Delta R^2 = .001, p = .80$) and CC ($\Delta R^2 = .003, p = .65$). The second set included perceived cohesion and had similar results. PU was entered in its own block after all other controls (including belonging and morale). It was found that PU accounted for a significant amount of the variance in future commitment ($\Delta R^2 = .027, p < .001$), even after controlling for AE, CC, belonging, and morale. On the hand, neither AE ($\Delta R^2 = .002, p = .22$) nor CC ($\Delta R^2 = .0003, p = .65$) was found to cause a significant change in the variance accounted by the model. Although non-significant, both CC ($b = -0.03, SE = 0.054, p = .645$) and AE ($b = -0.10, SE = 0.077, p = .216$) were associated with negative beta weights.

**Willingness to Impose Sanctions**
The same procedures followed for the last two outcome variables were repeated to understand the relationship between PVGC and an individual’s willingness to impose sanctions on other members of a group who break group rules. First, a regression model predicting public participation and controlling for age, sex, education, household income, race, previous involvement with the group, length of membership in the group, collective identity, and feelings of similarity was run (see Table 8, p. 103). Hypothesis 7 predicted that PVGC would positively affect willingness to impose sanctions. The results did not support this hypothesis. PVGC was a significant predictor, but its effect was in the opposite direction predicted ($b = -0.28$, $SE = 0.10$, $p < .01$). Possible explanations for this contradictory finding will be explored through post-hoc analyses in the next chapter. A second model was constructed for comparison purposes. In this model, the dimensions of perceived cohesion were entered in to the model as predictors and PVGC was not included. Neither belonging ($b = -0.06$, $SE = 0.10$, $p = .54$) nor morale ($b = 0.01$, $SE = 0.11$, $p = .93$) was significant predictors of willingness to impose sanctions. This model accounted for 11.0% of the variance in future commitment to the organization.
<table>
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<tr>
<th></th>
<th>PVGC only</th>
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<th>PVGC Factors without PC</th>
<th>PVGC factors with PC</th>
</tr>
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<td>-.009 (.005)*</td>
<td>-.008 (.005)</td>
<td>-.009 (.005)*</td>
<td>-.006 (.005)</td>
<td>-.006 (.005)</td>
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<td><strong>Gender</strong></td>
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<td>.673 (.172)***</td>
<td>.573 (.173)***</td>
<td>.521 (.172)***</td>
<td>.542 (.172)***</td>
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<td><strong>Education</strong></td>
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<td>-.104 (.085)</td>
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<td>-.105 (.085)</td>
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<td>.054 (.067)</td>
<td>.056 (.067)</td>
<td>.075 (.066)</td>
<td>.072 (.067)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
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<td>.147 (.092)</td>
<td>.113 (.092)</td>
<td>.125 (.092)</td>
</tr>
<tr>
<td><strong>Previous</strong></td>
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<td>-.060 (.111)</td>
<td>-.088 (.107)</td>
<td>-.085 (.111)</td>
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<td><strong>Length of Membership</strong></td>
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<td>-.006 (.060)</td>
<td>.010 (.060)</td>
<td>.029 (.059)</td>
<td>.019 (.060)</td>
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<td><strong>Collective Identity</strong></td>
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<td><strong>Similarity</strong></td>
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<td><strong>PVGC</strong></td>
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<td><strong>Belonging</strong></td>
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<td>.108 (.120)</td>
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<td>-</td>
<td>.049 (.088)</td>
<td>.027 (.094)</td>
</tr>
<tr>
<td><strong>AE</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-.094 (.087)</td>
<td>-.140 (.091)</td>
</tr>
<tr>
<td><strong>CC</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-.241 (.062)***</td>
<td>-.248 (.064)***</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>R²</th>
</tr>
</thead>
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<td><strong>PVGC only</strong></td>
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</tr>
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<td><strong>PC only</strong></td>
<td>.110***</td>
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<td><strong>PVGC and PC</strong></td>
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</tr>
<tr>
<td><strong>PVGC factors with PC</strong></td>
<td>.142***</td>
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</table>

*Table 8.* Regression models predicting willingness to impose sanctions on other group members. Entries are unstandardized beta coefficients. The coefficients for the third, fourth, and fifth models are from the last block of the hierarchical model. Parentheses are standard errors. ***p < .01, **p < .05, *p < .10
The dimensions of perceived cohesion – belonging and morale – were then added to the model. It was found that PVGC did explain a significant amount of variance after controlling for perceived cohesion ($\Delta R^2 = .023, p < .01$). In the model, the effect of PVGC remained negative ($b = -0.38, SE = 0.12, p < .001$). The effects of the two dimensions of perceived cohesion went in opposite directions, yet neither was significant (belonging $b = -0.03, SE = 0.10, p = .80$; morale $b = 0.16, SE = 0.12, p = .17$).

Finally, by entering the lower-order factors of PVGC separately into a hierarchical regression model the research question associated with sanctioning was assessed. To examine this two series of hierarchal regression models were constructed. The first included the lower-order factors of PVGC, without controlling for the effect of the dimensions of perceived cohesion on willingness to impose sanctions. In these models, CC ($\Delta R^2 = .034, p < .001$) was the only lower-order factor that accounted for a significant amount of variance in willingness to impose sanctions. Neither PU ($\Delta R^2 = .001, p = .58$) nor AE ($\Delta R^2 = .003, p = .28$) added significantly to the explanatory value of the model. A second series of hierarchical regression models include perceived cohesion. Perceived utility caused no significant change in $R^2$ ($\Delta R^2 = .002, p = .76$). Affective evaluation also caused no significant change in the variation explained ($\Delta R^2 = .004, p = .16$). Finally, CC was found to cause a significant change in the explanatory power of the model ($\Delta R^2 = .039; p < .001$) and had a negative beta weight ($b = -0.26, SE = 0.064, p < .001$). In this model, AE was also negative yet non-significant ($b = -0.13, SE = 0.091, p = .16$), whereas PU was positive and non-significant ($b = 0.03, SE = 0.094, p = .76$).
Chapter 4: Post-Hoc Analyses

The initial analyses in this dissertation lead to some additional questions. A series of post-hoc analyses will attempt to address those questions.

Hypothesis 1 and 7

Two hypotheses were not supported in the primary analyses – H1 and H7. Hypothesis 1 predicted that group size negatively affects PVGC. The hypothesized relationship was supported by numerous pieces of previous research examining group cohesion (e.g., Lawler, 1992; Mueller & Lawler, 1999; Mullen & Copper, 1994; Paxton & Moody, 2003). However, no significant relationship was found between group size and PVGC in the current study ($b = 0.033$, $SE = 0.026$, $p = 0.20$). This finding was surprising based on the substantial amount of previous research supporting the link between the two concepts.

Three additional regression models were run as a first step in understanding these surprising results. In the models, the individual dimensions of PVGC replaced the full PVGC measure as the dependent variable (see Table 9, p. 106). All control variables in the model were identical to the model used to initially test Hypothesis 1 and Hypothesis 2. Like the full measure, group size was not a significant predictor of either AE ($b = 0.03$, $SE = .035$, $p = 0.47$) or CC ($b = -0.003$, $SE = .043$, $p = 0.94$). However, group size did act as a statistically significant predictor of PU ($b = 0.08$, $SE = .036$, $p < .05$), although, the effect was in the opposite direction of the predicted relationship and was small in terms
of effect size. Group size only uniquely accounted for about 0.7% of the variance in PU. This eliminated any thoughts of a possible suppression effect amongst the dimensions of PVGC causing the non-finding.

<table>
<thead>
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<th>Perceived Utility</th>
<th>Affective Evaluation</th>
<th>Communication</th>
</tr>
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<td>-.005 (.003)</td>
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</tr>
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<td>-.238 (.112)**</td>
<td>-.503 (.135)***</td>
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<td>-.151 (.056)***</td>
<td>-.064 (.068)</td>
</tr>
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<td>-.110 (.044)**</td>
<td>.075 (.053)</td>
</tr>
<tr>
<td>Race</td>
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<td>.055 (.061)</td>
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<td>.205 (.071)***</td>
<td>.148 (.085)*</td>
</tr>
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<td>.007 (.042)</td>
<td>.072 (.050)</td>
</tr>
<tr>
<td>Collectivist Outlook</td>
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<td>.165 (.056)***</td>
<td>-.060 (.068)</td>
</tr>
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<td>Collective Identity</td>
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<td>.231 (.049)***</td>
<td>.190 (.060)***</td>
</tr>
<tr>
<td>Similarity</td>
<td>.210 (.050)***</td>
<td>.178 (.050)***</td>
<td>.029 (.060)</td>
</tr>
<tr>
<td>Size</td>
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<td>.026 (.035)</td>
<td>-.003 (.043)</td>
</tr>
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<td>Procedural Justice</td>
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<td>.242 (.052)***</td>
<td>.167 (.063)***</td>
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<tr>
<td>$R^2$</td>
<td>.439***</td>
<td>.387***</td>
<td>.202***</td>
</tr>
</tbody>
</table>

Table 9. Regression models predicting lower-order factors of PVGC. Entries are unstandardized beta coefficients. Parentheses are standard errors. ***$p < .01$, **$p < .05$, *$p < .10$

Next, there was concern about the group size measure. The measure for group size asked members to estimate the size of the group on a 5-point scale, ranging from 1 (Under 25 members) to 5 (Over 100 members). In the sample, 44.7% of respondents
selected “Over 100 member.” Because this selection would include groups from 101 members to a million or more members, it was thought this operationalization might be inducing some error in the measurement. To take a closer look at whether this is the case, two additional regression models were run.

