Antecedent and Consequence of Flux in Coordination Caused by Team Membership Change

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Antecedent and Consequence of Flux in Coordination Caused by Team Membership Change

by

TaeJin Hwang

A dissertation presented to
The Graduate School
of Washington University in
partial fulfillment of the
requirements for the degree
of Doctor of Philosophy

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May 2021
ABSTRACT OF THE DISSERTATION

Antecedent and Consequence of Flux in Coordination Caused by Team Membership Change

by

TaeJin Hwang

Doctor of Philosophy in Business Administration

Washington University in St. Louis, 2021

Professor Andrew P. Knight, Chair

Teams in diverse settings experience membership change. Although researchers have examined what happens in a team after membership change, we know little about what happens in a team after members are informed about the upcoming change and before the change actually happens. I develop and test a conceptual model of how teams respond to the news of upcoming membership change. Drawing on social identity theory, I propose that decreased team identification of members who will soon leave a team would necessitate members who will stay in a team to modify their coordination mechanisms which result in flux in coordination. Because it takes time for teams to modify established mechanisms and adapt to the modified system, I expect flux in coordination during the pre-change period to undermine a team’s short-term performance. Regarding the long-term effects of pre-change period flux in coordination, two theories suggest different predictions. Whereas a resource-based perspective suggests that early challenges in coordination can deplete resources in a team (i.e., members’ time and energy) and thus undermine a team’s long-term performance, a change theory that emphasizes the difficulty of overcoming resistance to change suggests that experience of modifying coordination mechanisms can enhance team adaptability and thus improve a team’s long-term performance. I
reconcile two opposing views by proposing an inverted U-shaped relationship between pre-change period flux in coordination and a team’s long-term performance. I test my hypotheses with an online study of 52 three-person teams. While working on a video-recording task, three-person teams were informed that one of them would leave and a new member will join. After 10 minutes from the announcement, membership change was implemented. I found that after learning about impending change, teams shifted the way they coordinate work. Contrary to the prediction, however, I found that departing members’ team identification increased during the pre-change period and flux in coordination during the pre-change period was positively related to subsequent team performance. I discuss alternative explanations of the unexpected and null findings. This dissertation contributes to the literature on team membership change, social identity, and coordination by revealing the presence of pre-change period, challenging the de-identification process of departing members, and testing the relationship between flux in coordination and team performance.
Chapter 1: Introduction

Teams across industries prevalently experience membership change—the entry and exit of individuals from groups or teams (Stuart, 2017, p. 284). Members voluntarily leave teams to develop their careers (e.g., join MBA programs) and seek better job opportunities. Some organizations rotate employees between different teams to make them versatile, transfer knowledge between work units, and mitigate boredom. The composition of surgical teams frequently changes due to the expiration of fixed-term contracts (e.g., 2-year-long fellowship positions), healthcare workers’ high turnover rate, and shift work schedule. Sports teams trade their players to discharge underperformers and to acquire skill sets lacking in a team. Customer service teams in retail businesses hire temporary workers to manage high sales volume. Exogenous factors such as financial crises and the COVID-19 pandemic can cause layoffs and furloughs across industries. When the economy recovers, teams may rehire furloughed members and hire new employees.

Given the prevalence of membership change in teams, it is important to understand the team-level effects of membership change. There are some positive functions of team membership change, such as enhanced team creativity, removal of underperformers, and knowledge transfer between work units (Choi & Thompson, 2005; Felps et al., 2006; Kane et al., 2005). However, scholars found that team performance typically decreases after membership change (De Stefano et al., 2018; Hausknecht, 2017; Huckman et al., 2009; Kacmar et al., 2006; Reagans et al., 2005; Stuart, 2017; Summers et al., 2012; Ton & Huckman, 2008; Van der Vegt et al., 2010). Membership change can undermine team performance by disturbing members from
effectively coordinating their activities (Reagans et al., 2005; Stuart, 2017; Summers et al., 2012).

Coordination—the process of orchestrating the sequence and timing of interdependent actions (Marks et al., 2001, pp. 367–368)—is a critical team process that enables members to combine their efforts to achieve collective goals. Teams utilize several mechanisms such as roles, routines, and plans to clarify who is accountable for which subtasks, predict what others are doing, and share understanding about the task progress (Okhuysen & Bechky, 2009).

Members set and follow schedules, perform assigned roles, develop routinized interaction patterns, communicate information, and help others who fall behind to complete a team’s collective task. When a team works on the same job in a static environment with the same members, teams can repeatedly use their coordination mechanisms.

However, when existing members leave and new members arrive, it becomes challenging for members to retain their established coordination mechanisms. New members need time to learn and adapt to a team’s coordination mechanisms. After newcomers’ entry, veteran members can take additional roles such as training, backing up, and socializing with new members and thus may not be fully committed to their primary roles. Moreover, new members and veteran members who have not shared enough work experience can have limited ability to anticipate and understand others’ actions and have little attachment between them (Argote & Guo, 2016; Reagans et al., 2005). As these factors hinder members from following established coordination mechanisms (e.g., keep up with the work schedule), team members can modify their coordination mechanisms (e.g., rescheduling their plan) which results in a changing pattern of coordination—flux in coordination (Summers et al., 2012). It takes trials and errors to develop effective coordination mechanisms. Also, until members adjust to modified mechanisms,
members can be confused about how to coordinate their activities. As a result, after membership change, team coordination can become less effective and team performance can decrease.

Despite the accumulated knowledge on how team coordination and performance can shift after membership change, we do not know much about what happens in a team before the entry and exit of its members. Except for unpredictable accidents such as injuries, team members usually know that change will occur before the change actually occurs. Members typically notify their managers and colleagues about their turnover plan in advance as a courtesy or due to internal regulations (e.g., two weeks’ notice). Temporary workers’ employment contracts specify their entry and exit timings. Professional workers tend to determine and announce their next positions a few months ahead. In these cases, teams have two weeks to even a couple of months after members know who leaves or joins the group and before the change happens. I use the term pre-change period to indicate a time after a team knows that membership change is determined and before a member exits or joins. Also, I use the term post-change period to indicate a time after a member exits or joins.

It is important to understand how team processes and performance change during the pre-change period for two reasons. First, in addition to the membership change’s effects during the post-change period, there can be additional, yet to be revealed, effects of membership change during the pre-change period. After their exit is determined, members who will soon leave a team may change their behaviors and influence teamwork. For example, in their case studies of turnover, Bartunek et al. (2008) found that members who decided to leave an organization expressed their dissatisfaction about the organization to their colleagues, which lowered colleagues’ morale and led other colleagues to leave the organization as well.
Second, challenges that emerge during the pre-change period can have lasting effects on team processes and performance during the post-change period. According to a path-dependent view of teamwork, preceding events in a team would naturally influence the following circumstances (Beckman & Burton, 2008; Sydow et al., 2009). Early events that disrupted teamwork can influence how teams deal with future challenges. For example, Ericksen and Dyer (2004) compared high- and low-performing project teams and found that only teams that secured key resources (e.g., work plan) by the end of launch meetings could successfully complete projects. On the other hand, teams that struggled in the early stage failed to bounce back.

