



# Relationship Conflict in Construction Management: Performance and Productivity Problem

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**Abstract:** Performance and productivity in construction management are essential for schedule and profit considerations, but are often diminished by conflict. Task conflict provides incentive for decisions and innovative solutions, whereas interpersonal conflict, also referred to as relationship conflict, is detrimental to performance and productivity because it affects schedules, cognition and collaboration efforts, and the morale of the team. This qualitative study investigates how relationship conflict affects performance and productivity among construction management professionals. Interviews were conducted in 18 construction firms with 25 construction management professionals, including project executives, senior project managers, project managers, and superintendents. The goal is to understand the antecedents and consequences of relationship conflict within construction management, and discover methods used to mitigate these effects. Key antecedents producing relationship conflict are lack of communication, old-school attitude, and lump-sum contracts. The key individuals generating relationship conflict are the owner or owner's representative, subcontractors, and superintendents. Consequences of relationship conflict include schedule delays, lowered morale and motivation, and reduced profit, whereas mitigating factors are good communication and trust building. DOI: [10.1061/\(ASCE\)CO.1943-7862.0001478](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001478). © 2018 American Society of Civil Engineers.

## Introduction

### Background

Within the construction industry, project stakeholders often maintain conflicting interests as they simultaneously work to design and construct today's complex built environment. Key project stakeholders frequently approach a project from opposing viewpoints, which lends itself to conflicting goals (Gebken and Gibson 2006; Harmon 2003; Kassab et al. 2006; Ning and Ling 2013; Wu et al. 2017). These stakeholders typically initiate a project with the intent of producing a quality project, on time and for a profit, but often conflict surfaces, undermining these goals. An adversarial climate due to the increasing complexity of construction projects can cause many projects to experience conflict that can escalate and sometimes explode, leading to a breakdown in communication and resulting in mediation or litigation (Harmon 2003; Ng et al. 2007).

### Complexity in Construction

The construction industry's complexity, involving numerous independent stakeholders, unique site and building conditions, and diverse project management teams, can often lead to an adversarial environment, resulting in conflict (Haplin 2006; Harmon 2003; Kassab et al. 2006; Ning and Ling 2013). Task interdependency between stakeholders is typically high, which can often lead to conflict that escalates as the project progresses (Gardiner and Simmon

1998). This task interdependency becomes quite complex because the construction process is combined with each party looking out for their own interests, with the intent of completing a quality project on time and within budget.

Baccarini (1996) argued that the most complex process of any industry is found in construction and identified differentiation and interdependency as the key components producing this complexity. Differentiation denotes the number of varied components in any given project, whereas interdependency refers to the interrelatedness of the stakeholders and process to complete a project. The size, duration, and uniqueness of a construction project will dictate the number of different components used, which can range from hundreds to thousands, resulting in substantial differentiation. Interdependency affects the various phases of a project on two levels. First, during the installation of components and construction of various phases by the different trades, when constant negotiation is required for the coordination and sequencing of work space with regards to access and timing. Second, at the project management level, where negotiation of contracts, construction document revisions, requests for information (RFIs), submittals, subcontractor crew sizes, and the timely procurement of materials are interrelated, producing an interdependency among stakeholders (J. Vaux, unpublished data, 2014).

Conflict resulting from the complexity of a project can produce either productive or unproductive results. The former is referred to as task conflict and is tied to the achievement of specific tasks involving judgements, decisions, ideas, viewpoints, and opinions. Task conflict typically has low levels of emotional energy associated with it and results in an increase of productivity for teams, which has been marked by the achievement of goals, improved decision quality, and productive strategic planning. (Amason 1996; Costa et al. 2015; De Dreu and Weingart 2003; Jehn 1995; Jehn and Bendersky 2003). Within construction, task conflict can result in innovative solutions and enhanced decision making as stakeholders discuss and process through solutions that can improve performance and productivity. Conversely, relationship conflict includes friction, frustration and at times animosity, and interpersonal tensions with a focus on personal incompatibilities, and has proven to produce a prejudicial effect in

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teams (Amason 1996; Costa et al. 2015; De Dreu 2006; De Wit et al. 2013; Jehn and Bendersky 2003; Lau and Cobb 2010). Members of a management team and key stakeholders often experience relationship conflict during the life of a project that can alienate involved parties, diminish cognitive reasoning, lower motivation, and make a project extremely difficult at best.

Because construction has this complexity, each project requires precise and timely coordination, clear communication, and cooperation for seamless execution. However, this does not always occur, because the high pace of interrelated activities combined with schedule pressure and the adversarial culture inherent in the construction industry often results in communication breakdowns and high levels of relationship conflict that can have a significant effect on performance and productivity (Wu et al. 2017; Zhang and Huo 2015). The goal of this study is to understand who typically initiates relationship conflict in a construction project, the effects, and what construction management (CM) professionals do to mitigate relationship conflict.

## Literature Review

### Conflict Types

Conflict was initially defined in general terms as an awareness that an individual's goals or interests are being obstructed by another individual, whether perceived or real, and the intensity of conflict is governed by the individual's commitment to their goal (Cosier et al. 1991; Deutsch 1969; Kolb and Putnam 1992; Thomas 1992; Wall and Callister 1995). All conflict was grouped together in one category by early theorists, who also recognized and defined conflict as possessing characteristics that were divergent from one another, ranging in their effects from beneficial to harmful in social, political, and organizational groups (Aubert 1963; Cosier 1957; Mack and Synder 1957). As conflict research and theory progressed, conflict was divided into two types: beneficial and detrimental (Deutsch 1969; Jehn 1995).

In subsequent literature, conflict has been divided into two distinct categories: task conflict, with a high potential for productive results, and relationship conflict, which is viewed as damaging in its effects. Task conflict refers to conflict associated with the accomplishment of a certain task involving decisions, judgments, viewpoints, ideas, and opinions. Task conflict commonly displays lower levels of emotional energy; is fundamentally cognitive, being focused on the task at hand; and is usually productive for teams because it enhances decision quality and understanding of the problem under consideration (Amason 1996; Chen et al. 2014; Costa et al. 2015; Jehn 1994; Simons and Peterson 2000; Wu et al. 2017). Task conflict is routinely encountered in construction management and serves a useful function. As the management team and stakeholders strive to maintain the schedule, budget, and quality, task conflict produces an increase in cognitive functioning, allowing management and stakeholders to make higher-quality decisions. If conflict remained solely in the task arena, there would be no further discussion—everything would be good. But all too often, task conflict increases in intensity and transfers into relationship conflict, leading to either strained communication or a breakdown in communication.

### Outcomes of Relationship Conflict

Whereas task conflict provides increased cognitive functioning, allowing a focus on problem solving and goal achievement, relationship conflict focuses on personal incompatibilities and differences of opinions, with outcomes shown to be instrumental in

lowering the performance of teams (Amason 1996; Brockman 2013; De Dreu 2006; De Wit et al. 2013; Jehn 1994; Lau and Cobb 2010; Simons and Peterson 2000; Wu et al. 2017). This loss of performance resulting from relationship conflict has three distinct outcomes, as seen in lowered decision quality resulting from diminished information sharing and reduced cognitive functioning, a lack of consensus among decision makers, and a reduced commitment to the group or team (Amason 1996; De Dreu and Weingart 2003; De Wit et al. 2013; Jehn and Mannix 2001; Lau and Cobb 2010; Simons and Peterson 2000).