First, all the individuals who selected “Over 100 members” were dropped from the analysis and the original regression was re-run. By dropping the catchall category, which allowed for groups ranging from over 100 to millions, an analysis can be run just looking at the change in PVGC in only the smaller groups with more precise measurement. In this regression, size remained non-significant ($b = 0.01, SE = .053, p = .89$). Therefore, it can be said that size does not have a significant effect on PVGC in groups composed of less than 100 people.

Second, another regression model was run inserting a different variable which might effectively account the influence of size. Along with asking about the number of members in the group, another item asked the participant to identify what type of voluntary group they were thinking about while answering the group-related questions in the survey. The possible choices were “national organization (e.g., AARP),” “local chapter of national organization,” or “independent local organization.” It is can be assumed that national organizations are larger than either local chapters of national organizations or independent local organizations. The data also matches this assumption; only 15 participants choose “national organization” and said the organization was composed of less than 100 people. In the regression, the sample was restricted to only people who choose “Over 100 members” as the group size. The group type variable was
entered into the model as a dummy variable with one being equal to national organization and zero representing either local chapter or independent organization. In the model, group type did not significantly affect PVGC ($b = -0.09, SE = 0.16, p = .57$). Although, this effect is still non-significant it does go in the direction hypothesized for the first time.

Finally, the initial regression model was re-ran replacing PVGC with the dimensions of perceived cohesion – belonging and morale – as the dependent variable. In the model predicting belonging, the effect of group size was positive and non-significance ($b = 0.05, SE = 0.03, p = .11$). In the model predicting morale, the effect of group size was positive and significant ($b = 0.111, SE = 0.03, p < .001$). The positive valance of these findings is in the opposite direction of which would be predicted (Bollen & Hoyle, 1990). Although, this finding does not explain the non-significant relationship between group size and PVGC, it does demonstrate that a similar concept – perceived cohesion – operates in the same manner within the sample. Further research will have to delve into the relationship between PVGC and group size. The problem could be as simple as measurement error caused by the self-report of the group size or as complex as a curvilinear relationship between size and group cohesion with individuals most highly connected to the smallest and largest groups in a social system (see Hipp & Perrin, 2006). These possibilities will be discussed in more detail in the next chapter (see p. 118).

Hypothesis 7 predicted PVGC would positively affect an individual’s willingness to impose sanctions on other group members who break group rules. Not only was the hypothesis not supported, but the relationship was found to be statistically significant and in the opposite direction of what was posited in Chapter 1. One possible explanation for
this finding is that an individual’s history with a voluntary group could moderate the relationship between PVGC and willingness to impose sanctions. As Fine and Holyfield (1996) found in their research on group cohesion in dangerous leisure groups (e.g., mushroom picking groups), individuals’ goals change over the length of their membership in a group. They argue that members of the potentially dangerous voluntary group they studied shifted roles, during the course of the their membership, from a learning role (i.e., seeking to gain information) to a teaching role (i.e., seeking to spread information). It could therefore be that length of membership in the group or level of previous involvement with the group interacts with PVGC, resulting in individuals with high PVGC and high previous involvement or longer membership length being the most willing to impose sanctions on other. The experienced member could see imposing sanctions as a way to teach the new comers how to operate within the group.

To test this view two additional regression models were run (see Table 10, p. 110). The models were identical as the initial model in H7, except that in each model one interaction term was added. In the first model, the interaction between PVGC and length of membership was added to the model. The interaction was non-significant \( b = -0.002, SE = .046, p = .96 \). In the second model, the interaction between PVGC and past involvement in the group was added to the model. This interaction term was found to have a significant negative effect on willingness to impose sanctions \( b = -0.17, SE = .086, p < .05 \).
<table>
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<th>Model 2</th>
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<td>-0.009 (.005)*</td>
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<td>.560 (.173)***</td>
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<td>.053 (.066)</td>
</tr>
<tr>
<td>Race</td>
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<td>.136 (.092)</td>
</tr>
<tr>
<td>Previous Involvement</td>
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</tr>
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<td>Length of Membership</td>
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</tr>
<tr>
<td>PVGC * Membership Length</td>
<td>-.002 (.046)</td>
<td></td>
</tr>
<tr>
<td>PVGC * Previous Involvement</td>
<td>-.173 (.086)**</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>.126***</td>
<td>.116***</td>
</tr>
</tbody>
</table>

Table 10. Regression models predicting willingness to impose sanctions on other group members. Entries are unstandardized beta coefficients. Parentheses are standard errors. ***p < .01, **p < .05, *p < .10

As can be seen in Figure 8 (p. 111), the effect of the interaction was opposite of what was initially thought. Individuals with high previous involvement (e.g., one standard deviation above the mean) and low PVGC (e.g., one standard deviation below the mean) were the most willing to impose sanctions on other members. Instead of a positive shift to a teaching role, these data appear to be painting a more negative picture.
The individuals willing to impose sanctions on other members might represent an embittered group of individuals. High sanctioners have donated a lot of time and resources to the voluntary group (i.e., high past involvement), but no longer feel they are benefiting from the group or have a voice in the group (i.e., low PVGC). This could be leading individuals to punish other members in order to try to make the group more effective for themselves. Future research should look at individuals’ motivations for sanctioning to understand the cause of this interaction.

![Graph of interaction between PVGC and past involvement.](image)

*Figure 8. Graph of interaction between PVGC and past involvement.*

After the interaction between PVGC and past involvement was found to be significant in predicting willingness to impose sanctions, the interaction was investigated in the two other outcome variables associated with PVGC – future commitment to the voluntary group and public participation associated with the group (see Table 11, p. 112). There was a significant interaction between PVGC and past involvement when predicting...
future commitment to the voluntary group \((b = - .13, SE = .04, p < .01)\), but it was non-significant \((b = - .101, SE = .074, p = .18)\) when predicting public participation associated with the group (e.g., recruitment activities).

<table>
<thead>
<tr>
<th></th>
<th>Future Commitment</th>
<th>Public Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.007 (.002)***</td>
<td>-.015 (.004)***</td>
</tr>
<tr>
<td>Gender (Male)</td>
<td>.035 (.080)</td>
<td>.026 (.149)</td>
</tr>
<tr>
<td>Education</td>
<td>-.023 (.039)</td>
<td>.102 (.073)</td>
</tr>
<tr>
<td>Income</td>
<td>-.017 (.031)</td>
<td>.007 (.057)</td>
</tr>
<tr>
<td>Race</td>
<td>-.067 (.043)</td>
<td>-.062 (.079)</td>
</tr>
<tr>
<td>Previous Involvement</td>
<td>1.049 (.226)***</td>
<td>.883 (.420)***</td>
</tr>
<tr>
<td>Length of Membership</td>
<td>.044 (.028)</td>
<td>-.059 (.052)</td>
</tr>
<tr>
<td>Collective Identity</td>
<td>.002 (.036)</td>
<td>.087 (.067)</td>
</tr>
<tr>
<td>Feelings of Similarity</td>
<td>.165 (.033)***</td>
<td>.265 (.062)***</td>
</tr>
<tr>
<td>PVGC</td>
<td>.587 (.048)***</td>
<td>.383 (.090)***</td>
</tr>
<tr>
<td>PVGC * Previous Involvement</td>
<td>-.127 (.040)***</td>
<td>-.101 (.074)</td>
</tr>
<tr>
<td>(R^2)</td>
<td>.657***</td>
<td>.327***</td>
</tr>
</tbody>
</table>

*Table 11.* Regression models predicting future commitment to the voluntary group and public participation in association with the group. Entries are unstandardized beta coefficients. Parentheses are standard errors. ***\(p < .01\), **\(p < .05\), *\(p < .10\)

As can be been in Figure 9 (p. 113), the interaction between PVGC and level of past involvement in the group resulted in a difference in the predicted level of future
commitment between the “high past involvement” (e.g., one standard deviation above the mean) and “low past involvement” group (e.g., one standard deviation below the mean) decreasing as PVGC was increased. The implications of these findings on long-term group stability will be discussed in the next section.