The entry and exit of individuals from teams include various forms of events. It is important to specify the form of membership change that I examine in my dissertation because different forms of change can present different challenges to teams. In one case, a new member may join a team one month prior to their predecessor’s exit, which creates a month-long overlapping period. In another case, a team may fail to timely find a replacement for the member who left. In the former case, an unclear division of responsibilities between a new member and a departing member can cause confusion about who does what in a team. In the latter case, burnout of members in understaffed teams can be a primary concern. In my dissertation, I examine a specific form of membership change in which a newcomer replaces their predecessor and team members knew who will leave a team. This form of membership change represents real-world cases of voluntary turnovers, personnel rotation, and player trades between sports teams.

To better understand how membership change influences team performance, I aim to answer two research questions. First, what happens in a team when members become aware of upcoming membership change? Second, how do potential shifts in team processes during the pre-change period influence subsequent team performance?
To theorize how members’ knowledge of upcoming membership change influences team processes during the pre-change period, I draw on social identity theory (Ashforth & Mael, 1989). The information about upcoming membership change creates two subgroups in a team—members who will stay (i.e., staying members) and those who will leave (i.e., departing members). I expect that departing members’ team identification will decrease because they no longer share goals with a team. As staying members cannot fully trust departing members who cannot be held accountable for their actions, a team will modify coordination mechanisms during the pre-change period. Given that coordination is a critical team process for successful team performance (Bechky & Okhuysen, 2011; Faraj & Xiao, 2006; Reagans et al., 2005, 2016), I expect that flux in coordination during the pre-change period will undermine a team’s short-term performance by hindering members from effectively coordinating their activities.

Regarding the lasting effects of the pre-change period flux in coordination on teams’ subsequent performance, however, two different theories suggest two opposite effects. On the one hand, according to a resource-based view (Coff, 1999; Ericksen & Dyer, 2004), flux in coordination during the pre-change period can negatively influence a team’s long-term performance. Flux in coordination during the pre-change period can decrease the amount of key resources (e.g., members’ time and energy) available in a team during the post-change period which are needed to facilitate newcomer adjustment. On the other hand, according to a theory of change that emphasizes the difficulty of overcoming individuals’ resistance to change (Audia et al., 2000; Gersick, 1994; Lewin, 1951), flux in coordination during the pre-change period can reduce members’ confidence with their coordination mechanisms and encourage members to make prompt adjustments when other challenges arise in the future (Gersick & Hackman, 1990). I reconcile the two theoretical predictions by proposing an inverted U-shaped relationship
between flux in coordination during the pre-change period and a team’s long-term performance. When teams experienced a moderate level of flux in coordination during the pre-change period, team members will have reduced confidence with their coordination mechanisms which enhances team adaptability but still have resources needed to facilitate newcomer adjustment.

I test my hypotheses in an online study of 52 teams and 216 individuals. Participants were assigned to three-person teams, and teams worked in a virtual meeting room. The task was to record three-to-four minutes long YouTube-style videos about a given topic (e.g., “introduce a fast-food restaurant of your choice”) in each round. There were four 20-minute-long rounds in total. After completing the first two rounds, participants were informed that after 10 minutes, one of them leaves a team to join another project and a new member joins them. The researcher randomly chose a member to leave a team and informed all members which one of them will leave a team. After 10 minutes from the announcement, a designated member was replaced with a new member, and teams completed the remaining rounds.

This research makes three theoretical contributions to the literature on team membership change, social identity, and coordination. First, I extend the team membership change literature by investigating an overlooked time—pre-change period. As noted above, except for unpredicted cases, team members typically have information about upcoming membership change regarding the timing of change and the members involved in the change. However, researchers have not theorized how teams react to the news of upcoming membership change. Previous experimental research on team membership change (e.g., Summers et al., 2012) failed to simulate the pre-change period by not sharing the change information with participants.

Second, I theorize and test how the news of upcoming membership change can have distinctive effects on team identification of departing members and staying members. To explain
team-level effects of membership change, scholars have mainly examined what newcomers can bring to a team and how newcomers are integrated into a team (e.g., Choi & Thompson, 2005; Cooper et al., 2019; Rink et al., 2013) while marginalizing the role of departing members (see Stuart & Moore 2017, and Bunderson, Van der Vegt, and Sparrowe, 2014, for exceptions). I highlight the distinctiveness of two sub-groups (i.e., staying members and departing members) within a team by focusing on changes in their team-based social identity due to the upcoming membership change (Ashforth, 2000; Davis & Myers, 2012).

Third, by examining the short-term and long-term effects of flux in coordination on team performance, I provide one way to reconcile inconsistent findings of the membership change’s effects on team performance. So far, researchers have examined static moderating factors such as a network position and a role of a member being replaced (Stuart, 2017; Stuart & Moore, 2017). Instead, I examine the possibility that the membership change’s effects may vary over time.

I start by reviewing the definition and operationalization of team membership change. Then I review findings on the team-level effects of team membership change. Based on a review, I identify a gap in the current knowledge that we do not know much about what happens in a team during the pre-change period. Drawing on social identity theory, I explain how the news of upcoming membership change weakens departing members’ team identification, which requires staying members to modify coordination mechanisms. Then I theorize how flux in coordination influences team performance in the short-term and the long-term. I then explain how I tested my conceptual model with an online study of 52 three-person teams and present the results. I discuss how my conceptual model and empirical findings contribute to the literature on team membership change, social identity, and coordination.

**Chapter 2: Literature Review**
2.1. Conceptualization of Membership Change

I first reviewed how researchers have defined membership change. I searched the Google Scholar and the EBSCO Business Source Complete database using the keywords membership change and member change. Then I traced citations of seminal articles about membership change (Arrow & McGrath, 1995; Ziller, 1965) and checked the reference of review articles related to this topic (Dineen & Noe, 2003; Humphrey & Aime, 2014; Rink et al., 2013).

Table 1 shows a list of definitions or descriptions of membership change. To define membership change, most scholars (e.g., Baer, Leenders, Oldham, & Vadera, 2010; H.-S. Choi & Thompson, 2005; Hirst, 2009; Lewis, Belliveau, Herndon, & Keller, 2007; Stuart, 2017) referred to Ziller (1965, p. 169) who noted that in open groups, “members may be added, removed, or replaced.”

To clarify what membership change means, I elaborate on the meaning of the two components, which are membership and change. Mortensen (2014, p. 910) proposed three approaches to define membership. First, members can be defined as individuals who are registered in an official group roster (i.e., formal membership). Second, members can be defined as individuals who are perceived as members by themselves or by other members (i.e., identified membership based on perception). Third, members can be defined as individuals who frequently interact with each other for group-related tasks (i.e., emergent membership based on interaction patterns). Based on how researchers have measured and operationalized membership change
which will be reviewed shortly, it seems that scholars have defined membership as individuals who are registered in a group roster and thus focused on changes in formal membership.

Researchers have mainly distinguished between change events based on the direction of change. A member can join (e.g., expansion of start-up teams), leave (e.g., injuries of sports players), or be replaced with another individual (e.g., personnel rotation between teams). Scholars have most frequently examined replacement cases (Baer et al., 2010; Choi & Thompson, 2005; Dineen, 2005; Hirst, 2009; Kane et al., 2005; Lewis et al., 2007; Nemeth & Ormiston, 2007; Summers et al., 2012). Relatively few scholars examined the entry (Chandler & Lyon, 2009; Kane & Rink, 2015, 2016; Rink & Ellemers, 2009) or the exit of members from a team (Christian et al., 2014; DeRue et al., 2008; Stuart, 2017; Stuart & Moore, 2017).