Decision quality is crucial for scheduling, sequencing of trades, material procurement and timely delivery, cost analysis, and project administration. However, stakeholders in relationship conflict experience lowered cognitive functioning as their focus turns to interpersonal conflicts, which restricts cognitive functions necessary for decision making and creative thinking. Instead, available cognitive resources are directed at overcoming the increase in anxiety resulting from interpersonal friction (Amason 1996; Costa et al. 2015; Jehn 1995; Jehn and Mannix 2001; Lau and Cobb 2010; Simons and Peterson 2000; Zhang and Huo 2015). As the tension increases, information sharing between participants necessary for quality decisions is reduced. The combination of lowered cognitive functioning and reduced information sharing has a significant impact on decision quality (Amason 1996; De Wit et al. 2013; Simons and Peterson 2000). As a result of increased tension and lowered information sharing, team members experience a lowered commitment to the group, resulting in less desire to actively participate in decisions and implementation of decisions.

This distinction between the two conflict types is crucial to understanding conflict in construction. Without task conflict, decision quality is diminished, productivity is lowered, and the most advantageous means and methods may not be discovered. Conversely, relationship conflict involves interpersonal conflict, which lowers decision quality by limiting information sharing and cognitive functioning, reduces buy-in on decisions among stakeholders, and creates a barrier of dissatisfaction between project participants so that working together on the next project is less likely. These two distinct conflict types have significantly differing outcomes that must be understood in order to embrace the benefits of task conflict and mitigate the consequences of relationship conflict.

Research into the effects of relationship conflict within construction is limited. Brockman (2013) studied the effects of interpersonal conflict with a focus on the labor force and the associated cost of the conflict. That study furthered the industry's understanding of the effects and costs of conflict along with triggers of conflict, but did not differentiate between task and interpersonal conflict, which is necessary so that beneficial conflict is separated from detrimental conflict. Within China's construction industry, Zhang and Huo (2015) identified negative emotions as a constraint to project performance resulting from the effects of relationship conflict. They maintained that political skill moderates negative emotions produced by relationship conflict. In research studying the effects of owner-contractor conflict on cost performance, Chen et al. (2014) maintained that relationship conflict has a predominantly negative impact on project performance related to cost.

## Research Methodology

The research methodology for this study involved a qualitative approach using interviews in order to understand from the CM professional's perspective the causes of relationship conflict, the effects, and how the professionals mitigated relationship conflict. Interviews with 25 CM professionals representing 18 different

Total Participants: 25		Total Firms: 18	
Positions held:		Annual Gross contract (millions):	
Superintendent	3	\$1 to \$80:	11
Project Manager	11	\$150 to \$610:	12
Senior Pr. Manager	3	\$2500 to \$4500:	2
Project Executive	8		
		Average annual gross	
Average age:	42.2 years	contract all firms:	
Average Tenure:	20.4 years	\$556 million	
Tenure Range:	5 to 41 years		
Gender: male:	25	Type of construction:	
		Commercial:	22
Education:		Multi-Family:	2
Undergraduate degree:	22	Residential:	1

**Fig. 1.** Participant demographics

construction firms were used as the data source for this study (Creswell 2007; Corbin and Strauss 2008). The participants' job tenure ranged from 5 to 41 years, their ages ranged from 28 to 62 years, and they had a minimum of 5 years of CM experience. The participants were project executives, senior project managers, project managers, and superintendents. The participant pool included those CM professionals responsible for the execution and success of a project from a management perspective. Each had a role in the process and combined they make up the CM team. Foreman and labor force personnel were not included because they represent a different voice within the project. In the past, superintendents worked their way up through the ranks with little or no formal training and were not considered part of the CM management team, but were more closely related to jobsite personnel. Currently, an increasing number of superintendents have a CM degree. Today's construction industry environment has seen an increase in project complexity combined with the advancement of technology, communication, and scheduling, which has changed the role of the superintendent to fit closer with the CM team.

The mean job tenure for the participants was 20.4 years, and the mean age was 42 years (Fig. 1). The annual gross contracts of the participants' firms were between \$1 million and \$4.5 billion, with mean gross contracts of \$556 million and median gross contract of \$90 million. Of the 18 firms, there were 13 commercial contractors; 1 high-end custom home contractor; and 4 subcontractors in excavation, HVAC, drywall, and tunnels and underground utilities.

Each interview lasted approximately 1 h and commenced with an explanation of relationship conflict and its distinction from task conflict. During the interviews, each participant was asked to recall a specific instance of relationship conflict in their CM experience, where it took place, and who was involved. In addition, the participants were then asked what effect the event of relationship conflict had on the project and for them personally. (Schwarz and Oyserman 2001). The interviews were then transcribed and entered into MAXQDA software for data analysis.

During each interview, the researcher made an effort to keep the participant's attention directed on remembering a relationship conflict episode. It became obvious during data analysis that some of their the relationship conflict stories were actually either task

conflict or conflict in general. Some participants began recalling a relationship conflict scenario that was actually task conflict. However, as they continued to recall the event it was clear that the example had changed to relationship conflict as a result of the increase in the level of the conflict's intensity. Simon and Person (2000) identified this process of task conflict changing to relationship conflict based on the intensity level of the conflict and maintained that there is a process of transferring or misattribution of task conflict into relationship conflict when the conflict becomes too intense or is extended over time. Within the construction industry, a transfer of task conflict to relationship conflict is cultural, as was revealed by the participants' stories.

## Results

Data analysis of the transcripts moved through a process of open coding to axial coding to selective coding. First, an open coding process examined the transcribed interviews line by line in the MAXQDA data analysis program and identified themes that were common, which were then named with a distinct identifier representing a theme or concept. (Corbin and Strauss 2008; Creswell 2007). These codes were names (such as communication, subcontractor conflict, trust, and old school, as discovered in the transcripts) used to identify concepts, ideas, themes, and phrases within the transcripts. Hierarchical patterns within the data were then formed throughout the open coding process as common themes were connected. Following open coding, axial coding then connected identified concepts into groups under core concepts within the data, which connected smaller pieces of data to broader concepts (Corbin and Strauss 2008). These core concepts, now categorized under an axial code, were then arranged into categories, with the predominant categories receiving an identifying name. The result was the emergence of five main categories that housed all of the previously coded data. Finally, selective coding was incorporated to explain the connection of the five higher-order categories to the data. These five higher-order categories were the basis for providing an explanation of the effects of relationship conflict on performance and productivity in construction management, as both antecedents and outcomes of relationship conflict (Fig. 2).