Figure 9. Graph of interaction of PVGC and previous involvement on future commitment to the voluntary group.

The Mediating Role of PVGC

The pattern of relationships between the various control variables (e.g., gender, education, procedural justice, feelings of similarity, collective identity, past involvement, and membership length), PVGC, and the three criterion variables in this dissertation (e.g., future commitment to the voluntary group, public participation in association with a voluntary group, and willingness to impose sanctions) speak to a possible larger process
of effects in which PVGC acts as a key mediator between the control variables and the outcome variables. To examine the role of PVGC as a mediator, a SEM model was constructed in AMOS 19 (see Figure 10). In the initial model PVGC was hypothesized to fully mediate the effects of all the other variables on the types of participation.

Figure 10. SEM model treating PVGC as mediating variable.

The initial model was not found to fit the data well, $\chi^2 (df = 21) = 245.75$; CFI = 0.83; RMSEA = 0.16 (90% C. I., 0.14 to 0.17); SRMR = 0.13. Using the model building techniques described by Kline (2005), numerous paths were added to the model. The paths added all represent direct effects from the exogenous variables to the types of participation. In the initial model, these paths were effectively constrained to zero, while

---

21 Collectivist outlook, income, race, and length of membership were not used as controls in these analyses because they were not found to have a significant effect (i.e., $p < .05$) in any of the previous analyses.
in the later models they were allowed to freely vary. The final model retained all significant direct effects between the endogenous variables and the criterion variables (see Figure 11).

![SEM model with direct and indirect paths. All directional paths are significant at the 0.05 level.](image)

*Figure 11.* SEM model with direct and indirect paths. All directional paths are significant at the 0.05 level.

This model was found to fit the data well, $\chi^2 (df = 11) = 18.09$; CFI = 0.99; RMSEA = 0.04 (90% C. I., 0.00 to 0.05); SRMR = 0.02. Further, PVGC was found to carry indirect effects from all endogenous variables to the criterion variables. For example, looking at Figure 11 it can be seen that procedural justice has an indirect effect
of 0.11 on future commitment to the voluntary group. An SPSS macro for estimating indirect effects was used to conduct additional analyses to formally test the significance of the indirect effects of procedural justice and collective identity through PVGC on the three criterion variables (for more information on the Indirect macro see Preacher & Hayes, 2008).

Procedural justice was found to have a significant, positive effect on PVGC (e.g., Hypothesis 2). In the SEM models, procedural justice was also found to have direct effects on two of the outcomes variables in this dissertation: future commitment to the voluntary group ($b = 0.24, p < .001$) and public participation ($b = 0.26, p < .001$).

Through probing the indirect effects using bootstrapping (5000 resamples) within the Indirect macro, procedural justice was found to have significant indirect effects through PVGC on future commitment (point estimate = 0.11, 95% bias corrected CI = 0.06 to 0.16), public participation (point estimate = 0.06, 95% bias corrected CI = 0.03 to 0.12), and willingness to impose sanctions (point estimate = -0.07, 95% bias corrected CI = -0.02 to -0.14). When looking at future commitment and public participation, the indirect effect goes in the same direction as the direct effect. On the other hand, the indirect of procedural justice on sanctioning went in the opposite direction of the direct effect. This resulted in the total effect of procedural justice on PVGC being insignificant ($b = .03; SE = .07, p = .68$).

Collective identity is seen as a distinct process from the contractual view. Both processes motivate cooperation in voluntary groups. Specifically, collective identity was

\[ \text{Collective identity is seen as a distinct process from the contractual view. Both processes motivate cooperation in voluntary groups. Specifically, collective identity was} \]

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\[ ^{22} \text{The indirect effect can be calculated by multiplying the path to PVGC by the path from PVGC to the criterion variable of interest.} \]
found to have a significant direct effect on public participation ($b = 0.13, p < .001$).

Although distinct it is theorized that the processes could overlap slightly resulting in collective identity enhancing an individual’s commitment to his or her contract with a voluntary group. Using bootstrapping in the Indirect macro, collective identity was found to have significant indirect effects through PVGC on all three criterion variables: future commitment (point estimate = 0.09, 95% bias corrected CI = 0.06 to 0.14), public participation (point estimate = 0.05, 95% bias corrected CI = 0.02 to 0.10), and willingness to impose sanctions (point estimate = -0.06, 95% bias corrected CI = -0.02 to -0.11). This demonstrates that although both processes (i.e., identity and contractual view) motivate participation in voluntary groups, there is also important interplay between these variables.

These analyses further demonstrate the important role PVGC plays in plays in the maintenance and survival of voluntary groups. Specifically, it shows that PVGC is an important mediator in understanding human action within groups. Specifically, PVGC carries the indirect effects of both procedural justice and collective identity on to the three criterion variables in this dissertation. It also makes clear the need for longitudinal research to examine the effects of PVGC on voluntary groups over time.
Chapter 5: Discussion

This chapter will be divided into four sections. The first section will discuss the findings of this dissertation in relation to the validity of the PVGC measure. This area will include a discussion of some the limitations that constrain the strength of the validity claims made in this dissertation. The second section will discuss the broader implications of the PVGC on voluntary group participation and stability. Specifically, the interactions examined in Chapter 5 will be expanded upon, and their effects on long-term group stability will be demonstrated through a number of computer simulations using Agent-Based Modeling (ABM). A third section will include a discussion of suggested future research and the implications of PVGC on communication research. The final section will discuss the broader implications of PVGC in understanding the functioning of democracy.

Summary of PVGC Validation

This dissertation bolsters the claims for the validity of the PVGC concept (Geidner, 2010). The strengths and limitations of its validity claims will now be discussed. Over the course of three previous samples (Geidner, 2010), the proposed higher-order factor structure with three indicators for each of the three lower-order factors was found to fit the data (see Figure 6, p. 87). One goal of this dissertation was to replicate the model fit found in the previous samples. Unfortunately, this was not
accomplished within this sample. The 9-item measure did not fit the data. It is believed the nature of the sample (e.g., opt-in online survey) and response set led to error in the 9-item PVGC scale. The error was most noticeable in the reverse-coded items. This was true of multiple scales in the second half of the questionnaire (e.g., collective identity). Within the CC subdimension of PVGC, one item was reverse-coded (i.e., CC03). It was this item that was dropped from the scale. After dropping this item, the new model was found to fit the data on all fit statistics examined.

Although this alternation in the model structure eliminates the ability to replicate the previous model fit in a new sample, it is argued that results of this dissertation can still be used to demonstrate the validity of the PVGC concept. Specifically, the 8-item measure still includes multiple indicators for each of the lower-order factors – PU, AE, and CC. Further, the altered dimension, communication connectedness, still includes one item addressing the individual’s ability to send communication and one item addressing the individual’s ability to receive communication. The item that was dropped referred more broadly to the ease of communication within the group. The altered measure, without CC03, still allows for an understanding of individuals’ ability to negotiate their contract and learn about adaptations to the contract, which is essential to understanding the individuals’ commitment to the given group and their contract with the group.

Within this dissertation, the relationship between PVGC and six different variables – group size, procedural justice, perceived cohesion, future commitment to the voluntary group, public participation associated with the group, and willingness to impose sanctions on other group members – was examined. The hypothesized
relationships were derived primarily from previous research looking at the concept of group cohesion, although research from various other theoretical frameworks was used for further support (e.g., Choice-Process Theory; see Lawler, 1992; Mueller & Lawler, 1999). The majority of the hypotheses were supported (i.e., H2, H3a, H3b, H5, H6), which acts to bolster claims for the validity of the PVGC concept. There was one hypothesis that was partially supported (i.e., H4) and two hypotheses that were not supported through the analyses of the collected data (i.e., H1, H7).

Hypothesis 4 predicted that perceived cohesion would be more closely related to the lower-order factor of AE, than to either PU or CC. In this sample, the two dimensions of perceived cohesion – belonging and morale – were found to correlate highly with both AE and PU, but only moderately correlate with CC. Although this was different than predicted, it doesn’t in any way take away from the validity of PVGC. More accurately, it adds validity to the perceived cohesion concept. Hypothesis 4 was included in this study, because it was believed that perceived cohesion was simply a measure of an individual’s emotional connection to the group. The finding in Hypothesis 4 demonstrates that the perceived cohesion measure is a more complex and nuanced measure than initially anticipated.