Scholars also have differentiated change events based on temporal features such as duration and predictability (Christian et al., 2014; Gruenfeld et al., 2000; Kane & Rink, 2015, 2016; Rink & Ellemers, 2009; Stuart, 2017). Examples of temporary change are furloughs, medical leave, personnel rotation, and the entry of members with fixed-term employment contracts. Examples of permanent change include turnovers, layoffs, and the entry of members with indefinite-term employment contracts. Researchers have also distinguished between predictable and unpredictable changes. Although teams can predict and be pre-informed of most membership change cases, some cases such as injuries are unpredictable. Teams can only reactively respond to unpredictable change, whereas teams can prepare for predictable and pre-informed change (Christian et al., 2014; Stuart, 2017).

A feature of change that has been neglected in the team membership change literature is the initiator of change (e.g., a member, management). Unlike team researchers, Human Resource researchers have distinguished between turnovers that are initiated by employees (i.e., voluntary
turnovers) and by management (i.e., involuntary turnovers). Because management can selectively discharge less competent employees, involuntary turnovers, compared to voluntary turnovers, are less costly to firm performance (for a meta-analysis, see Park & Shaw, 2013).

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Insert Table 2 about here

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Table 2 provides a list of constructs that are closely related to membership change. *Fluidity* (Dineen & Noe, 2003; Mortensen & Haas, 2018) refers to the rate of membership change over time. Scholars have interchangeably used the terms *longevity* (Katz, 1982) and *stability* (Hollenbeck et al., 1995, 2012; Valentine & Edmondson, 2014) to refer to the absence of membership change over time. Researchers (Goodman & Leyden, 1991; Harrison et al., 2003; Huckman et al., 2009) also used the term *familiarity* to indicate the extent of shared work experience between team members. However, a distinction between these terms is not clear. Researchers have interchangeably used several adjectives such as *fluid, unstable,* and *dynamic* to describe teams whose membership continuously changes (e.g., Bushe & Chu, 2011; Mathieu et al., 2014; Mortensen, 2014; Valentine & Edmondson, 2014). Perhaps, “the proliferation of different terms and labels for similar phenomena” (Suddaby, 2010, p. 352) shows that scholars have yet to clearly define membership change.

Given that most scholars have not specified several features of change (e.g., magnitude, duration, predictability, initiator) in their definition, I define team membership change as *addition, departure, or replacement of a single or multiple individual(s) who are registered in a group roster, regardless of the initiator and temporal features of change.*

**2.2. Operationalization of Membership Change**
To understand how researchers have empirically studied this phenomenon, I reviewed research methods of membership change. I found 24 experiments, four studies that used field survey data, five studies that used archival data, and three studies that combined field survey and archival data. Laboratory experiment has been the most popular research method in the team membership change literature. One of the benefits of experimental research is that scholars can rule out the possibility of reverse causality (i.e., poor team performance causes membership change).

Traditionally, team researchers have conceptualized membership (in)stability as one of the indicators of (in)effective teams (Mathieu et al., 2008; Sundstrom et al., 1990; Wageman et al., 2005). If a team is not effectively functioning, then unsatisfied team members would want to leave a team. However, high rates of membership change do not necessarily signal ineffective teams because membership change (e.g., expiration of fixed-term employment contracts) occurs regardless of the team performance level on many occasions.

A review of the experimental operationalization of membership change is informative in two aspects. First, scholars deliberately decide various aspects of membership change (e.g., direction, magnitude, timing) when designing an experimental study. Therefore operationalization of membership change can reflect researchers’ implicit assumptions of the phenomenon. Second, by reviewing which forms of membership change have been more and less frequently simulated in the experiments, we can understand which real-world cases of membership change have been examined and not.

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Insert Table 3 & 4 about here

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As shown in Table 3, there are some commonalities and variations across operationalizations of membership change in experimental studies. First, except for five experiments, researchers did not pre-inform participants that team membership will change during the study. Except for Christian et al. (2014) who examined an unplanned member loss, researchers did not justify their decision regarding whether to pre-inform teams about the upcoming change. In five experiments that researchers informed participants about the upcoming change, researchers did not tell participants who will be leaving or joining a group. Second, in all cases, teams were required to perform their task immediately after membership change without having any time to reorganize themselves and to practice tasks. Third, except for one case (Arrow, 1997; Arrow & McGrath, 1993; O’Connor, Gruenfeld, & McGrath, 1993; three papers shared the same data), in all experiments, researchers initiated membership change, as opposed to a team or a member voluntarily opted in for membership change. Fourth, except for six experiments, researchers randomly selected a member to be changed, as opposed to systematically selecting a member based on some criteria such as a role or performance. Fifth, in 13 out of 24 experiments, researchers did not provide any explanation about the reason for the change to participants. In 10 experiments, researchers explained that the purpose of the change is to simulate challenges of real-world teams without specifying a concrete situation (e.g., job rotation for career development). Sixth, scholars operationalized change as a replacement unless they specified their focal phenomenon as downsizing (DeRue et al., 2008), loss (Christian et al., 2014), or entry (Kane & Rink, 2015, 2016; Rink & Ellemers, 2009). Seventh, except for five cases that scholars specified their focal phenomenon as temporary change (Gruenfeld et al., 2000; Kane & Rink, 2015, 2016; Rink & Ellemers, 2009), changed group composition was maintained until the task completion.
Taken together, unless scholars specified otherwise, they have operationalized membership change as a surprising (i.e., teams did not know that there will be a membership change until it happened), involuntary (i.e., teams had no choice on whether, who, and when to change), unexplained (i.e., no convincing rationale of change was provided to teams), one-time (i.e., group composition changed one time during a team’s life cycle), permanent (i.e., until the task completion, a newcomer remained in the team and a departed member did not return to the team), and instant replacement (i.e., immediately after a member left, a new member joined a team) of a member which happens around the temporal midpoint of a performance episode.

A review of research methods reveals a critical issue in the literature on team membership change. The prevalent operationalization of membership change does not closely simulate how membership change happens in real-world teams. Specifically, participants in most studies had little or no information about the change. However, real-world teams usually receive information about the impending change (e.g., who will leave or join and when the change will be) in advance (e.g., two weeks’ notice). A gap between real-world cases and the experimental operationalization can reduce the external validity of the experimental findings on team membership change.

2.3. Effects of Team Membership Change on Team Performance

Researchers have found both positive and negative team-level effects of membership change (Humphrey & Aime, 2014). Benefits of membership change include enhanced creativity and knowledge transfer (Arrow & McGrath, 1993; Choi & Thompson, 2005; Kane et al., 2005; Ziller et al., 1962). New members can bring new ideas and knowledge to a team, although existing
members do not always accept them (Rink et al., 2013). In their laboratory experiment, Kane et al. (2005) found that existing group members were more likely to adopt a newcomer’s idea when they share a superordinate identity and when a newcomer’s idea was superior to their own. If incumbent members accept newcomers’ ideas, teams can combine the ideas of the existing members and newcomers to produce creative outputs. When team membership remains the same for a long time and members share similar experiences, members can conform to each other and less engage in divergent thinking (De Dreu & West, 2001; Guimera et al., 2005). In their laboratory experiment, Choi and Thompson (2005) found that three-person groups which had one of their members replaced with a member from another group, compared to groups whose membership remained intact, exhibited higher creativity.