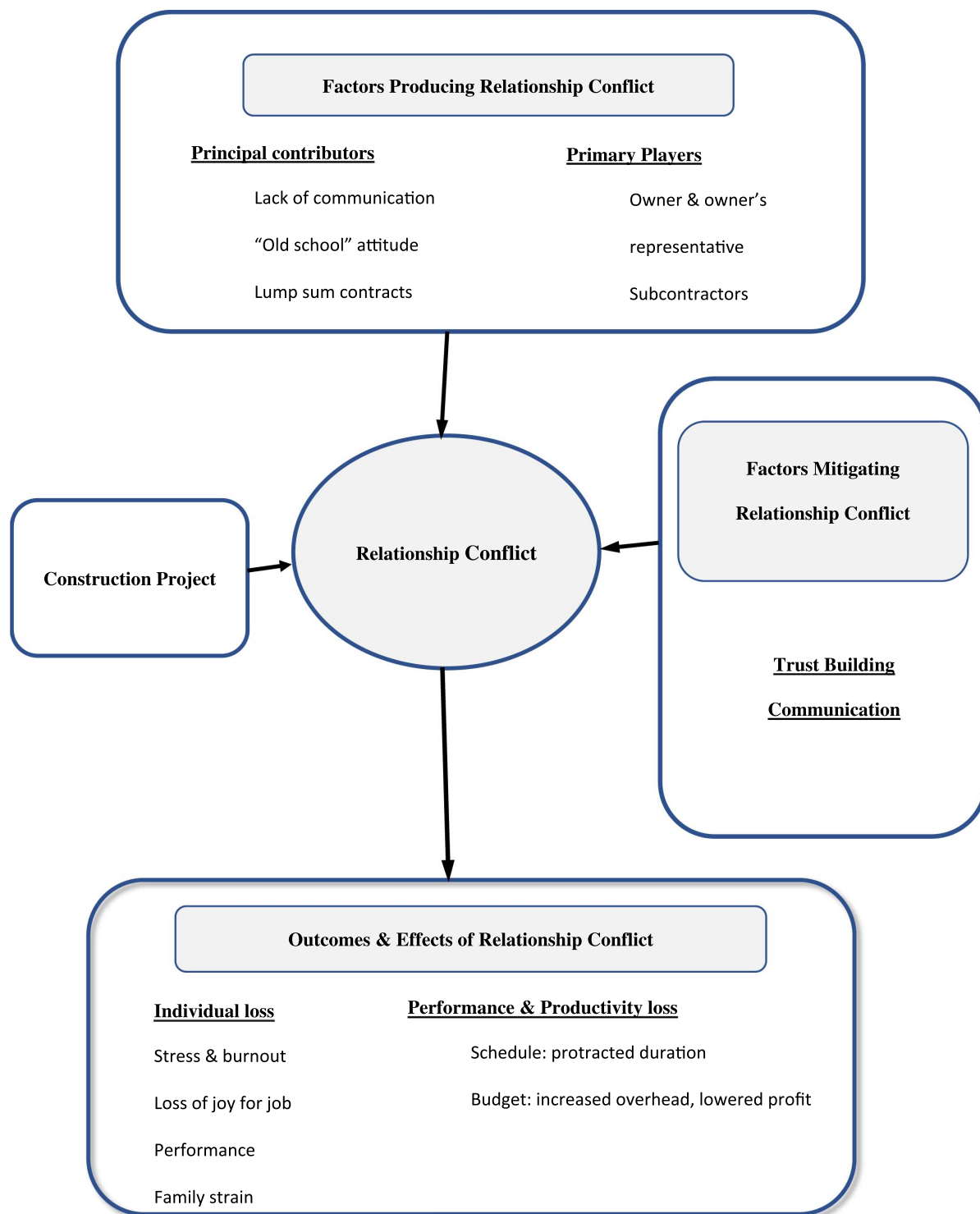
The five main categories identified (Table 1) in the data were principal contributors to relationship conflict, primary players in relationship conflict, the effects of relationship conflict on performance and productivity, efforts used by CM professionals to mitigate relationship conflict, and effects of relationship conflict on construction management professionals personally. Participants were identified as follows: project executive (E), senior project manager (SP), project manager (P), and superintendent (S).

### Principal Contributors to Relationship Conflict in Construction Management

Under the main category of principal contributors to relationship conflict, three significant subcategories were identified. These subcategories are given in a hierarchical order based on the participants' frequency of responses combined with their job position and tenure. The principal contributors to relationship conflict as identified by the participants were lack of communication, old-school attitude, and lump-sum contracts with a focus on the bottom line.

### Lack of Communication

Lack of communication was designated as the central issue contributing to relationship conflict because participants articulated strong opinions and reasons for identifying this as most important. A



**Fig. 2.** Factors of relationship conflict in construction management

project executive stated his view of communication as a prominent factor in relationship conflict: "I think what I see for us, probably the biggest reason for relationship conflict, is bad communication to start with, as far as what the requirements [project scope] are" (E.2). Another participant stated, "without a doubt, communication is number one, that or lack of communication, I should say" (SP.1). This was found to be the case in both intramanagement team scenarios such as between a project manager and a superintendent, and interfirm situations such as a general contractor to a subcontractor

or an architect. As communication broke down, both working relationships and the project were directly affected. A project executive described a long, protracted event concerning conflict between the owner, the architect, and his firm that resulted in a breakdown of communication. This breakdown eventually led to barriers being established that blocked communication attempts, "and, it just got to be, you know, we were arguing and writing letters. And, it just turned into a big, big mess. And, it was heading for where no one wants to go, which was some sort of litigation" (E.1).



**Table 1.** Categories and Sub Categories of Data Analysis

Main finding	Primary factor	Secondary factor	Tertiary factor
1. Biggest contributors to relationship conflict	Lack of communication	“Old school” attitude	Lump-sum contracts and a focus on the bottom line
2. Primary players in relationship conflict	Owner and owner’s representative	Subcontractor	Superintendent
3. Effects of relationship conflict on performance and productivity in construction management	Schedule	Budget	—
4. Efforts used by CM professionals to mitigate relationship conflict	Communication	Trust	—
5. Effects of relationship conflict on construction management professionals personally	—	—	—

As low communication produced conflict, often projects would experience even lower communication and an increase in conflict as the reciprocating process unfolded. Less communication led to increased conflict, which led to even less communication, and so forth. This cycle fed on itself and resulted in a negative impact on both the management team and the project. A project manager explained the effects on a project’s progress that resulted from this cycle of poor communication

Oh, yeah. It was definitely affected. I mean, it was painful. That’s when we were kicking off a new project, you know, excavation, pilings. No one wanted to talk to each other. Nobody was communicating with each other, and you know that communication at that point in a project is huge (P.4).

Collaboration was seen as a central component of communication by many of the participants. As relationship conflict increased, the communication needed for beneficial collaboration was drastically reduced because of diminished information sharing. A project executive recalled how collaboration among the stakeholders of a project had disappeared as a consequence of relationship conflict “that totally went out the door to where we just threw things over the fence. They threw things back over to us, and we mostly argued, because they were protecting themselves” (E.4).

### Old-School Attitude

The old-school attitude was portrayed by participants as long standing and predominant in the construction industry. A project executive identified the old-school attitude as something that needed to change in their company’s culture, as he explained, “so, our company has shifted 180 degrees. And it’s not been easy because you’ve got old-school superintendents that are seeing fist-pounding, yelling-and-screaming kind of guys. Well, that doesn’t get you anywhere anymore” (E.1).