It must also be noted that in this sample CC was found to correlate more highly with each of the two dimensions of perceived cohesion (CC and Belonging $r = .41, p < .001$; CC and Morale $r = .39, p < .001$), than with the other dimensions of PVGC (CC and PU $r = .30, p < .001$; CC and AE $r = .27, p < .001$). This finding detracts from claims for the unidimensionality of PVGC and perceived cohesion. The low correlations between
CC and the other two lower-order factors of PVGC were surprising. In the previous study (i.e., Geidner, 2010), these correlations were much stronger. For example, in the first data collection the correlation between CC and PU was 0.60 ($p < .001$) and the correlation between CC and AE was 0.42 ($p < .001$). The low correlations in the current study could be result of the dropped item (i.e., CC03). It is possible that CC03, being the most broad of the CC items, is the most important in understanding the individual’s relationship to the voluntary group. Further studies must be conducted to fully comprehend the relationships between the three PVGC lower-order factors and the two dimensions of perceived cohesion.

Neither Hypothesis 1 nor 7 were supported. These non-findings act to undermine the validity claims made regarding the PVGC measure. The implications of each non-supported hypothesis will now be discussed further and areas of future research will be explored.

Hypothesis 1, which predicted group size would negatively influence PVGC, was not supported. There are at least two potential reasons for this non-finding, both of which do not affect the proposed validity of the PVGC concept. First, this finding could be caused by measurement error. The group size measurement was a single item, which asked the participant to estimate the size of the group for which he or she was thinking. It is possible that the scale is too small (i.e., the maximum choice being “100 or more member). Specifically, there might not be a change in PVGC when comparing a group of 25 members to a group of 100 members, but that might change if a group of 100
members were to be compared to a group of 1,000 members. Future research of this nature should use a scale with a larger range.

Beyond the scale, the self-report nature of the item might also be causing error in the measurement. First, individual members might not be good judges of the size of a group. In future studies attempting to understand the relationship between group cohesion and group size, researchers should work with voluntary groups that have clear membership lists or groups in which the researcher can track active participants. The actual membership numbers should then be compared to participant estimates. The relationship between actual membership numbers and PVGC should also be probed. Second, the strictness with which individuals can delineate their perceptions about different partitions of a group also must be probed. For example, in the current study a participant might have listed a local chapter of a national organization (and answered the group size question based on the local chapter), but then thought about benefits received from both the local chapter (e.g., social benefits) and the national organization (e.g., tangible benefits). This situation would present error in understanding the relationship between group size and perceived benefits.

The theory used to predict the relationship between group size and PVGC could also be misguided. The hypothesized relationship was derived from numerous studies within group cohesion research (e.g., Carron et al., 1990; Hogg, 1992; Rovio et al., 2009). Looking outside the group cohesion research, a number of other predications could be made. For example, it has been argued that individuals form the strongest bonds with the closest and furthest group within a social system (Hipp & Perrin, 2006). For
example, an individual in a social movement would have the highest level of bonding with their immediate, local group and with the national organization. This view could be further explained through the lens of Choice-Process Theory (Lawler, 1992; Mueller & Lawler, 1999). Choice-Process Theory argues an individual forms the greatest bond with groups, which give the individual a feeling of control. Midsized divisions (e.g., state or regional divisions) would result in lower levels of bonding (Hipp & Perrin, 2006). For example, a college professor might feel the highest level of bonding to his or her department and the university as a whole and have lower levels of bonding with the school or college in which the department resides. If this view were true, group size – in sheer numbers – would not affect PVGC. Instead relative group size within a given voluntary group would have a curvilinear effect on PVGC, with individuals most highly connected to the smallest and largest group. Although it could be argued that the non-finding for H1 demonstrates the lack of validity of the PVGC concept, it is believed that either measurement error or poor theoretical choices could instead be the primary reason for the non-finding.

Hypothesis 7 was not supported, and the results showed a significant effect in the opposite direction. This hypothesis predicted PVGC would positively affect individuals’ willingness to impose sanctions on other members of the group who break group rules. In Chapter 4, an interaction was found between previous involvement in the group and PVGC when predicting sanctioning. The interaction presents a more nuanced understanding of how PVGC affects sanctioning. Specifically, individuals with high past involvement and low PVGC are the most willing to impose sanctions. The implications
of this finding on voluntary groups will be discussed more in the next section. Future research should probe this interaction further. Specifically, by looking at group relationships in a longitudinal fashion the casual paths between previous involvement, PVGC, and willingness to impose sanctions could be explained in greater detail (Eveland & Morey, 2010).

Beyond the hypothesized relationships, a number of additional analyses were carried out to examine the relationship between perceived cohesion and PVGC and the explanatory power of both. When looking at future commitment and willingness to impose sanctions PVGC accounted for variance in the outcome variable above and beyond that which is associated with the dimensions of perceived cohesion, belonging and morale. After looking at the explanatory power of the full PVGC scale, the lower-order factors of PVGC were entered into regression models predicting the three outcome variables. In these analyses it was found that PU or CC explained a significant amount of variance in each of the outcome variables – PU was significant in predicting future commitment and public participation and CC was significant in predicting future commitment and willingness to impose sanctions – after controlling for the dimensions of perceived cohesion and the other two dimensions of PVGC. This speaks to the importance of all three dimensions of PVGC. Further, it adds some support to Hypothesis 3b, which predicted perceived cohesion would be most closely related to AE. This was not found when looking at the correlations between the dimensions, but when predicting the outcome variables AE did not explain unique variance after controlling for perceived cohesion while PU and CC did. These finding, along with Hypothesis 4 which
empirically demonstrated that perceived cohesion and PVGC were distinct concepts, demonstrate the importance of PVGC as an explanatory variable. Specifically, this research demonstrates the importance of including a communication dimension when looking at group cohesion.

**Implications of PVGC on Voluntary Groups**

The criterion variables in this study—future commitment, public participation, and willingness to impose sanctions—represent three primarily outcomes resources a group needs for survival. Within any voluntary group there must be groups of individuals who are willing to: (1) show up at meetings and be involved in day-to-day group activities (i.e., future commitment), (2) recruit (i.e., public participation) new members, and (3) impose sanctions on other group members that break the rules. The first two are fairly straightforward requirements (i.e., a group must have active members and must sustain an effective level of membership through recruitment activities). The need for the last requirement, sanctioning, is not as obvious. Social grouping are formed on the basis of giving up rights to gain specific benefits (Locke, 1689/1980; Keeley, 1988). The rights relinquished are usually associated with specific responsibilities (e.g., paying dues to the voluntary group). If a given member doesn’t follow through with his or her group responsibilities sanctions must be imposed in some manner (Locke, 1689/1980). This has been further demonstrated by scholarship on collective action, which has found free riders can be destructive to the creation of public good (e.g., a stable voluntary group) (see Alexrod, 2006; Kollock, 1998). Free riders by their nature are individuals within a collective who are not contributing. In a voluntary group where individuals are
contractually obligated to contribute, free riders must be prevented or they could be destructive to the group. Therefore, like with participation and recruitment, for a voluntary group to successfully survive a subset of the group must be willing to impose sanctions on other members of the group.

The three resources outlined in this dissertation work together to allow voluntary groups to survive and grow. As has been shown, PVGC directly affects all three of these variables. The primary limitation of this dissertation is in only looking at PVGC in a cross-sectional nature. It is assumed that PVGC, through its relationships with future commitment, public participation, and willingness to impose sanctions, has a complex, nonlinear relationship with the long-term survival of groups. The complexity of this relationship is compounded by interdependence of individuals within a group. By their nature, the benefits associated with social contracts can only be gained by participating in a collective. Therefore, the actions of other members within the group affect the actions of the individual (Coleman, 1987; Granovetter, 1978).

To demonstrate these points and to show the potential effects of PVGC on the day-to-day survival and stability of voluntary groups a computer simulation was created using NetLogo software (for background on computer simulation see Appendix K, p. 177; see also Epstein, 2006; Macy & Willer, 2002; Mason, Conrey, & Smith, 2007; Smith & Conrey, 2007).\(^\text{23}\) The primary goal of the simulation is to demonstrate, in an abstract, simplified society, how the relationship between previous group involvement and PVGC can affect group participation and willingness to impose sanctions. The

\(^{23}\)The simulation created for this dissertation is available in working form at http://www.nickgeidner.com/dissertation/dissertation.html.
complex, non-linear fashion of these effects can be easily demonstrated through the use of ABM.