There can be additional positive functions of team membership change for teams under certain conditions. Teams with poor performance history can use membership change as a chance to make a fresh start. Teams can attribute previous underperformance to members who left the group (Ziller et al., 1962). By discharging underperformers, managers can send a signal to remaining members that low-quality work is not tolerated (Shaw et al., 1998). Moreover, when there is a severe conflict between members that cannot be worked through, removing members who are involved in the conflict can an efficient way to resolve unconstructive relationships in a team (Staw, 1980).

Nonetheless, in multiple studies, scholars found that membership change undermined team performance (De Stefano et al., 2018; Huckman et al., 2009; Kacmar et al., 2006; Reagans et al., 2005; Smith-Jentsch et al., 2009; Stuart, 2017; Summers et al., 2012; Van der Vegt et al., 2010). Using archival data of 543 software project teams, Huckman et al. (2009) found that teams with a longer history of working together better adhered to schedules and produced fewer
defective outputs. Van der Vegt et al. (2010) found similar results in their field study of 47 automobile production teams that voluntary turnover was negatively related to team performance. Using longitudinal archival data of 255 stores in the food and beverage industry, De Stefano et al. (2018) found that stores which experienced a higher level of temporary workers’ planned turnover (i.e., temporary workers leaving the store due to the contract expiration) were less profitable.

Marks et al.’s (2001) recurring phase model of team processes describes how events like membership change can disrupt a team’s ongoing activities. According to Marks et al. (2001), through its life cycle, a team continuously shifts between action and transition phases. During the action phase, teams execute activities that are directly related to goal accomplishment. To do so, during the transition phase, teams evaluate feedback from previous performance episodes and environmental information. Based on the analysis, teams make necessary adjustments to their work processes to perform better in the upcoming action phase.

One of the key processes that teams engage in during the action phase is coordination. To collectively perform a team task, team members arrange the sequence and timing of their interdependent actions, which process is referred to as coordination (Marks et al., 2001). When a task is complex and interdependent so that team members perform their roles based on others’ actions who manage different elements of a task, coordination between members becomes challenging.

In their literature review of coordination in organizations, Okhuysen and Bechky (2009) identified three conditions that enable effective coordination, which are accountability, predictability, and common understanding. Specifically, to effectively coordinate their actions, group members need to: (a) know “who is responsible for specific elements of the task”
(Okhuysen & Bechky, 2009, p. 483) (i.e., accountability); (b) understand “what subtasks make up larger tasks and in what sequence tasks will be performed” (Okhuysen & Bechky, 2009, p. 486) (i.e., predictability); and (c) share a “perspective on the whole task and how individuals’ work fits within the whole” (Okhuysen & Bechky, 2009, p. 488) (i.e., common understanding). When any of these three conditions are not satisfied, team members will fail to effectively coordinate their contributions.

To satisfy these conditions, teams use various mechanisms such as plans, roles, and routines (Bechky & Okhuysen, 2011; Edmondson et al., 2001; Gersick & Hackman, 1990; Valentine & Edmondson, 2014). Teams develop detailed plans and schedules to specify who needs to complete which subtasks by when. Roles, which “represent expectations associated with social positions” (Okhuysen & Bechky, 2009, p. 475), help a team monitor and update members’ work progress and hold members accountable for their responsibilities. Routines, defined as “repeated patterns of behavior that are bound by rules and customs and that do not change very much from one iteration to another” (Feldman, 2000, p. 611), help members share understanding about how and when work moves from one member to another. After teams initially set up their plans, roles, and routines during a transition phase, teams would coordinate their activities by using these organized mechanisms to accomplish taskwork in a subsequent action phase.

After new members join a team, a team can be unable to maintain and follow established coordination mechanisms (De Stefano et al., 2018; Summers et al., 2012; Ton & Huckman, 2008). Specifically, three factors hinder members from following established coordination mechanisms. First, new members need to learn a team’s established coordination mechanisms. For example, new members of a production team can be unfamiliar with standard operating procedures that a team has been using, which can be different from what they learned in a school
or what they followed in their previous workplace. A team may follow work routines that are not written on their work manual. Until newcomers learn and become familiar with a team’s coordination mechanisms, new members can slow down a team’s work pace and make mistakes (Ton & Huckman, 2008).

Second, when a new member enters a team, veteran members often take additional roles and become overburdened. For example, incumbent members may be asked to mentor, train, and back up new members. These additional responsibilities can distress and distract veteran members so that they cannot fully focus on their primary roles (Staw, 1980). Increased workloads can restrain veteran members from following their original work routines and schedules, which not only decreases their productivity but also hinders other members whose work is dependent on the overburdened members’ work.

Third, new members and veteran members are not familiar with each other. Members need time to learn about each other’s work habits, personalities, and expertise. When members work together over a long time, members can develop communication shortcuts that are interpretable between them and better anticipate others’ actions (Reagans et al., 2005; Stuart, 2017). Moreover, new members and veteran members would have little attachment between them, which can reduce cooperative interaction between them. Using the field data collected from air traffic controllers, Smith-Jentsch et al. (2009) found that teammates with longer experience of working together more requested and accepted back-ups.

In sum, due to these restrictions, teams with frequent membership change can have difficulties in following established work routines and thus work slowly. Using a sample of surgical teams in a hospital, Reagans et al. (2005) found that teams with more experience of working together took less time to complete the procedures. Similarly, using a sample of 262
fast-food restaurants, Kacmar et al. (2006) found that turnover rates of crew members were positively related to the customer waiting time and food waste amount.

In response to the emerging threats against their coordination, teams in the action phase can return to the transition phase (Marks et al., 2001). Teams assess the potential effects of membership change on their activities and discuss their response. Based on their evaluation of how effectively members can coordinate their activities after the change and how to enable more effective coordination, teams can modify their coordination mechanisms such as role structure, routines, and schedules to restore effective coordination. Summers et al. (2012) defined flux in coordination as an unstable or changing pattern of coordination. In my dissertation, I define flux in coordination as the changing pattern of coordination mechanisms that result from team members’ efforts to modify them.

For example, a team can adjust its role structure. Although a team’s initial plan was to replace an old-timer with a new member and let other members keep their roles, it may turn out that a new member does not fit well with the designated role. A new member may not have the knowledge and skillsets required for the assigned role. Or a new member’s personalities and work habits may not match those required by the assigned role. Then, rather than waiting until a new member adjusts to the role, which may be a futile effort even after a long waiting period, a team can shift roles between members.

Bechky and Okhuysen (2011) examined how SWAT teams and film production crews handled surprising events, including member absence. One day, a film crew who performed a critical role was unexpectedly unavailable at the set. A film production team evaluated who is most qualified to replace the role of an absent member and shifted roles between members. For another example, when a member who was new to their role could not effectively schedule
scenes, another manager took over the task rather than waiting until a new member learns how to do it. In addition to flexibly shifting roles between members, teams can also revise their routines and work plans to cope with membership change (Bechky & Okhuysen, 2011). For example, there was a situation in which a lead actor in a film was sick. Because other members could not replace the role of a lead actor, a team modified its original schedule.