This old-school attitude has a disposition of “my way or the highway,” as portrayed by a participant: “The way they resolve it—my way or the highway—still a few of those guys” (S.1). The old-school attitude was explained by a senior project manager concerning one of his superintendents

Like, if they are an older superintendent, and we have one of those right now. When you go to a meeting, he has to immediately, the way he talks to the other people, subcontractors, suppliers, even the owner or architect, it’s like he’s making sure everybody knows that he knows what he’s doing, and don’t question him, and don’t bring anything up because he’s got it. And, it’s just that kind of attitude, I guess, that causes a lot of conflict. (SP.1)

This old-school attitude was described as that of someone who does not work as a team player and often pushes their own agenda without regard for the performance of the management team. This

old-school attitude was not limited to older personnel, but was found even among younger project managers. Both a project executive and project manager admitted to starting out their careers with this attitude and ultimately changing because of the pain and financial loss encountered because of their attitudes.

### Lump-Sum Contracts

Lump-sum contracts, commonly known as design-bid-build or hard-bid, were seen as the third primary contributor to relationship conflict. A senior project manager whose firm’s contracts were a mixture of negotiated and lump-sum stated his view, which was voiced by each of the CM professionals: “When you’re dealing with a hard-bid scenario, you are going to have conflict, way more conflict than you ever want to have. It’s a different mentality” (SP.2). There are some common scenarios that the participants described in their experiences with lump-sum contracts. In most cases, conflict surfaced through the process of charging for and explaining change orders and extras that were unnoticed by all stakeholders at the time of the bid. A typical example included details or areas of the drawings that were unclear until closer examination during the construction process. From the owner and architect’s perspectives these should be apart of the contractor’s bid. But from the contractor’s point of view, the drawings were unclear and the item in question was not in the original bid and should be considered an extra. A senior project manager gave this explanation

Part of the thing that has always bothered me in our industry is the way that it is set up, and unfortunately, the lump-sum market is that way. I mean, it is ripe to set up for conflict and battle because, you know, here’s a set of drawings. This is what we bid on. We didn’t interpret it the way you thought it was, therefore we think this is extra. This isn’t something we were supposed to do, and the gloves come on and you start fighting (SP.3).

Some participants only pursued hard-bid work, but most, if given the choice, would not. The inherent conflict with the owner because of differing perspectives over bid documents and change orders led most participants to view hard-bid jobs as conflict-based: “We don’t always have that option if it’s a true hard-bid scenario. But again, at [company name], we try not to go after those jobs, because those are the projects that have conflict. They’re conflict-based” (SP.2).

### Primary Players in Relationship Conflict

In the interviews, each participant was asked to recall their most challenging experience with relationship conflict. As the participants described a challenging experience, particular individuals were commonly identified around whom relationship conflict centered. These individuals were grouped into three main categories and identified as the primary players with whom CM professionals encountered relationship conflict. The primary players consisted of

the owner or owner's representative, subcontractors, and superintendents. A distant fourth was the architect, who has historically been at the top of the list with respect to conflict. The interviews revealed a change in attitude and working relationship among construction management professionals, who now see the architect as an ally and team player with whom they seek to work collaboratively.

### **Owner or Owner's Representative**

Central in relationship conflict between CM professionals and owners was the often wide gap in perspectives regarding the building project. The owner is keenly focused on abating changes to the contract, specifically changes that increase their costs, whereas the contractor is focused on being paid a fair price for any extra work beyond the contract. These two divergent perspectives can create an atmosphere that fosters conflict. A project executive recalled a 3-year project in which the two divergent perspectives carried a significant impact

The culture of the developer was, get the most out of the contractor that we can. Get the most for the least price, and that obviously creates a contentious atmosphere. So, they're trying to get the most out of us for the least amount of price, and we're trying to cover our costs and make our fee, while still delivering a good product and hopefully maintaining a good relationship, but sometimes those two just don't mix. So, there's a cultural difference of [project executives' firm] trying to please and build a good relationship, a good long-term relationship, and then there's the developers' culture of, beat the crap out of the contractor to get as much project as we can for the lowest cost. (E.7)

This was a common theme expressed by each of the participants who identified the owner as the primary individual with whom relationship conflict developed. Owners varied in their degree of aggressiveness toward the CM professional, but there still remained an attitude of "get as much project as we can for the lowest cost." This attitude promoted a contentious atmosphere and often developed into relationship conflict as the owner sought to "get as much project as we can for the lowest cost" and the contractor worked to produce a quality project for a fair price in the design-bid-build scenario. Chen et al. (2014) emphasized this same concept in their research on Chinese contractors and owners, because they discovered a negative impact on performance that equated to poor cooperation and coordination of work between parties when relationship conflict was present between the owner and contractor.

### **Subcontractors**

Not all projects involved difficult subcontractors, but when the subcontractors were problematic and conflict oriented, an inordinate amount of management effort was required. In addition, there were times when this conflict affected the morale of the management team, or the whole project, or both. Subcontractors who fostered relationship conflict typically viewed themselves as independent and were unwilling to work as a team player. Others were labeled as old school in their attitude because of their contentiousness, and still others mostly just proceeded their own way on the jobsite without any consideration for those with or around whom they were working.

A senior project manager described an experience with a subcontractor on a recent project as one of his most difficult experiences with conflict. The subcontractor maintained an attitude of noncollaboration which ended up affecting the entire project. The relationship conflict produced by the subcontractor's attitude so affected one of the CM team members that the individual experienced burnout. In addition, the other subcontractors on the project viewed

the CM team as lenient with the problem subcontractor, which caused friction, and the owner began to question the CM team's ability to lead the project and control the subcontractor. The senior project manager summarized their conflict with the subcontractor: "We finally got through it, and it's done, but that's an example of this firm [the subcontractor] being such a cancer in the project that it really affected everything" (SP.3).

Because of conflict scenarios such as those just mentioned, some of the participants used a more cooperative model in hopes of creating a team atmosphere with their subcontractors as a means of avoiding the harmful effects of relationship conflict. Whenever possible, CM professionals hired team-minded and collaborative-minded subcontractors who respected the contractor's project management and leadership personnel.

### **Superintendent**

The superintendent was identified by participants as the individual on the CM team who most often was in the center of relationship conflict issues. Superintendents who were the primary player in relationship conflict were usually old-school senior superintendents. The superintendent was found to be in relationship conflict with either the senior project manager or the project manager, with most of the conflict being with the project manager. A project manager gave an example of a recent project with three project managers and several superintendents in which the conflict on the project team was centered around the senior project manager, "and the senior superintendent thrived around causing conflict in the office. His ultimate goal was to separate the office and the field, and everything that had to go out in the field had to go through him" (P.4). The project manager continued his description of the project, explaining that the office staff came to the point where they would not talk with the senior superintendent because of his negative attitude and an apparent enjoyment of causing conflict. The result was an atmosphere of negativity that centered on one individual and which reduced the productivity of the office.