The simulation in this dissertation uses the interactions between PVGC and previous group involvement – discussed in Chapter 5 – as a basis. Specifically, the regression formulas for each outcome – future commitment and willingness to impose sanctions – can be used to generate point estimates in the simulation based on levels of PVGC and previous involvement. In this simplified society, the only variables in both the simulation and the regression are past involvement and PVGC.\textsuperscript{24} Therefore, the formulas used in the simulation are simplified to containing a constant and the $b$ weights associated with past involvement and PVGC. The constants for the formulas needed to be adjusted from the original regression models to allow for the minimum achievable value to be 0 for each variable. The future commitment formula produces values ranging from 0 to 8.41. Like displayed in the interaction graph in Chapter 5, the highest value for future commitment (i.e., 8.41) is achieved when both PVGC and past involvement are set to their maximum values. The willingness to impose sanctions formula produces values ranging from 0 to 6.64. In this formula, the highest value (i.e., 6.64) is achieved by setting PVGC to its minimum value and past involvement to its maximum value. The point estimates created by the formulas will act to define individual agent’s activity within the simulation (e.g., participation and sanctioning). Below are the formulas used to create point estimates for future commitment and willingness to impose sanctions:

\textsuperscript{24} In future studies complexity could be added to the model by including additional variables in the simulated world. For example, the agents in the model could be given a gender. The effects of gender on PVGC, future commitment, and willingness to impose sanctions could then be added to the model.
Future Commitment = 3.73 + (PVGC * .587) + (Past Involvement * 1.049) + (PVGC * Past Involvement * -.127)  

(1)

Willingness to Impose Sanctions = 3.4594 + (PVGC * -.334) + (Past Involvement * .896) + (PVGC * Past Involvement * -.173)  

(2)

In the simulation, the value produced from the formula will be divided by the maximum value of the scale. This will produce a number ranging from 0 to 1, which will represent the proportional likelihood of the agent engaging in the act – either participating in the group or sanctioning other group members. For example, if during a given iteration an agent has a future commitment value of 5.50, it will have a 65.4% (i.e., current value/max value or 5.5/8.41) chance of participating in the group during that iteration. To create the most parsimonious model possible and because PVGC is the central variable of interest, PVGC will be the only variable (other than the outcome variables) that will change during the initial simulations. The simulation will be briefly described (see Appendix L, p. 182, the simulation script).

All simulations in this dissertation contain 100 agents in an 11x11 space. At the start of the simulation, each agent will be assigned a value for PVGC, previous involvement, and PVGC change. These will all be randomly assigned. The mean and
standard deviation of the distribution of PVGC will be varied across numerous simulation runs. The distribution for previous involvement will be based on the distribution found in the survey data. Because the survey data was cross-sectional and a specific value for the rate in which PVGC changes is unknown, PVGC change was allowed to randomly vary within the population from 0 to one half of one standard deviation of the PVGC measure in the survey data (i.e., 0.58).

Once assigned values, the agent will enter the simulation space. At the beginning of an iteration the agent will move one space in a random direction. The agent will then calculate a value for future commitment using Equation 1 (p. 118). Based on the future commitment the agent will decide if it wants to participate in the group in the given iteration. If the agent chooses not to participate it can be considered a free rider. In this simulation all agents are considered members of the group. With the future commitment variable, the agent is deciding if it wants to be an active member in the given simulation. For example, the simulation space can be thought of as a group meeting where everyone has been asked to throw in money to cover the snacks and drinks provided. If the agent successfully free rides in Iteration X, it will automatically try to free ride again in Iteration X+1.

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25 The mean for the previous involvement variable was set just over 1 standard deviation below the mean in the survey data. This is to compensate for the right-skew of the survey data. Because the distribution of the past involvement variable is being obtained directly from the survey data, it is possible for its value to be a negative number. Although, it is impractical for past involvement to be a negative absolute value (e.g., attended 4 meetings), the past involvement variable used in the simulation is not based on an absolute value. It is instead based on a scaled value (i.e., derived from the 2-item previous involvement scale in the survey); therefore, the value represents the agent’s relative level of previous involvement and can be negative in valance.
If the agent decides to participate (e.g., throw money in for the snacks), it then looks around to see if other agents are also participating or if it was in the minority and in effect paying for everyone else’s snacks. If a majority of others within one space of the agent are participating the agent’s PVGC will increase; otherwise, it will decrease. This effect could be explained in numerous ways. For example, if the individual is surrounded by free riders, the individual could believe the benefit he or she is gaining from group membership is much less than other members (i.e., free riders) resulting in lower perceived utility. The individual could also have a negative emotional reaction to the free riders resulting in a less emotional attachment to the group. The rate of increase or decrease is dictated by the PVGC change variable. After adjusting its PVGC value, the agent calculates a value for willingness to impose sanctions using Equation 2 (p. 118). Just like future commitment, the current sanctioning value is divided by the maximum sanctioning value. This creates a value between 0 and 1, which is used as a proportional likelihood of imposing sanctions. If the agent chooses to sanction, it finds an agent that was free riding in the current iteration and “punishes” it. When an agent is punished in Iteration X, it will automatically participate in Iteration X + 1. The simulation was run for 100 iterations in all cases. In each set of runs, the initial mean value of PVGC in the society was increased 1 unit. The initial standard deviation for PVGC was 1.25 across all simulations. For each set of starting means, the simulation was re-ran 25 times and means across iterations were used to create the graph below.
Figure 12. Active membership at varying starting levels of PVGC. Each line represents the average number of active members at a given time point across 25 runs of the simulation.

As can be seen in Figure 12, the level of active membership in the voluntary group jumps dramatically from when PVGC was set at 3 (i.e., Series 3) to when PVGC was set to 4 (i.e., Series 4). In Series 3, the average number of active participants after 100 iterations was 13.12, with the group collapsing to no members in 19 of the 25 simulation runs. On the other hand, in Series 4 the average number of active members after 100 iterations was 84.52, with the group only failing a single time to last the 100 iterations. The dramatic increase in active membership can be explained through a multi-step process resulting in a positive spiraling of PVGC. Specifically, PVGC beginning at a higher level results in more initial active membership. This reduces the number of free
riders in the society. When an agent participates, it is then more likely to be surrounded by other active members, which further encourages future participation.

Although this first set of simulation runs speaks to the non-linear way in which PVGC might influence macro-level outcomes (e.g., group survival), it is also important to understand the role sanctioning plays in this process. It has been argued throughout this dissertation that voluntary groups are formed through the same processes in which individuals negotiate their relationship with the state (e.g., the social contract). When forming a contract with a voluntary group, the individual gives up rights in order to gain benefits through group membership. To go back to the bowling league discussed in Chapter 1, a member of a bowling league gives up time and money (i.e., rights) in order to be allowed to participate in league sanctioned events (i.e., benefits). For the social contract to work as a mechanism inducing group cooperation, individuals must be willing to give up the rights they agreed to give up (Locke, 1689/1980). If an individual bound by the social contract lapses on that contract, the group must sanction the individual. If the individual is not sanctioned, the social contract (and the group) begins to collapse.

This phenomenon can also be demonstrated in the simulated society created earlier. In the earlier model the starting mean value for PVGC was manipulated across runs of the simulation to demonstrate the non-linear process through which PVGC affects active group membership. In this model, the starting mean for PVGC will be held at constant across models. The starting mean PVGC value will be 4 ($SD = 1.25$). To demonstrate the importance of sanctioning, the number of willing sanctioners will be manipulated across a series of simulations. Specifically, in each series of simulation runs
the willing number of sanctioners will be shrunk by 10%. This could represent the variance between a group with a norm of encouraging sanctioning and a group with a norm of discouraging sanctioning. Again all simulations will be run for 100 iterations. For each level of sanctioning reduction, the model will be run 25 times. Means values of active members during each iteration are displayed in the figure below.

![Figure 13](image)

*Figure 13.* Active membership at varying levels of willing sanctioners. Each line represents the average number of active members at a given time point across 25 runs of the simulation.

As can be seen by Figure 13, reducing the number of individuals willing to engage in sanctioning behaviors dramatically impacts the end level of active participants in the groups. For example, reducing the level of sanctioners by 10%, from Series 1 (i.e., 100%) to Series 2 (i.e., 90%) results in 35% drop in the number of active members after
100 iterations (Series 1 $M = 84.52$; Series 2 $M = 54.96$). The change from Model 2 to Series 3 (i.e., 80%) was 50%, and the change from Series 3 to Series 4 (i.e., 70%) resulted in the complete collapse of the group. None of the 25 runs of Series 4 resulted in any active members after 100 iterations. This demonstrates the important role sanctioning might play in the long-term survival of voluntary groups.

Within a voluntary group guided by the social contract, it is not only important to impose sanctions, but also to sanction members fairly. Specifically, Locke (1689/1980) argues that the only reason for creating the contract and a democratic government structure is to allow for the fair decision of disputes which would inevitably arise in the state of nature. The perceived procedural justice (i.e., fairness of group decisions regarding disputes) of a given voluntary group has been found to affect the individual’s level of attachment to that group (Ayee et al., 2002; Meyer & Allen, 1997; Rhoades et al., 2001). In Hypothesis 2, it was predicted that procedural justice positively affects PVGC. This hypothesis was confirmed. Procedural justice was a positive predictor of PVGC, uniquely accounting for 4.6% of its variance. It could be said that if an individual feels the voluntary group is fair and just in its procedures, he or she will feel a stronger connection to the group. The inverse is also true. If a voluntary group is viewed as unjust, members will be less strongly attached to the group. The long-term effects of procedural justice on group membership can also be examined through the use of computer simulation.