Flux in coordination can undermine team performance, at least in the short-term (Summers et al., 2012). It is possible that teams find more effective mechanisms to coordinate their activities as a result of flux in coordination. However, it takes time and energy to modify and develop coordination mechanisms. Given that time and energy of team members are limited resources, the more time and energy team members spend to modify coordination mechanisms, the less time and energy will be available for the action phase. If modified mechanisms turn out to be ineffective, teams may re-modify their mechanisms. Moreover, it takes time for members to adjust to the modified mechanisms. Until then, a changing pattern of coordination mechanisms can confuse members about how to coordinate their activities.

To test whether flux in coordination due to membership change undermines team performance, Summers et al. (2012) conducted a laboratory experiment. The study had a 2 x 2 design—whether a role being replaced is strategically central (vs. peripheral), and whether team members were allowed to transfer information to a new member (vs. not allowed). Researchers measured flux in coordination with participants’ self-reports to survey items (e.g., “This change caused disruptions in the way the team carried out its tasks”). Summers et al. (2012) found that when a member being replaced held a strategically core role, compared to a peripheral role, teams reported a higher level of flux in coordination and also produced worse performance.
In sum, we have theories to explain why coordination between members can become less effective after membership change (i.e., a newcomer’s unfamiliarity with a team’s established coordination mechanisms, veteran members’ increased responsibilities, low familiarity between a newcomer and veteran members). We also have empirical evidence (e.g., Bechky & Okhuysen, 2011; Summers et al., 2012) which shows that membership change can cause flux in coordination and undermine team performance.

However, we only have half the picture of how team membership change influences team performance. This is because researchers have not investigated what happens in a team before a member joins or leaves. The current approach is valid if the goal is to understand how teams respond to unpredicted membership change. That is, the effect of team membership change on team processes and performance will be temporally limited to the time after the change if members were not aware of the upcoming change. For example, to understand how film production crews responded to sudden unavailability of members (Bechky & Okhuysen, 2011) and how professional hockey teams dealt with unexpected injuries of players (Stuart, 2017), researchers only studied the post-change period because those changes were unpredicted. As reviewed above, in most experimental studies on team membership change (e.g., Summers et al., 2012), researchers did not share information about the change with participants in advance and thus did not have a chance to examine the pre-change period.

Nonetheless, in many real-world cases such as voluntary turnover, personnel rotation, and the entry and exit of temporary members, membership change is not a surprising event for team members. Members can know in advance who will join or leave and when the change will be. However, a lack of theory and research on the pre-change period limits our understanding of the team-level effects of membership change.
To understand the process through which new members adjust to their new team and become integrated with other incumbent members, researchers have focused on the development of newcomers’ social identity based on their team membership (Cooper et al., 2019; Kane & Rink, 2015; Rink & Ellemers, 2009). Likewise, drawing on social identity theory (Ashforth & Mael, 1989; Turner & Tajfel, 1986), I develop a theoretical model (see Figure 1) to explain how the news of upcoming membership change influence the social identities of team members, which subsequently influence their own behaviors and interactions between them. When team members received detailed information about membership change, which includes who will stay and leave, team members are categorized either as departing members or staying members. Although both departing members and staying members will equally retain their formal membership until the change, the extent to which two subgroups of members feel belonged in a team will differ. That is, a change in identity-based membership will precede a change in formal roster-based membership (Mortensen, 2014).

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Insert Figure 1 about here

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Chapter 3: Theory and Hypotheses

3.1. Antecedent of Flux in Coordination During the Pre-Change Period

Social identity theory (Tajfel, 1982; Turner & Tajfel, 1986) posits that individuals’ self-concept consists of two aspects—personal identity and social identity. Personal identity is based on individuals’ unique attributes such as talent, bodily attributes, and own goals. Social identity is based on individuals’ sense of belonging to social groups (Ashforth & Mael, 1989). Individuals categorize themselves in relation to other social categories. Individuals classify others who are similar to the self as the in-group and who differ from the self as the out-group. To clarify the boundaries between groups, individuals focus on the perceived similarities between the self and other in-group members and the perceived differences between the self and other out-group members. Researchers found that individuals tend to positively evaluate and cooperate with the in-group members more than with the out-group members (Balliet et al., 2014; Greenwald & Pettigrew, 2014; Mullen et al., 1992). When individuals perceive that they share goals and values with a group and when the boundaries between groups are clear, their group-based social identity, or group identification, is strengthened.

In organizations, employees can develop organizational identification, which is a specific form of social identity that targets an organization (Ashforth & Mael, 1989). Individuals define themselves in terms of their membership in an organization with which they share goals and values. Particularly, employees who are assigned to teams can identify with their teams more strongly than with the organization as a whole. In teams, members frequently interact with each
other to complete interdependent tasks. Also, teams often use incentives to align the interest of a team and its members. These factors—frequent interaction and close goal alignment—lead members to feel a sense of belonging in the affiliated team, which is called team identification. In their meta-analysis, Riketta and Van Dick (2005) found that employees perceive stronger identification with their workgroup than with the organization.

Members with high team identification are committed to their team tasks (Ellemers et al., 1997). This is because the success of a team with which individuals identify will enhance their own self-esteem. Researchers found that individuals who strongly identify with their teams perform not only the roles which are expected and required by the job (i.e., in-role behaviors), but also positive and discretionary behaviors which are not specified by their job prescriptions (i.e., extra-role behaviors) such as helping other in-group members (for meta-analysis, see Riketta, 2005, and Riketta & Van Dick, 2005). Members who have a team-based social identity will actively share information with other in-group members because they trust and positively evaluate each other (Kane, 2010; Kane et al., 2005).

Members’ task commitment and cooperative interactions between members such as helping and information sharing enable teams to rely on their coordination mechanisms such as role structure, schedules, and routines. Role structures can properly function when members can be held accountable for their roles. Even if some members struggle to perform their roles, help from other members can prevent struggling members from delaying the team schedule. Continuous information sharing will help team members stay updated about each other’s progress and thus share the common perspective on what has been done and what to do next (Okhuysen & Bechky, 2009).
As noted above, in many cases of team membership change such as personnel rotation and voluntary turnovers, team members receive information about the change ahead of the actual change. From two weeks to a couple of months ahead of the change, members know who stays, who leaves, and when the change happens. When team members are informed about impending change, team members are classified into two subgroups based on one’s future prospect in a team—members who will stay (i.e., staying members) and members who will leave a team (i.e., departing members). Because two subgroups have different goals and are clearly distinctive, team members will identify less with the team as a whole but instead with the subgroup to which they are classified.

Once one’s exit from a team is determined, departing members’ team identification will be attenuated. Ashforth (2000) used the term *anticipatory deidentification* to describe a process through which an individual who anticipates leaving a group separates one’s identity based on their group membership from one’s self-concept. Deidentification occurs because departing members no longer view themselves as similar to other staying members and no longer share goals with a team. Departing members have a different, personal goal which is to successfully manage one’s career after exiting the team. On the other hand, staying members share a goal with a team which is to successfully complete team tasks despite the change. As a result, team identification of staying members will not decrease due to the upcoming change.