A project executive described a frequent scenario with one of his superintendents: "So, 90-plus percent of my time spent on those sorts of issues are with a small group of individuals that tend to repeatedly have relationship conflict issues." He described one superintendent in particular: "We happen to have one that is probably at the very top of the list that I bet I spend most of my time dealing with. This person is probably not long for this world at [name of firm]" (E.2).

### **Effect of Relationship Conflict on Performance and Productivity in Construction Management**

As participants experienced relationship conflict based on the effects of the principal contributors and primary players, performance and productivity were affected in the form of a protracted project schedule, and in some cases the budget was impacted, with lowered profit. Actual numbers associated with profit were given in general terms due to the proprietary nature of the information.

### **Schedule**

The negative effects of relationship conflict on schedule were consistent among many of the participants. The typical scenario was a breakdown in communication that alienated stakeholders and impeded project progress. As participants encountered relationship conflict, the schedule became protracted, which in turn affected productivity.

A superintendent described a project in which a subcontractor affected other subcontractors and the entire project because of his minimal cooperation and poor attitude. As the complexity of the project increased, communication weakened and a somewhat

hostile environment developed as relationship conflict increased, with the result being that the schedule suffered. Relationship conflict stalled collaboration and communication between the subcontractor and superintendent, and this led to a lengthening of the schedule as the timeliness and accuracy of decisions were delayed. Quality and timely decisions needed for project execution were lost as relationship conflict increased and the schedule increased. The superintendent recalled how impactful this relationship conflict event was: "As far as productivity, we were ahead of schedule until we got to the complicated stuff. We burned up about a month of float, and finished about a month late. And then the rest of the subcontractors, their productivity suffered" (S.1). The subcontractor was problematic both to work with and in communicating with the superintendent, and aggressively tried to "screw the project over," as the superintendent put it. Completing a project one month behind schedule does not automatically translate into a lack of productivity or a loss in profit. However, within the construction industry it is understood that a lengthened schedule without change of scope is descriptive of a performance and productivity decrease, and typically will have an impact on the budget in the form of additional overhead costs.

In another example, a project executive described a 2-year hospital project in which conflict developed between the contractor, owner, and architect which moved into relationship conflict as interpersonal barriers went up and communication decreased. As a result of the communication breakdown and an increase in relationship conflict between the stakeholders, a consultant was hired to help bring resolution to the impasse. At this juncture, the project executive recognized that their 18-month construction schedule was not going to be met, "and, what ultimately turned out to be, I think it was an 18-month project, after we got partway into it, turned into a 24-month project" (E.1). The participant attributed this extension of the schedule to the relationship conflict between his firm, the owner, and the architect, and concluded that this caused a significant overhead increase to the project.

### Budget

In addition to an extension of the schedule as a result of relationship conflict, there was an impact on the budget. The impact on the budget resulted from nonpayment for change orders, schedule extension, poor coordination between general contractor and subcontractors, loss of cooperation reviewing constructability of phases, and more. In most cases, participants discussed in general terms how relationship conflict impacted the budget, not exact dollars lost, which is a limitation for this study. Some examples included exact dollar amounts connected with relationship conflict, but most examples provided a description of the impact of relationship conflict on their costs in general terms. A senior project manager captured this explanation of dollars lost in general terms: "Because, when you have conflict, it costs money. The two words go hand in hand. Conflict costs money. There's just no doubt about it. And, it's not a good working environment. It's not fun to work with conflict" (SP.2).

Specific dollar amounts associated with the cost of relationship conflict were provided in two examples by participants. The first example involved a project executive and one of their subcontractors concerning scheduling of work. The conflict became intense, which led to a breakdown in their communication efforts and an inefficiency in labor over a several week period, "and so, ultimately that relationship conflict lead to the erosion of, I don't know, probably \$40,000 in inefficient labor" (E.5). This was not verified from the firm's project costs, but it is an example of how relationship conflict can effect the budget and consequently profit.

The other example given by another project executive involved an extended relationship conflict with the owner's representative for the project. As conflict increased, communication diminished and became tense, which led to discussions on changes turning into protracted arguments, collaboration becoming nonexistent, and increased letter writing. At this point the participant tried to build a personal rapport with the other party as a means of common ground, but it resulted in the relationship conflict increasing so that each side operated by the contract only and letter writing became the only form communication. The result was a significant loss to the participant's firm: "The only thing I have left is the contract side to protect our risk. I mean, we're a medium-sized company, but \$10 million hurts no matter who you are" (E.4). Again, the participant provided a dollar amount that was tied to relationship conflict. To accurately associate this loss with relationship conflict, the amount needs to be allocated to categories tied to the specific causes. A share would be attributed to relationship conflict, but other causes, such as inefficiencies of methods, problems with the drawings, estimating errors, and more, also need to be examined.

### Efforts Used by CM Professionals to Mitigate Relationship Conflict

There were two primary means by which participants mitigated the effects of relationship conflict: communication and trust building. These two means were not always fruitful because there were times the other party did not want to communicate or there was no foundation for trust. But many of the participants succeeded in communicating well and developing trust, which were both useful for decreasing the effects of relationship conflict. Many of the participants learned the value of good communication and trust building through the distress of relationship conflict.

These findings are consistent with the previous literature, which emphasizes the need for application of relationship conflict theory to construction management. Open communication combined with trust are vital factors in preventing the costly consequences of conflict (Anderson and Polkinghorn 2008; Harmon 2003; Kumaraswamy et al. 2005). Simons and Peterson (2000) maintained that communication involving open mindedness and collaboration about innovation or new ideas was seen as helpful in mitigating relationship conflict among teams at a high performance level.

### Communication

The CM professionals keenly emphasized communication as one of the keys to mitigating relationship conflict, as expressed by a project executive: "Communication is, the factor by ten, the biggest. I couldn't even tell you, [researcher's name], I can't think of anything that doesn't just go back to communication" (E.6). The participant continued to stress the importance of good communication when discussing means to mitigate relationship conflict. This position was shared by each of the CM positions, as voiced by a superintendent: "I think it all comes down to communication. You know, if the communication is poor, and the people are not on the same page, it instantly creates conflict . . . So, I think open and clear communication definitely mitigates conflict" (S.2). A project manager gave this response about the value of communication: "Just to help solve relationship conflict, it's communication and getting people to talk to each other and understanding that everybody has a point that should be listened to, if it's right or it's wrong, but there should be discussion" (P.4). Finally, a senior project manager provided his view concerning mitigating relationship conflict: "So, from my perspective, the best way I can avoid conflict is to provide very clear communication on what my expectations are, to whoever it is I'm working with, whether it be my client, my staff, or



subcontractors” (SP.1). Experiential descriptive explanations such as these from the participants accentuate the value of good communication as a major ingredient in mitigating relationship conflict in construction management. Each of the participants had experienced relationship conflict as a consequence of poor communication, and through this process now appreciated and valued good communication as a central component in mitigating relationship conflict.