In the previous models, when agents doled out sanctions they were 100% accurate in their ability to punish only free riders. In the current simulation, the level of accuracy
of sanctioning within the group will be varied. For example, the second series run will drop the accuracy from 100% to 90%. This will result in agents, who are giving out sanctions, to have a 90% chance of correctly picking a free rider to punish. Therefore, there is a 10% chance that an active member will be unjustly punished. Based on Hypothesis 2, if an agent is unjustly punished its PVGC will decrease based on the randomly assigned PVGC change variable. The starting mean PVGC value will be 4 with a standard deviation of 1.25. In each series, the level of accuracy in sanctioning will be reduced by 10%. This represents the group slowly devolving from a just group defined by a Lockeian social contract to an unjust tyranny. Again, all simulations will be run for 100 iterations. For each level of sanctioning reduction, the model will be run 25 times. Means values of active members during each iteration are displayed in the figure below.
Figure 14. Active membership at varying levels of sanctioner accuracy. Each line represents the average number of active members at a given time point across 25 runs of the simulation.

As demonstrated in Figure 14, small shifts in the level of accuracy of a sanctioning system can result in large changes in the level of active members within the group. The initial 10% drop did not have much of an effect on active membership after 100 iterations (Series 1 or 100% accuracy $M = 84.52$; Series 2 or 90% accuracy $M = 81.0$). Yet, when the level of accuracy was dropped another 10% to 80% accuracy, the mean level of active membership dropped to 21.44 (or a 74% decrease) after 100 iterations. The shift from 90% to 80% leads to the dramatic shift in active membership for multiple reasons. First, the inaccuracy of sanctioning is allowing enough free riders to go unpunished that over time it effects group participation. Low group participation results in more people feeling like they are unfairly carrying the weight of the group. This
results in a decrease in PVGC, which further suppresses participation. Second, the inaccuracy in sanctioning results in active members getting unjustly punished. Based on the positive relationship between procedural justice and PVGC, unjust sanctioning results in reduced PVGC, which also suppresses participation.

It was illustrated through these three series of simulations that over time PVGC could have a complex, non-linear effect on group longevity and survival. Based on the assumptions in the simulations, it was shown that a critical mass of members willing to impose sanctions on other members is necessary for the survival of groups bound by a social contract. It was also demonstrated that groups must be just in their sanctioning procedures. If individuals feel the group is unfair, they will have lower levels of PVGC (i.e., Hypothesis 2). This in turn will lead to a reduced chance of survival for the voluntary group. Further, the simulations discussed in this chapter demonstrate how ABM can be used in tandem with empirical data to further contextualize the results and add to the knowledge created.

Future Research

This dissertation lays the groundwork for much future research. Primarily, this dissertation presents a valid and reliable measure of individual-level feelings of group cohesion toward a given voluntary group. Over the last 60 years, group cohesion has been argued to be the primary variable in understanding individual action within groups (Bollen & Hoyle, 1990; Carron & Brawley, 2000, Friedkin, 2004; Griffith, 1988; Gross & Martin, 1952; Horne, 2001; Lott & Lott, 1965; Shils & Janowitz, 1948). Unfortunately, the concept of group cohesion has been underutilized by numerous subfields within
communication (e.g., political communication, computer-mediated communication, public opinion).

It is possible that communication researchers have avoided group cohesion as a concept because the role of communication has been underspecified in previous models. Across the history of group cohesion research, communication within the group has often been discussed (see Festinger et al., 1950; Hogg, 1992; Holtz, 2004), but it hasn’t been seen as an essential concept in understanding group cohesion. The inclusion of the CC dimension in PVGC explicitly argues for the importance of communication and communication efficacy in understanding humans’ relationship with voluntary groups. In this dissertation, it was found that CC accounted for a significant amount of variance in both future commitment to the voluntary group and willingness to impose sanctions on other group members who break group rules, even after controlling for the effects of another measure of group cohesion and the other lower-order factors of PVGC (i.e., PU and AE). This finding demonstrates the importance of communication in the group cohesion process and brings group cohesion research directly under the purview of communication scholarship. This dissertation represents a beginning for the application of group cohesion to many problems of interest within contemporary communication research.

Specifically, this dissertation has shown that PVGC positively affects participation in voluntary groups in the form of future commitment to the voluntary group (e.g., willingness to attend future meetings) and public participation associated with the group (e.g., recruitment). Expanding on these findings, PVGC could be used to
understand individuals’ relationships to political parties and interest groups. This could provide great insight into the processes which result in group membership influencing political participation. One primary question would be the following: *does an individual’s relationship to a political campaign affect their likelihood of voting in the corresponding election?* This is an important question as campaigns spend vast resources attempting to build relationships with the electorate (Kerbel & Bloom, 2005; Trippi, 2004). By using PVGC to understand the individual’s relationship to the campaign (i.e., voluntary group), an answer to the above questions can be derived through longitudinal survey research. If PVGC does significantly affect political participation, further research would have to be conducted to understand how campaign communication and activities affect PVGC. For example, the effect of political social media usage on political participation could be mediated through PVGC. In this case, the campaign social media usage would enhance the bond the individual feels toward the campaign and, in turn, affect their likelihood of participating politically.

PVGC could also be used to help explain how opinions move through society. As this dissertation found, PVGC is positively associated with public forms of participation (e.g., talking to non-members about the group and recruiting new members). In particular, talking to non-members about the group represents the spread of information (e.g., group information and ideology) from voluntary groups to the general public. Though numerous scholars have sought to explain how opinions flow through society (e.g., Huckfeldt, Johnson, & Sprague, 2004; Noelle-Neumann, 1993; Nowak et al., 1990), none of these authors take into account the effect of voluntary groups in their theories and
models (i.e., the autoregressive model, spiral of silence theory, and social impact theory). Voluntary groups, in certain cases, allow for the survival of minority of opinion in society. Yet, if the minority opinion cannot transfer from the group to the public sphere (e.g., because of fear of social isolation), it is bound to die with the group. PVGC could act as a primary mediating variable in allowing the minority opinion to enter the public sphere. Future research must examine the relationship between PVGC and willingness to express group opinions in the public sphere. Once there is a greater understanding of this relationship, the models predicted by Huckfeldt et al. (2004), Noelle-Neumann (1993), and Nowak et al. (1990) could be updated to generate a more nuanced understanding of how opinions flow through complex societies. Specifically, voluntary groups could be seen as another viable way for minority opinions to survive within society.

Outside the political context, PVGC could be an important explanatory variable in research within computer-mediated communication. There has been much research and debate concerning why some online communities succeed and others fail (e.g., Joyce & Kraut, 2006; Postmes, Spears, & Lea, 2000; Rheingold, 1993; Wilhelm, 2000). The current research found that PVGC affects both individual-level participation and willingness to impose sanctions on group members who break commonly agreed upon rules (although these results were in opposite directions). In future research, PVGC should be validated in online spaces. Specifically, online groups following a contractual model should be identified. Contractual groups would be those bound group with which individuals enter to achieve a goal or goals not attainable through individual action. The individual sacrifices rights for the benefits associated with the goal. It is believed that the
PVGC measure with slight alterations could be used to understand individuals’ relationships with contractually based online group. Once validated, it could then be used to help explain why prosocial group norms are followed in some online group, while other groups turn into arenas for flaming and name-calling.

Future research should also seek to increase the scope of this concept by loosening its boundaries. Specifically, PVGC is currently limited to voluntary groups. Researchers should attempt to understand the complex relationship between group cohesion and perceptions of choice. For example, the interaction between choice and PVGC might result in individuals participating in groups with which they have low PVGC (e.g., a work group), but the interaction might also affect the individual in numerous other ways (e.g., attitude, level of productivity, level of creativity). If the relationship between choice and PVGC is further specified, PVGC could then be applied to primary groups (e.g., work groups and family). The competing and complementary forces acting on the individual from numerous groups could then be mapped giving researchers a greater understanding of the social forces acting on the individual within society.

Finally, future research should be conducted to further bolster claims for the validity of PVGC. Specifically, the model fit of the initial 9-item measure should be tested in other samples (as indicated by the poor initial model fit in this dissertation). In the first three data collections using PVGC (Geidner, 2010), the proposed model with nine indicators was found to fit the data. In the current study, the reverse-coded item in the CC subscale needed to be dropped from the analysis because of the substantial error it
added to the model. Future research will have to refine the measurement of PVGC and further validate the concept.

**Conclusion**

Social contracts guide human actions within collectives. In Hobbes (1651/1996), Locke (1689/1980), and Rousseau’s (1762/1997) texts the only collective of interest was the state. In this text, the collective of interest is the voluntary group. Like the contract with the society, individuals’ enter into an implicit or explicit contract with voluntary groups (Keeley, 1988). The individual rationally enters the contract to gain some kind of benefit, which he or she cannot achieve alone. The PVGC measure, which has been validated through this study, acts to measure the individual’s commitment to that contract. By understanding this relationship, a greater understanding of how humans operate in a complex society can be gained.