_Hypothesis 1: Departing members’ team identification decreases during the pre-change period compared to before the announcement of upcoming membership change._

As departing members’ team identification decreases, the extent to which staying members and departing members share a superordinate social identity (i.e., team-based social identity) will decrease. As a result, cooperative interactions such as helping and information
sharing between the two subgroups will decrease. In addition to the shared identity and
attachment, individuals also have an instrumental motive to cooperate with others. When
individuals can expect that their cooperative behaviors will be reciprocated by those who receive
help, they become more motivated to engage in cooperative behaviors (Deckop et al., 2003;
Gouldner, 1960). Because departing and staying members will soon be unavailable to each other,
cooperative behaviors between them are less likely to be reciprocated and thus less likely to be
taken.

Departing members with low team identification will become less committed to team
tasks and decrease their extra-role behaviors. Departing members can aim to satisfy the
minimum job requirements to avoid potential penalties. Because one of the strongest penalties
that management can give to employees—firing—is not applicable, departing members may not
even complete their required roles. Departing members will lose motivation to engage in extra-
role behaviors for which they are neither evaluated nor rewarded in the short-term. For example,
in professional sports leagues such as the National Basketball Association (NBA), championship
rings are awarded to players of the champion team who are registered in the team roster at the
end of the season. Players who were traded to other teams during the season are not awarded
championship rings even if they made huge contributions to the team until they left. Once their
trade to another team is decided, sports players rarely make hustle play which is a specific form
of extra-role behavior that benefits a team but entails a high risk of injury.

Departing members can act to pursue their personal goals during the pre-change period.
As a part of their self-concept—team-based social identity—is waning, departing members can
be motivated to reconstruct their self-concept based on the idiosyncratic attributes that they do
not share with other members and one of such attributes is their post-exit career. To enhance
their self-esteem and to reduce uncertainty related to the future, departing members may invest their time and effort to better prepare their career after exiting the current team. For example, departing members may start to build relationships with their future colleagues and learn knowledge and skillsets valued in their next job.

In response to emerging threats that disrupt the action phase, a team can enter the transition phase to plan how to cope with the threats (Marks et al., 2001). As staying members can anticipate that departing members will be less committed to the task or as staying members actually observed that departing members reduced their task commitment, staying members can adjust a team’s role structure. To reduce potential damage to teamwork due to departing members’ low task commitment, staying members can assign departing members to roles that are less critically related to the overall success of the team or reduce the amount of roles assigned to departing members.

Staying members can also modify a team’s routines and work schedule to decrease their reliance on departing members’ inputs. By doing so, even if departing members poorly performed subtasks assigned to them, their output will not contaminate the quality of subtasks completed by staying members. For example, if a team has used reciprocally interdependent work routines that require continuous information sharing between members, a team may restructure its work process to be sequentially interdependent and have staying members take charge of the early stage of the task (Thompson, 1967).

Staying members can also adjust a team’s routines to decrease the number of members who are task-wise related to departing members to make post-change transition easier. When a member who takes a central versus peripheral network position leaves a group, the post-exit shock on team performance can be greater. This is because a larger set of relationship-specific
knowledge and work practice (e.g., communication shortcuts uniquely interpretable between a dyad) will be lost when a member who has a high degree of involvement with other members exits a team (Stuart, 2017).

In sum, after members know that there will be a membership change, reduced departing members’ team identification will decrease their task commitment, extra-role behaviors, and cooperative interactions between departing members and staying members. In response, teams will modify their established coordination mechanisms during the pre-change period. Staying members will reorganize the way work is done in a team to reduce departing members’ involvement in a team’s key tasks and decrease departing members’ influence on other members. As a result, a team will experience flux in coordination during the pre-change period.

*Hypothesis 2: Departing members’ team identification is negatively related to the degree of flux in coordination during the pre-change period.*

### 3.2. Effects of the Pre-Change Period Flux in Coordination on a Team’s Short-Term Performance

Flux in coordination will decrease the effectiveness of coordination and undermine team performance, at least for the short-term. It takes time for a team to figure out alternative coordination mechanisms that properly function. For example, to switch roles, a team needs to assess the person-role fit of members and identify which members possess knowledge and skills that can meet the demands of alternative roles. Unlike the initial expectation, a replaced member may turn out to be unfit for the role. Then a team needs to identify another member who can take roles. The more time a team spends to revise its coordination mechanisms, the less time and
energy a team could spend on activities that are directly related to task accomplishment (i.e., the action phase).

Coordination mechanisms such as roles, routines, and schedules help a team establish accountability (i.e., who’s responsible for what subtask), predictability (i.e., what members are doing by when), and shared understanding (i.e., members are on the same page with regard to who does what and when things are done by whom) so that members can adjust the pace and sequence of their work (Okhuysen & Bechky, 2009). However, shortly after a team modifies its mechanisms during the pre-change period, these mechanisms can fail to achieve their goals. For example, when some individuals are assigned to new roles, it will take time for them to master their new roles. In addition, whenever a member is assigned to new roles, other members need to update their understanding about who does what in a team (Faraj & Sproull, 2000).

For another example, when a team revises its work routines, members can have new interaction partners. A staying member who used to closely interact with departing members may now need to interact with another staying member. Until interaction partners learn about each other and develop practices such as shorthand terms that facilitate communication between them, it can take more time to complete the tasks and cause more misunderstanding between members (Reagans et al., 2005). Until members fully adjust to the changed system, meaning that members become comfortable with one’s roles, know for sure who needs to finish what task by when and share such knowledge among them, teams would be unable to effectively perform their task (Faraj & Xiao, 2006; Okhuysen & Bechky, 2009; Reagans et al., 2005, 2016).

In sum, as a team experiences flux in coordination during the pre-change period, members can less effectively coordinate their activities compared to the earlier period. Flux in coordination not only reduces the amount of time that a team can use to execute their activities,
but also compromises a team’s ability to effectively coordinate its activities because members need to adjust to the modified system. Given that effective coordination is a critical condition for teams to perform well, I predict that the negative effects of flux in coordination during the pre-change on a team’s short-term performance will be partially mediated by coordination effectiveness.

*Hypothesis 3: Coordination between members becomes less effective during the pre-change period compared to before the announcement of upcoming membership change.*

*Hypothesis 4: The effectiveness of team coordination during the pre-change period partially mediates the negative relationship between flux in coordination during the pre-change period and a team’s short-term performance.*

### 3.3. Effects of the Pre-Change Period Flux in Coordination on a Team’s Long-Term Performance

Preceding events in a team are likely to influence following events. In addition to its immediate effects on team performance, flux in coordination during the pre-change period can have lasting effects on team performance. However, two different theories, which are a resource-based perspective (Coff, 1999; Ericksen & Dyer, 2004) and a model of change that emphasizes the difficulty of overcoming people’s resistance to change (Audia et al., 2000; Gersick, 1994; Lewin, 1951), predict the opposite direction of the relationship.

#### 3.3.1. Negative Lasting Effects of the Pre-Change Period Flux in Coordination on Subsequent Team Performance

From a resource-based perspective, teams that secured key resources will outperform teams that lack needed resources (Coff, 1999; Ericksen & Dyer, 2004). Key resources that a team needs to
facilitate newcomer adjustment, which is a major challenge during the post-change period, include incumbent members’ time and energy to socialize with, train, and help newcomers (Kammeyer-Mueller & Wanberg, 2003; Rink et al., 2013). However, the availability of these resources during the post-change period can vary depending on the extent to which teams experienced flux in coordination during the pre-change period. A high degree of flux in coordination during the pre-change period can reduce the amount of resources needed for newcomer adjustment.