The means to nurture good communication varied between participants. Some had learned to actively listen and communicate effectively while engaged in business settings: “Be empathetic towards others. Period! Understand what drives other people and what’s important to them, and who they are” (E.5). Others spent time with business colleagues outside the work environment as a means to build relationships and thereby improve communication.

### Trust Building

Next to communication in mitigating relationship conflict was trust building. Many of the participants had experienced difficult conflict situations that were emotionally draining, and consequently discovered the value of working within the boundaries of a business relationship based on trust.

A project executive described a scenario of intense conflict during a project that resulted in a schedule extension and reduced profit for his firm. From this experience, the participant extended the lessons learned into his management style by choosing to be more collaborative with owners and architects and by not drawing attention to every error in the construction documents. This transferred into trust building among stakeholders of a project

So, and all of that, to me, helps build the trust. I mean, that’s the baseline. If there’s a breakdown of trust on your team, you’ve got a long road in front of you to get to the end. And unfortunately, it doesn’t take much to violate trust. (E.1)

Another project executive whose firm primarily negotiated projects with repeat clients explained that the value he placed on building trust was rooted in his lifestyle of building and maintaining relationships

I think, for me, it’s having relationships already in place with clients. I think in order to avoid conflict on projects, there needs to be a high level of trust. The client needs to trust the contractor. The contractor needs to trust the client. And, that only comes with a relationship being in place. (E.7)

A senior project manager recalled a project in which his firm experienced a high level of conflict with a particular subcontractor that resulted in a horrendous relationship conflict event throughout the project. This conflict was so intense over a prolonged period that some of his staff experienced high levels of stress and even burnout including a leave of absence. In hindsight, the participant recognized the need to build trust as a foundation to work from: “And the best way I can describe it is, and maybe this is the way they look at everybody, which I kind of think is so, but maybe especially with us, they just had zero trust, zero idea of collaboration” (SP.3). The result of his experience was choosing to work with subcontractors his firm knew and trusted, rather than just accepting the lowest bid.

Trust as a key factor in mitigating conflict in construction has gained traction in recent research (Gad and Shane 2014). Previously developed trust between stakeholders has been shown to soften the effects of relationship conflict and aid in the transition through a difficult conflict situation (Chen et al. 2014; Korsgaard et al. 2002; Simons and Peterson 2000; Wu et al. 2017). Trust is a

key factor in reducing conflict, and bonds of trust between stakeholders are not easily built. Construction management professionals must find ways to build these bonds of trusts and develop business relationships that can bridge the turmoil of relationship conflict.

### Effect of Relationship Conflict on Construction Management Professionals Personally

In addition to lowered performance and a productivity loss for the firm, relationship conflict affected CM professionals in personal ways, which also affected their performance in their jobs. The personal consequences of relationship conflict included mental strain, stress, burnout, physical and emotional symptoms, and the toll it took on the family.

A project managers’ description of a relationship conflict experience provides insight into the effects it has on CM professionals personally: “So, I’m sure it probably shaved a couple years off my life in stress because it’s just a stressful thing when you have that sort of conflict every single day, and you know it’s coming” (P.11). This conflict event over shadowed an 18-month project and even affected the participants’ family life to the point of ruining a 10-day family vacation from merely reading an email related to the project.

A project executive explained how he dislikes driving past a particular project that was completed a few years earlier because of personal consequences from the relationship conflict and how it affected his family: “I still hate going to [location of project]. You know, it impacts your family. I don’t want to go home and talk about it. My wife didn’t really know what was going on. Yeah, it’s just a crappy deal all around” (E.1).

The impact of relationship conflict personally was described by another project executive: “It leaves a bad taste in your mouth, and there’s a major burnout factor, and it takes years to get over the broken relationships that can come out of a job like that” (E.4). This 2-year project involved intense relationship conflict with the owner’s representative that lasted through most of the project. As a result, the participant indicated his goal of avoiding this type of experience for the project managers he leads

At the end of the day, you want to come to work in an environment that’s enjoyable and not full of conflict. And so, it’s really important for me to not have that stressor constantly around me, because it affects performance, it affects quality of life, it affects every aspect of what you’re doing, and so finding ways to be better at solving those types of issues is really important. (E.4)

Work motivation and performance is affected as well as home life. A project manager discussed the effect of relationship conflict on performance while on a project: “Oh, it goes way down. And, the worst part about it is, my love for the job, it fades” (P.5). The participants’ responses described personal consequences when relationship conflict is encountered that affected both their work and family life. These consequences point to the detrimental effects of relationship conflict in the construction management field and in one’s personal life.

### Discussion and Implications for the Construction Industry

The goal of this study was to understand the effects of relationship conflict on job performance and productivity among construction management professionals. Data from interviews identified specific antecedents and outcomes of relationship conflict that point to the



detrimental effects associated with relationship conflict. Principal players in relationship conflict were the owner or owner's agent, subcontractors, and superintendents with an old-school attitude. The principal players and contributing factors to relationship conflict impact the CM professional by reducing productive communication and promoting detrimental conflict, thereby negatively affecting performance and profit.

Current relationship conflict literature identifies the detrimental effects caused by conflict, but a study within the construction industry among CM professionals to understand antecedents and outcomes has not been previously conducted. Brockman (2013) identified the antecedents and effects of interpersonal conflict among construction labor force personnel and subsequent associated cost for the conflict without any distinction made between task and interpersonal conflict. Zhang and Huo (2015) researched the moderating effects of political skill on interpersonal conflict and performance in construction projects in China. They maintained that political skill reduced the negative emotions caused by interpersonal conflict so that performance could be enhanced.

This study broadens and enriches existing relationship conflict theory by recognizing antecedents and outcomes of relationship conflict among construction management professionals. The antecedents were identified as old-school attitude and key players as subcontractor and superintendent. Outcomes produced by relationship conflict were identified as lengthened schedules and increased costs.

The construction literature has discussed the abrasive culture of the industry, but the old-school attitude with its related effects on relationship conflict was not previously identified. The old-school attitude is typically exhibited by older superintendents, but has also been found in younger project managers because its tenets tend to be promoted within the construction industry. The effects of the old-school attitude have been shown to divide teams, break down communication, and promote conflict.

The main contributors to relationship conflict were identified along with its outcomes. Previous literature has identified the subcontractor as combative and conflict prone in contractual agreements with general contractors (Jin and Zhang 2013), but the subcontractors' involvement in relationship conflict and its subsequent effects has not previously been identified. This study showed the subcontractor to be a key player in relationship conflict and demonstrated the effect on the schedule and budget. The participants were clear about the subcontractor not being dispute prone in connection to the contract, but instead as a result of the subcontractors' combative and negative attitude, which had a negative impact on the project.

Previous construction literature did not identify the superintendent as a key player in producing relationship conflict. Within the construction industry, superintendents are known for being involved in conflict, but their centrality in promoting relationship conflict was not previously studied and identified. This is a salient issue because of the central role occupied by the superintendent on a jobsite and within CM teams.

## Implications for the Construction Industry

This study showed the detrimental effects of relationship conflict on performance and productivity in construction management. The key findings demonstrate the outcome of schedule prolongation and the consequential implications for budget and profit as a result of relationship conflict. Essentially, it takes more time to complete a project when relationship conflict is encountered, and the overhead costs continue to mount.