Currently, PVGC is limited to voluntary groups, but if the mechanism (i.e., the social contract) is the same in other types of groups it should not be assumed that the individual’s commitment to that group couldn’t be measured as well. The numerous contracts to which the individual is committed could then be mapped. The complexity and unpredictability of human decisions could be reduced through understanding how decision-making is guided by the different contracts acting on the individual. PVGC would play a central role by allowing for explanation when competition arises between multiple contracts.

Further, PVGC and the contractual view could be used to add greater understanding to the operation of our democracy. The creation of individual citizen’s
contract with the state is not as clear as that with a voluntary groups (e.g., if a new voluntary group starts tomorrow individuals are free to negotiate their contracts, but within a nation-state the individual is born into a contract), but the individual’s level of commitment to his or her contract with the state might be definable. Through understanding the individual’s level of commitment to his or her contract with the state, there can be an understanding of not just the individual’s likelihood of voting on Election Day (i.e., future commitment), but also a diverse set of other civic-related outcome variables (e.g., running for office, entering the military, volunteering in the community).

Finally, as the earlier simulations demonstrated PVGC can have abrupt and unpredictable effects on the survival and longevity of voluntary groups. At the voluntary group level, this just means the collapse of a bowling league or the local PTA. At the nation-state level, it is exactly what Madison (1787/2008), Hobbes (1651/1996), and Rousseau (1762/1997) feared most, the collapse of the state spurned on by the rise of factions. As Locke (1689/1980) argued, and this dissertation demonstrated, having a just legislature in the eyes of the people is one possible the remedy for this problem. Perceived procedural justice can act to bolster commitment to the contract (i.e., PVGC) and allow the society to maintain even when the individual member is not benefiting. Corruption, on the other hand, leads to decreased commitment to the social contract and ultimately, the collapse of society and reemergence of the state of nature.
References


Miller, M. K. (2010). Membership has its privileges: How voluntary groups exacerbate the participatory bias. *Political research quarterly, 63*, 356-372


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Appendix A: Group Environmental Questionnaire

All statements are answered on a Likert-scale ranging from “Strongly Agree” to “Strongly Disagree”

Attraction to Group - Social

I do not enjoy being part of the social activities of this team.
I am not going to miss the members of this team when the season ends.
Some of my best friends are on this team.
I enjoy other parties more than team parties.
This team is one of my most important social groups.

Attraction to Group - Task

I’m unhappy about the amount of playing time I get.
I’m unhappy with my team’s level of desire to win.
This team does not give me enough opportunities to improve my personal performance.
I like the style of play on this team.

Group Integration - Social

Members of our team would rather go out on their own than get together as a team.
Our team members rarely party together.
Our team would like to spend time together in the off-season.

Members of our team do not stick together outside of practices and games.

**Group Integration - Task**

Our team is united in trying to reach its performance goals.

We all take responsibility for any loss or poor performance by our team.

Our team members have conflicting aspirations for the team’s performance.

If members of our team have problems in practice, everyone wants to help them so we can get back together again.

Our team members do not communicate freely about each athlete’s responsibilities during competition or practice.
Appendix B: Perceived Cohesion Scale

All statements are answered on a Likert-scale ranging from “Strongly Agree” to “Strongly Disagree”

**Sense of Belonging**

I feel a sense of belonging to ____________________.

I feel that I am a member of the ____________________ community.

I see myself as part of the ____________________ community.

**Feeling of Morale**

I am enthusiastic about ____________________.

I am happy to be at [live in] ____________________.

______________________ is one of the best schools [cities] in the nation.
Appendix C: Perceived Voluntary Group Cohesion Scale

All items are answered on a 7-point Likert scale with responses ranging from “Strongly Disagree” to “Strongly Agree.”

**Perceived Utility Items**

This group allows me to accomplish a lot.

I gain a lot from being involved with this group.

I gain a lot from the communication I have with this group.

**Affective Evaluation Items**

When I think about this group I feel happy.

When I think about this group I feel compassion.

When I think about this group I feel relief.

**Communication Connectedness Items**

I find it hard to communicate with this group.

People in this group have a hard time contacting me.

Communication within this group is easy.
Appendix D: List of Voluntary Group Types

- Fraternal Group
- Service Group
- Veteran Group
- Political Club
- Labor Union
- Sports Club
- Youth Group
- School Service Group
- Hobby Club
- School Fraternity
- Nationality Group
- Farm Organization
- Literary or Art Group
- Professional Society
- Church Group
- Any other group outside the workplace

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## Appendix E: Correlations Between Scales

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### Table 12. Correlation matrix of scales used.
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Appendix F: Procedural Justice Subscale

Below is the full 7-item scale and prompt which will be included on the questionnaire. All items are answered on a 7-point Likert scale with responses ranging from “Not at All” to “Very Often.”

The following items refer to the procedures used to arrive at decisions with the group. To what extent...

1) ...have you been able to express your views and feelings during those procedures?
2) ...have you had influence over the decision arrived at by those procedures?
3) ...have those procedures been applied consistently?
4) ...have those procedures been free of bias?
5) ...have those procedures been based on accurate information?
6) ...have you been able to appeal the decision arrived at by those procedures?
7) ...have those procedures upheld ethical and moral standards?
Appendix G: Future Commitment Scale

All items are answered on a 7-point Likert scale with responses ranging from “Strongly Disagree” to “Strongly Agree.”

**Future Commitment Items**

I am going to be involved in this group for as long as I can.

If I were asked to do something to make this group better I probably would.

If someone in this group asked me for a favor I would probably do it.

If I volunteered to do something for this group I would go out of my way to do what I promised.

During the upcoming six month, I will attend the majority of this group’s meetings.
Appendix H: Scales for Control Variables

All items are answered on a 7-point Likert scale with responses ranging from “Strongly Disagree” to “Strongly Agree.”

**Collective Identity**

Overall, my group membership has very little to do with how I feel about myself.

The group I listed above is an important reflection of who I am.

The group I listed above is unimportant to my sense of what kind of person I am.

In general, belonging to the group I listed above is an important part of my self-image.

**Feelings of Similarity**

People in this group are a lot like me.

People in this group see the world the same way as me.

I have a lot in common with other people in this group.

**Collectivist Outlook**

My relationships with my friends and family are more important than my personal accomplishments.

My happiness depends on the happiness of my friends and family.

I often consider how I can be helpful to specific others among my friends and family.

I am careful to maintain harmony among my friends and family.

I would sacrifice my self-interests for the benefit of my family and friends.
I should take into consideration my parents' advice when making educational and career plans.

It is important to consult close friends and get their ideas before making decisions.
Appendix I: Collinearity Statistics

The collinearity statistics for the variables used in Hypothesis 5, Hypothesis 6, and Hypothesis 7 are presented in Table 13 (p. 174). There are two sets of collinearity statistics: one with all control variables and the full PVGC scale and one with all the control variables and the individual lower-order factors of PVGC. As can be seen, none of the tolerance statistics drop below .25, which is the threshold at which Hayes (2005) suggests issues of multicollinearity begin to arise. Even though no tolerance statistics drop below that threshold, the two dimensions of perceived cohesion come close in both instances. Because of this it was believed that using hierarchical regression to examine the effects of PVGC above and beyond perceived cohesion and the effects of the individual lower-order factors of PVGC was appropriate.
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*Table 13.* Collinearity statistics for regressions in Hypothesis 5, Hypothesis 6, and Hypothesis 7.
Appendix J: Inter-item Correlations for PVGC and Perceived Cohesion

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Table 14. Correlation matrix of items within PVGC and PC scales.
Table 14 continued

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Appendix K: Background on the Use of Computer Simulation

Agent-based modeling (ABM) is the type of simulation that will be used in this study. Agent-based modeling is a powerful tool, because it provides a computational demonstration of whether a series of microspecifications (e.g., PVGC) is sufficient to generate a theorized macrostructure (e.g., lasting voluntary groups) (Epstein, 2006, p. 8). Specifically, ABM is "a simulated multiagent system constructed with a particular goal: to capture key theoretical elements of some social or psychological process" (Smith & Conrey, 2007, p. 2). ABM uses a reductive modeling framework "to discover the consequences of the repeated application of simple laws governing lower level units for determining properties of higher level systems" (Nowak, Szamrej, & Latane, 1990, p. 362). By modeling the simple rules individuals follow (e.g., rules derived from the assumptions of communication theories or rules derived from empirical data) it is possible to understand how the repeated application of these simple rules can create complex, generative social processes (e.g., the collapse or survival of voluntary groups).