After a newcomer joins a team, it takes incumbent members’ time and energy to build a relationship with and train new members. Emotional and instrumental support from team members is essential for newcomers to quickly learn team coordination mechanisms and feel welcomed in a new work environment (Fisher, 1985; Rink et al., 2013). As noted above, given that members’ time and energy are limited resources, teams that spent a lot of time and energy to modify their coordination mechanisms would have fewer resources to focus on their primary tasks. As a result, a team that experienced a high degree of flux in coordination during the pre-change period can become busy catching up with their schedule and thus have not enough time and energy to socialize with, train, and help newcomers. Teams which can effectively utilize knowledge and information that newcomers bring are more likely to survive and perform well in the long-term by making innovations (Rink et al., 2013). When newcomers do not want to share their knowledge and information with a team, or when a team is unwilling to accept and appreciate newcomers’ contributions, teams will struggle in the long-term.

**3.3.2. Positive Lasting Effects of the Pre-Change Period Flux in Coordination on Team Performance**
On the other hand, it is possible that flux in coordination during the pre-change period improves subsequent team performance. According to a three-step model of change by Kurt Lewin (1951), a successful change project involves three steps which are, unfreezing, moving, and refreezing. People tend to resist or avoid making changes (Oreg et al., 2011). For teams to successfully adapt to changes by making adjustments, members’ resistance to change needs to be overcome first (Audia et al., 2000; Gersick & Hackman, 1990). Flux in coordination during the pre-change period can be a triggering event that unfreezes the rigid mindset of team members.

Using the archival data from the airline and trucking industry, Audia et al. (2000) found that organizations with higher performance in the past more persisted with their past strategies despite a radical environmental change. Organizations that persisted with their past strategies ended up experiencing a greater decline in performance after the environmental change. Audia et al. (2000) ran a laboratory study to test the mediating mechanisms. The authors found that past success increased individuals’ confidence in the effectiveness of their strategies, which then led them to persist with past strategies despite a radical change in their task environment.

After modifying their coordination mechanisms during the pre-change period to deal with threatening factors (e.g., departing members’ low task commitment), members can be less confident in their coordination mechanisms and thus less reluctant to make further changes. As a result, when additional challenges arise in the future that threaten team coordination and performance, members who experienced flux in coordination can better adapt to the challenges, which is a key for a team’s long-term survival and success.

3.3.3. Non-Linear Lasting Effects of the Pre-Change Period Flux in Coordination on Team Performance
To reconcile these opposite theoretical predictions, I propose that the effects of the pre-change period flux in coordination on the team’s long-term performance is non-linear (i.e., inverse U-shaped) rather than linear. Whereas too high and too low levels of flux in coordination can undermine a team’s long-term performance, a moderate level of the pre-change period flux in coordination can enhance team performance in the long term.

Too high level of flux in coordination during the pre-change period can stress out members and leave members with no slack time and energy to facilitate newcomer adjustment. After experiencing turbulent coordination disruption during the pre-change period, members can become demoralized and even give up when similar challenges arise later. Too low level of flux in coordination during the pre-change period can lead members to become overconfident about their coordination mechanisms. Too high trust in their coordination mechanisms can lead members to become reluctant to promptly adjust their system even when members face difficulties in coordinating their actions later.

A moderate level of flux in coordination during the pre-change period can lead members to have reasonable doubt with their system but not too overwhelmed by the future challenges. Therefore, a moderate level of flux in coordination during the pre-change period can improve a team’s long-term performance by enabling a team to make better adjustments when they experience other challenges during the post-change period.

Hypothesis 5: The relationship between pre-change period flux in coordination and a team’s long-term performance is inverse U-shaped; the relationship is positive at a moderate level of pre-change period flux in coordination and is negative at both low and high level of pre-change period flux in coordination.
Chapter 4: Study

4.1. Method

4.1.1. Research Setting and Participants

I collected data from 216 individuals comprising 53 teams. The average age of participants was 19.9 and 74% of the participants were female. Participants were either current students or recent graduates of a U.S. university. I recruited participants from two pools. First, 24 participants were recruited from the business school undergraduate research participant pool and received a course credit in return for their participation. Second, I contacted 28 school deans and department chairs of the same university and asked whether I can invite their students to this study. I invited students from 13 schools and departments to this study, whose deans and department chairs approved me to contact their students. As a result, 192 participants signed up for the study and received $20 as a base pay in return for their participation. Participants from both pools received an extra $10 if their performance was rated as top 20 percent among all participants.

I conducted this study via Zoom, which is an online platform for virtual meetings. There were 53 sessions, and each session was approximately two-hour-long. Each session required exactly four participants to be run. However, I set the maximum number of sign-ups of each session as five so that even if one person does not show up on time, the scheduled session can be run without being canceled. There were 49 four-person sessions and four five-person sessions. When all five people showed up, I randomly selected one participant and separated them to another meeting room where they worked on filler tasks. Therefore I could run four-person sessions and five-person sessions following the exact same procedure.
Among the 53 sessions, one session was excluded from the analysis. In the excluded session, one participant sabotaged the experiment by not letting other participants speak at all. Moreover, due to a technical issue with Zoom, one session was not properly recorded. So third-party ratings of coordination and team performance were not available for this unrecorded session. However, participants’ self-reporting survey data were available and thus included in the analysis.

4.1.2. Procedure

In each session, four participants were randomly assigned to one of the three roles, which were staying members (i.e., participants who stay in a three-person team throughout the experiment), a departing member (i.e., a participant who leaves a team in the middle of the experiment) and a new member (i.e., a participant who joins a team in the middle of the experiment). There were two staying members, one departing member, and one new member in each session. At the beginning of the study, two staying members and one departing member were assigned to the first meeting room, while another participant—a new member—was assigned to the second meeting room. In the first meeting room, three participants were grouped as one team. After watching a pre-recorded video in which the experimenter explains what their task is and how to perform the task, a three-person team had three minutes to introduce themselves to each other and come up with a team name to be used in the study. This was to help participants feel more comfortable with each other and develop a group-based social identity. A three-person team was informed that they would work as a team for four rounds and did not know that there will be a member change during the study.

One participant who was randomly selected as a new member worked solo in the second meeting room. A new member also watched a pre-recorded video in which the experimenter
explains what their task is and how to perform the task. A new member did not know that other participants were working as a team in another meeting room and was informed that they would work solo until the end of the study.

After a team completed the first two rounds, the experimenter announced the upcoming membership change. The experimenter explained that one of them is needed for another project and thus will leave the current team after 10 minutes, which is halfway through their third round. The experimenter also announced who is going to leave the team, which was the participant who was randomly selected as a departing member. The experimenter informed that even if the team is eligible to earn the extra $10 incentive, the departing member will not receive the incentive. The experimenter also informed the team that a new member would join them right after a departing member leaves. At the same time, the experiment also informed a new member in the second meeting room that after completing one more round, they will join other participants who have been working together as a team. The experimenter asked a new member to work with other team members to complete the team’s ongoing third-round project.