Second, lack of communication was identified as leading to relationship conflict which then produced even less communication, with the end result being a higher level of relationship conflict. This progression of a breakdown in communication and increase in relationship conflict is prevalent in the construction industry and needs attention. Tensions can quickly build when conflict is present in construction, and sincere effort among CM professional is required to aggressively move toward raising the quality and level of communication and thereby reduce the intensity of the conflict. Good communication is crucial in order to reduce and avert the damaging effects of relationship conflict.

Third, the primary players involved in relationship conflict have substantial influence in generating the outcomes of schedule protraction and budget deficiencies. Historically, the owner has been known as a central figure in conflict scenarios, but the subcontractor and superintendent were not previously identified. Attention needs to be given to the roles of these newly identified primary players in relationship conflict. Subcontractors who are unwilling to work collaboratively as team players and chose an adversarial attitude can impact a project in significant ways. The choice of a subcontractor can have a substantial bearing on preventing the effects of relationship conflict.

Superintendents typically possess high levels of tacit knowledge of the means and methods of the construction process and are vital in the management of a project. But the old-school attitude displayed by many is damaging because it hampers the management process because of the relationship conflict it generates. There are three options with regards to this old-school attitude. The first is to disregard the issue and allow the old-school attitude of some superintendents to dominate management teams and continue to produce relationship conflict. The second is to replace those superintendents who have an old-school attitude, but doing so could significantly impact a firm because of these individuals' high level of tacit knowledge and experience. Finally, some firms are providing training for superintendents with old-school attitudes in hopes of enacting change. This takes time and investment on the part of management and requires leadership to navigate through this process. Often the old-school attitude of a superintendent is tolerated by a project manager for the sake of the expertise the superintendent brings to the project, the difficulty of confronting the attitude, or both. Although change is difficult and uncomfortable, it may be needed. This is not a quick or easy process, but any change or progress toward reducing the impact of the old-school attitude will help to lessen the outcomes of relationship conflict connected to these superintendents.

The old-school attitude was seen not only in older superintendents but was also evidenced in some of the young CM professionals as well. Considering this, it is often said that the industry will wait until these older superintendents retire and will replace them with younger ones. The problem is that the construction industry culture has a propensity to produce this attitude, and future research aimed at examining this phenomenon and providing solutions is needed.

## Limitations and Future Research

This study extended relationship conflict theory to the construction management professionals' work environment by identifying antecedents and consequences of relationship conflict and their effects on the CM professionals personally. At the same time, as with most research, there are limitations to this study. First, although there is a small percentage of women in construction management roles, their inclusion in the study would be beneficial in order to hear their perspective. Research indicates that women carry out their leadership

roles in certain situations differently than men (Eagly and Johnson 1990). Relationship conflict research including women in construction management may reveal a perception different than the one shown through the male view. Second, the owner and owner's representative were identified as key players in relationship conflict but these stakeholders were not interviewed to understand their viewpoint. Their experience told in their own words would help clarify and balance the prominence of this group as a primary player in relationship conflict. Future research that included this group in the data pool would increase the understanding of relationship conflict in construction management. Third, loss of performance from relationship conflict was identified when the schedule lengthens and the budget increases. The dollar amounts lost due to relationship conflict were stated in general terms without specifics that tied them clearly to relationship conflict. Research aimed at identifying the actual dollars lost as a result of relationship conflict in construction management would serve to inform the industry of this problem.

The data pool of construction management professionals included superintendents, project managers, senior project managers, and project executives. The management role of the superintendent has grown with the increase of technology, communication, scheduling, and owner contact. At the same time, future research would benefit from separate data collection in each of these management roles in order to identify differences in views based on role. A second recommendation for further research is to include a study of the effects of the old-school attitude which is prevalent in the construction industry. The old-school attitude has been identified as an antecedent to relationship conflict. Future research must explore this further to discover whether this attitude is produced by the industry based on its adversarial climate or if the attitude is slowly fading away with the retirement of the older generation. Younger project managers and project executives realized they had this old-school attitude at the start of their careers and found it necessary to change in order to be successful in business. Research aimed at understanding how this attitude is propagated within the construction industry, how it can change, and whether it needs to change would create a greater understanding of the nature of relationship conflict in construction.

## Conclusion

The construction industry is known for its conflictive and abrasive nature. Competing interests among stakeholders combined with the complex interdependent process of construction and a historical adversarial climate become a framework for the detrimental effects of relationship conflict. This study showed that performance and productivity suffer under the effects of relationship conflict, whereas good communication and trust building mitigate the effects of relationship conflict. The construction management process requires significant information sharing and innovative thinking in order to schedule and complete a project on time and to find the most advantageous means and methods for the construction process. Relationship conflict hinders the cognitive functioning of these processes, lowering performance and productivity, and is therefore detrimental to the construction management process. To counter these negative effects of relationship conflict, construction management professionals should enhance their communication skills. Active listening, empathy, and taking a real interest in those with whom stakeholders interact in construction management roles is strongly encouraged to increase communication. Communication is a soft skill that can be learned, and the investment in the learning process is a small price considering the return. Trust building takes time and requires that a construction management professional

can be trusted and can extend trust to others. Trust is a key factor in reducing conflict, and bonds of trust between stakeholders are not easily built. Construction management professionals must find ways to build these bonds of trusts and develop business relationships that can bridge the turmoil of relationship conflict. The harmful and costly effects of relationship conflict on performance and productivity can be turned around in construction, but it will require construction management professionals to actively and deliberately choose to pursue good communication efforts and trust building.

## Data Availability Statement

Data generated or analyzed during the study are available from the corresponding author by request. Information about the *Journal's* data sharing policy can be found here: <http://ascelibrary.org/doi/10.1061/%28ASCE%29CO.1943-7862.0001263>