There are four specific assumptions that guide agent-based models (see Macy & Willer, 2002; Smith & Conrey, 2007). First, agents are autonomous. Each agent in the model represents an individual and each individual makes decisions on his or her own. This is to say there are no societal-based rules; all rules are based within the individual. There can be higher-level structures (i.e., groups). However, groups can’t make decisions
for the individual. The Lockeian (1689/1980) contract, which underlies the theorizing on PVGC, does not violate this assumption. Like ABM, it also assumes that the individual has the ultimate authority. On the other hand, a Rosseauian (1762/1997) contract and its focus on individual submission to the general will would violate this assumption and would disallow the use of ABM.

Second, agents are interdependent. Models are multiagent systems, with most models containing hundreds or thousands of agents. Agents interact with other agents and through these interactions each individual agent can be affected. A simple example of this dynamic is contagion models (see Dodds & Watts, 2005). In a simple contagion model, when an agent comes in contact with another agent the first agent changes from one state to another (e.g., uninfected to infected), based on the state of the second agent – either uninfected or infected. Of particular interest to the research effort at hand is the interdependence of agents based on group membership and PVGC.

Third, agents follow simple rules. Although we tend to think of the world as a very complex place, many of the theories and processes described in communication research are based off simple rules (Macy & Willer, 2002; Mason, Conrey, & Smith, 2007). For example, Noelle-Neumann (1993) describes Spiral of Silence Theory as being based off four simple assumptions. These assumptions can be converted into individual-level rules. The individuals in the system continuously repeat these simple rules. Subsequently, their rule-bound interactions lead to the complex, emergent processes that drive the society (e.g., the silencing of minority opinion predicted by Spiral of Silence.
Theory). By using computer simulation, the researcher can see these processes emerge over the course of a simulation’s run.

Fourth, agents are adaptive. Agents can adapt by moving within the society, imitating behaviors of others, replicating their own behaviors, or learning from their interactions with other agents. In the simulations in this paper, adaptation will include participating in groups and altering PVGC and previous involvement values.

A classic example of how the four assumptions of agent-based modeling can be used to model complex processes is Schelling’s (1971) work looking at neighborhood-level segregation. Schelling (1971) was able to show how segregation can occur even when no single agent explicitly desired segregation. The autonomous, interdependent agents in his model followed one simple rule, “do not be the minority in your local neighborhood” (Smith & Conrey, 2007, p. 3). In his model he had two types of agents, circles and pound signs. The agents were distributed randomly within a grid. Anytime the proportion of same verse others surrounding the agent dropped below a given threshold (e.g., .30 or .50), which was varied across models, the individual moved to an open space on the grid. This process was repeated until equilibrium – when all the agents stopped moving – was reached. In most cases, near-complete segregation within the environment was achieved.

**Previous ABM Research Examining Groups**

Schelling’s (1971) model demonstrates how likeminded enclaves can emerge within a society. This represents a type of group formation (i.e., the creation of segregated neighborhoods). Other previous models have also touched on group formation
processes (Geard & Bullock, 2010). For example, Nowak et al. (1990) used ABM to examine opinion formation and change in a dynamic setting based on social impact theory. Like Schelling (1971), their model resulted in the formation of coherent subgroups. The subgroups were based around agents having similar opinions. Alexrod’s (1997) cultural evolution model examines how cultural variation occurs within a society. His model also results in the formation of distinct cultural regions, characterized by homogenous clusters of agents with clear cultural boundaries. Each of these models demonstrate how types of groups (e.g., segregated neighborhoods, opinion enclaves, cultural regions) can emerge in a society, but for none of the authors was group formation the primary area of focus.

A select few studies have applied ABM directly to the formation and survival of voluntary groups. For example, Chattoe (2006) used ABM to examine individual church membership and the survival or collapse of churches over time. In the model, it is assumed that churches are associated with varying levels of cost (e.g., level of strictness) and offer varying benefits (e.g., spirituality). It is also assumed that individuals have limited resources. From the model, Chattoe finds that churches with low strictness were more likely to be created, but survived for less time than churches that were moderately stricter. In this model, agents were only allowed to be members of one church at a time.

Geard and Bullock’s (2010) also used ABM to look at the survival of groups in society. In their study, they look at group membership and longevity in an environment where individuals could be members of multiple groups. In the model, social ties were created in either a random fashion or through group-oriented processes. Agents were
recruited to a group through existing ties and then ultimately joined the group based on its Time and Energy Capacity (TAE). Specifically, each agent and each group had a TAE value associated with it. For example, Agent X could have a TAE value of 2 and Group Y could have a TAE value of 1. Agent X could join Group Y and still have 1 TAE unit, which it could use to join another group. When an agent must choose between two groups, its decision is based on the relative level of similarity it has with the group members of each group. This is based on the similarity the agent has with the group members on a number of randomly distributed traits (i.e., unchanging values – either 0 or 1 – meant to represent concepts such as gender or race). Geard and Bullock (2010) create a baseline model and then manipulate key variables within the model. Specifically, they manipulate the cost of groups and individuals’ TAE. They found that reducing the level of competition (i.e., increasing individual-level TAE and decreasing group-level TAE) between the groups limits the community structure (i.e., density of the group), but increases the number of groups and longevity of those groups. When manipulating individual-level TAE within the society, they found individuals with higher TAE became central actors in the society, because they could join more groups and create more social ties.
Appendix L: Program Used for Simulations in Chapter 5

turtles-own [  
PVGCPastInvolveFCSanctionFCperSancPerPartDecidePartSancDecidesancPunishedNotPunishedFreeRidersActiveMemsPartnerPVGCCchange2AccuDecideShrinkdecide  ]

To setup  
clear-all  
setup-turtles  
setup-patches  
End  

To setup-turtles  
ask n-of number patches [  
sprout 1 [  
   set PVGC random-normal PVGCMean PVGCsd  
   set PastInvolve random-normal -1 .89086  
   set PVGCCchange2 random 59  
]  
]
ask turtles [set color grey]
ask turtles [set shape "person"]
ask turtles [set PVGCchange2 PVGCchange2 / 100]
End

To setup-patches
ask patches [set pcolor black]
End

To go
if ticks > 1000 [stop]

ask turtles [set sanc 0]

ask turtles [left random 360 forward 1]
ask turtles [if PVGC > 7 [set PVGC 7]]
ask turtles [if PVGC < 0 [set PVGC 0]]
ask turtles [if PastInvolve > 3.56 [set PastInvolve 3.56]]
ask turtles [if PastInvolve < -3.56 [set PastInvolve -3.56]]

ask turtles [set FC 3.73444 + (PVGC * .587) + (PastInvolve * 1.049) + (PVGC * PastInvolve * -.127)]
ask turtles [set FCper FC / 8.41304 * 100]

ask turtles [set PartDecide random 101]

ask turtles [if-else Punished = 1
[set Part 1]
[set Part 0]]

ask turtles [if PartDecide < FCper [set Part 1]]

ask turtles [if NotPunished = 1 [set Part 0]]

ask turtles [if-else part = 1
[set color red]
[set color blue]]

ask turtles [set Punished 0]
ask turtles [set NotPunished 0]

ask turtles [if Part = 1 [participate]]
ask turtles [if Part = 0 AND Punished = 0 [set NotPunished 1]]
do-plots
tick

End

To participate

set sanc 0

set FreeRiders count turtles with [part = 0] in-radius 1
set ActiveMems count turtles with [part = 1] in-radius 1

if-else PVGCRandom
  [if-else FreeRiders > ActiveMems
    [set PVGC PVGC - PVGCChange2]
    [set PVGC PVGC + PVGCChange2]]
  [if-else FreeRiders > ActiveMems
    [set PVGC PVGC - PVGCChange]
    [set PVGC PVGC + PVGCChange]]

set Sanction 3.4594 + (PVGC * -.334) + (PastInvolve * .896) + (PVGC * PastInvolve * -.173)
set SancPer Sanction / 6.64916 * 100

set SancDecide random 101

if SancDecide < Sancper [set Sanc 1]

if shrinksanc [shrink]

if Sanc = 1 [punish]

if-else PVGCRandom
  [if part = 1 AND punished = 1 [set PVGC PVGC - PVGCchange2]]
  [if part = 1 AND punished = 1 [set PVGC PVGC - PVGCchange]]

if part = 1 AND punished = 1 [set punished 0]

End

To punish
set partner nobody
set accudecide random 101
ifelse BadSanction
[if-else AccuDecide > accuracy
  [set partner one-of other turtles with [part = 1]]
  [set partner one-of other turtles with [part = 0]]]
  [set partner one-of other turtles with [part = 0]]
  if partner != nobody [ask partner [set punished 1]]
End

To shrink
  set shrinkdecide random 101
  if sanc = 1
    [if-else shrinkamount > shrinkdecide
      [set sanc 0]
      [set sanc 1]]
  End