## References

- Amason, A. C. (1996). "Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: Resolving a paradox for top management teams." *Acad. Manage. J.*, 39(1), 123–148.
- Anderson, L. L., and Polkinghorn, B. (2008). "Managing conflict in construction megaprojects: Leadership and third-party principles." *Conflict Resolut. Q.*, 26(2), 167–198.
- Aubert, V. (1963). "Two types of conflict and of conflict resolution." *J. Conflict Resolut.*, 7(1), 26–42.
- Baccarini, D. (1996). "The concept of project complexity: A review." *Int. J. Project Manage.*, 14(4), 201–204.
- Brockman, J. (2013). "Interpersonal conflict in construction: Cost, cause, and consequence." *J. Constr. Eng. Manage.*, 10.1061/(ASCE)CO.1943-7862.0000805, 04013050.
- Chen, Y., Zhang, Y., and Zhang, S. (2014). "Impacts of different types of owner-contractor conflict on cost performance in construction projects." *J. Constr. Eng. Manage.*, 10.1061/(ASCE)CO.1943-7862.0000852, 04014017.
- Corbin, J., and Strauss, A. (2008). *Basics of qualitative research*, 3rd Ed., SAGE Publications, Thousand Oaks, CA.
- Coser, L. A. (1957). "Social conflict and the theory of social change." *Br. J. Sociol.*, 8(3), 197–207.
- Cosier, A. R., Dalton, D. R., and Taylor, L. A. (1991). "The positive effects of cognitive conflict and employee voice." *Employee Responsibilities Rights J.*, 4(1), 7–11.
- Costa, P. L., Passos, A. M., and Bakker, A. B. (2015). "Direct and contextual influence of team conflict on team resources, team work engagement, and team performance." *Negotiation Conflict Manage. Res.*, 8(4), 211–227.
- Creswell, J. W. (2007). *Qualitative inquiry & research design: Choosing among five approaches*, 2nd Ed., SAGE Publications, Thousand Oaks, CA.
- De Dreu, C. (2006). "When too little or too much hurts: Evidence for a curvilinear relationship between task conflict and innovation in teams." *J. Manage.*, 32(1), 83–107.
- De Dreu, C. K. W., and Weingart, L. R. (2003). "Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis." *J. Appl. Psychol.*, 88(4), 741–749.
- Deutsch, M. (1969). "Conflict: Productive and destructive." *J. Soc. Issues*, 25(1), 7–42.
- De Wit, F. R. C., Jehn, K. A., and Scheepers, D. (2013). "Task conflict, information processing, and decision-making: The damaging effect of relationship conflict." *Organiz. Behav. Hum. Decis. Process.*, 122(2), 177–189.
- Eagly, A. H., and Johnson, B. (1990). "Gender and leadership style: A meta-analysis." *Psychol. Bull.*, 108(2), 233.
- Gad, G. M., and Shane, J. S. (2014). "Trust in the construction industry: A literature review." *Construction Research Congress 2014: Construction in a Global Network*, ASCE, Reston, VA, 2136–2145.
- Gardiner, P. D., and Simmons, J. E. L. (1998). "Conflict in small and medium sized project: Case of partnering to the rescue." *J. Manage. Eng.*, 10.1061/(ASCE)0742-597X(1998)14:1(35), 35–40.

- Gebken, R. J., and Gibson, G. E. (2006). "Quantification of costs for dispute resolution procedures in the construction industry." *J. Prof. Issues Eng. Educ. Pract.*, 10.1061/(ASCE)1052-3928(2006)132:3(264), 264–271.
- Halpin, D. W. (2006). *Construction management*, 3rd Ed., Wiley, Hoboken, NJ.
- Harmon, K. (2003). "Conflicts between owner and contractors: Proposed intervention process." *J. Manage. Eng.*, 10.1061/(ASCE)0742-597X(2003)19:3(121), 121–125.
- Jehn, K. (1994). "Enhancing effectiveness: An investigation of advantages and disadvantages of value based intra-group conflict." *Int. J. Conflict Manage.*, 5(3), 223–238.
- Jehn, K. A. (1995). "A multi-method examination of the benefits and detriments of intragroup conflict." *Administrative Sci. Q.*, 40(2), 256–282.
- Jehn, K. A., and Bendersky, C. (2003). "Intragroup conflict in organizations: A contingency perspective on the conflict-outcome relationship." *Res. Organiz. Behav.*, 25, 187–242.
- Jehn, K. A., and Mannix, E. A. (2001). "The dynamic nature of conflict: A longitudinal study of intragroup conflict and group performance." *Acad. Manage. J.*, 44(2), 238–251.
- Jin, X.-H., and Zhang, G. (2013). "Relationship between head contractors and subcontractors in the construction industry: A critical review." *7th Int. Conf. on Construction in the 21st Century (CITC-VII) "Challenges in Innovation, Integration and Collaboration in Construction & Engineering"*, Bangkok, Thailand.
- Kassab, M., Hipel, K., and Hegazy, T. (2006). "Conflict resolution in construction disputes using the graph model." *J. Constr. Eng. Manage.*, 10.1061/(ASCE)0733-9364(2006)132:10(1043), 1043–1052.
- Kolb, D. M., and Putnam, L. L. (1992). "The multiple faces of conflict in organizations." *J. Organiz. Behav.*, 13(3), 311–324.
- Korsgaard, M. A., Brodt, S. E., and Whitener, E. M. (2002). "Trust in the face of conflict: The role of managerial trustworthy behavior and organizational context." *J. Appl. Psychol.*, 87(2), 312–319.
- Kumaraswamy, M. M., Ling, F. Y. Y., Rahman, M. M., and Phng, S. T. (2005). "Constructing relationally integrated teams." *J. Eng. Manage.*, 10.1061/(ASCE)0733-9364(2005)131:10(1076), 1076–1086.
- Lau, R. S., and Cobb, A. (2010). "Understanding the connections between relationship conflict and performance: The intervening roles of trust and exchange." *J. Organiz. Behav.*, 31(6), 898–917.
- Leung, M., Bowen, P., Liang, Q., and Famakin, I. (2014). "Development of a job-stress model for construction professionals in South Africa and Hong Kong." *J. Constr. Eng. Manage.*, 10.1061/(ASCE)CO.1943-7862.0000934, 04014077.
- Mack, R. W., and Snyder, R. C. (1957). "The analysis of social conflict: Toward an overview and synthesis." *Conflict Resolut.*, 1(2), 212–248.
- MAXQDA version 11 [Computer software]. VERBI Software Consult Sozialforschung, Berlin.
- Ng, H., Peña-Mora, F., and Tamaki, T. (2007). "Dynamic conflict management in large-scale design and construction projects." *J. Manage. Eng.*, 10.1061/(ASCE)0742-597X(2007)23:2(52), 52–66.
- Ning, Y., and Ling, F. Y. Y. (2013). "Reducing hindrances to adoption of relational behaviors in public construction projects." *J. Constr. Eng. Manage.*, 10.1061/(ASCE)CO.1943-7862.0000745, 04013017.
- Ock, J., and Han, S. (2003). "Lessons learned from rigid conflict resolution in an organization: Construction conflict case study." *J. Manage. Eng.*, 10.1061/(ASCE)0742-597X(2003)19:2(83), 83–89.
- Schwarz, N., and Oyserman, D. (2001). "Asking questions about behavior: Cognition, communication, and questionnaire construction." *Am. J. Eval.*, 22(2), 127–160.
- Simons, T. L., and Peterson, R. S. (2000). "Task conflict and relationship conflict in top management teams: The pivotal role of intragroup trust." *J. Appl. Psychol.*, 85(1), 102–111.
- Thomas, K. W. (1992). "Conflict and conflict management: Reflections and update." *J. Organiz. Behav.*, 13(3), 265–274.
- Wall, J. A., and Callister, R. R. (1995). "Conflict and its management." *J. Manage.*, 21(3), 515–558.
- Wu, G., Zhao, X., and Zuo, J. (2017). "Relationship between project's added value and the trust-conflict interaction among project teams." *J. Manage. Eng.*, 10.1061/(ASCE)ME.1943-5479.0000525, 04017011.
- Zhang, L., and Huo, X. (2015). "The impact of interpersonal conflict on construction project performance: A moderated mediation study from China." *Int. J. Conflict Manage.*, 26(4), 479–498.