After ten minutes, a new member replaced a departing member. After a new member joins, a team was given a five-minute new member orientation time so that the staying members could explain the current project to a new member and team members can get to know each other. After five minutes, the team continued to finish the second half of their third round. Then the team completed the fourth round. In the meantime, a departing member who left the team was moved to the second meeting room. The experimenter had a short interview with a departing member and asked about their experience in the team. After the interview, a departing member completed one more round working solo, which was a filler task to ensure that all participants finish at a similar time. After all participants completed their last round, the experimenter
debriefed the participants and had a post-experiment interview with them. Throughout the study, both meeting rooms were video- and audio-recorded. Figure 2 visualizes the timeline of the experiment.

4.1.3. Task

Participants were asked to record three-to-four minutes long YouTube-style videos about a given topic in each round. Three-person teams completed four rounds, and each round was 20-minute-long. Four video topics for each round were “introduce a fast-food restaurant of your choice,” “discuss how to maintain healthy both physically and mentally,” “introduce a smartphone of your choice,” and “introduce a kind of animal of your choice.” In the second meeting room in which either a new member (before the change) or a departing member (after the change) worked solo, each round was 15-minute-long. Three video topics that a new member completed before joining a team were “introduce a fast-food restaurant of your choice,” “discuss how to maintain healthy both physically and mentally,” and “introduce a place to travel of your choice.” After leaving a team, a departing member recorded the last video which was to “introduce a kind of animal of your choice.”

4.1.4. Measures

**Departing Member’s Team Identification** I measured a departing members’ team identification using a 4-item self-report survey measure from Van der Vegt and Bunderson (2005). Sample items are: “I feel emotionally attached to my team.” and “I feel a strong sense of belonging to my team.” Participants responded to survey items using a seven-point Likert-type
scale ranging from 1 = “Disagree strongly” to 7 = “Agree strongly.” A departing member completed this measure after round 1, after round 2, and immediately after leaving the team in the middle of round 3. The internal reliability of the four items was high. Cronbach’s alpha for the four items was .94 after round 1, .96 after round 2, and .96 after membership change.

**Flux in Coordination During Pre-Change Period** I measured flux in coordination during the pre-change period using third-party ratings of the recorded interaction of a team. Two research assistants who were blind to the hypotheses independently coded each interaction video. Because I am interested in flux in coordination caused by membership change, flux in coordination was not coded for a team’s interaction during round 1 and round 2. After observing how teams coordinated their activities during round 1 and round 2 of a team, coders rated shifts in the way members coordinated their work during the first half of round 3, which is a time after members were informed about the upcoming change and before the change actually happened (i.e., pre-change period). Coders rated the extent to which a team engaged in following behaviors using five-point scales (1 = not at all, 5 = entire time). Sample behaviors of flux in coordination during the pre-change period included: “Interaction patterns (e.g., who talks first, who talks most) between members changed, compared to the earlier rounds.”; “Members shifted roles (e.g., who takes note of the group discussion), compared to the earlier rounds.” I examined the level of interrater reliability in judges’ ratings. Two raters exhibited high interrater agreement (median rwg = 0.95, ICC(2) = 0.48, p < 0.01), so I operationalized flux in coordination during the pre-change period by using the mean score across two raters.

**Coordination Effectiveness** I measured coordination effectiveness between team members using a 3-item self-report survey measure adapted from Hoegl et al. (2004). Sample items are: “The work done was closely harmonized.” and “My team avoided duplication of
effort.” Participants responded to survey items using a seven-point Likert-type scale ranging from 1 = “Disagree strongly” to 7 = “Agree strongly.” All three team members completed this measure after round 1, after round 2, and immediately after the membership change. Cronbach’s alpha for the three items was .83 after round 1, .82 after round 2, and .86 after member change. Three team members exhibited high interrater agreement until the membership change. Median rwg(j) was .86 after round 1, .94 after round 2, and .91 after member change. ICC(2) was .24 (p = .002) after round 1, .23 (p = .003) after round 2, and .17 (p = .002) after member change. So I operationalized coordination effectiveness by using the mean score across three members.

**Team Performance** I measured team performance using third-party ratings of recorded YouTube-style videos which were outputs of the video-recording task. A research assistant and I rated the quality of videos using the seven items. To address potential single-source bias in testing the hypotheses (Podsakoff et al., 2003), a research assistant and I did not code team interactions and only rated team performance. Coders rated the extent to which a recorded video meets the following standards using five-point scales (1 = strongly disagree, 5 = strongly agree). Sample items are “Overall, the video quality was high,” “The video shared useful and interesting information related to the topic.” The internal reliability of the seven items was high (Cronbach’s alpha = 0.87). I examined the level of interrater reliability in judges’ ratings. Two raters exhibited high interrater agreement (median rwg(j) = 0.94, ICC(2) = 0.70, p < 0.01), so I operationalized team performance by using the mean score across two raters.

**Control Variables** I included the Big 5 personality traits, gender diversity (i.e., single-gender vs. mixed-gender), age, and the use of English as a first language as team-level control variables because these factors can influence a team’s ability to coordinate their actions and perform well in a video-recording task (Asendorpf & Wilpers, 1998; Neuman et al., 1999;
Pearsall et al., 2008). I used a ten-item Big 5 personality measure with a 7-point Likert type scale (Gosling et al., 2003) and calculated the average level of a given trait within a team. Using participants’ self-report of their gender, I operationalized team gender diversity as a binary construct (i.e., a team is composed of the same gender = 1, not = 0). Using participants’ self-report of their age, I calculated the average age of team members. Using participants’ self-report of their first language, I calculated the proportion of team members who are using English as their first language.

4.2. Results

4.2.1. Descriptive Statistics

Table 5 provides descriptive statistics for and correlations among study variables. I did not include the control variables in Table 5 due to the limited space. There were 16 control variables (i.e., five personality traits, gender diversity, age, the use of English as a first language; the value of each control variable was calculated respectively for the pre-change period and post-change period). Table 6 provides descriptive statistics for control variables and their correlations with main study variables. With regard to Hypothesis 1, all three measurements of departing members’ team identification were not significantly correlated with flux in coordination during the pre-change period (r = .00, .04, -.01, respectively, all p > .10). With regard to Hypothesis 2, the mean value of coordination effectiveness during the pre-change period (M = 6.20) was lower than round 2 (M = 6.38). With regard to Hypothesis 3, flux in coordination during the pre-change period was not significantly correlated with all three measurements of coordination effectiveness.
Coordination effectiveness during the pre-change period was also not significantly correlated with team performance in round 3 ($r = .21, p > .10$). Surprisingly, flux in coordination during the pre-change period was significantly and positively correlated with team performance in round 3 ($r = .33, p < .05$). Lastly, with regard to Hypothesis 4, flux in coordination during the pre-change period was not significantly correlated with team performance in round 4 ($r = .22, p > .10$).

Teams with more extraverted members performed better ($r = .34, p < .05; r = .44, p < .01; r = .32, p < .05; r = .41, p < .01$, respectively for round 1, 2, 3, and 4). Teams with more conscientious members reported their coordination to be more effective ($r = .43, p < .01; r = .38, p < .01; r = .41, p < .01$, respectively for round 1, 2, and 3 pre-change period). In round 1 and 2, mixed-gender teams performed better than single-gender teams ($r = .35, p < .05; r = .49, p < .01$, respectively for round 1 and 2). Average age of team members and the proportion of members who use English as their first language were not significantly related to team coordination and performance.

### 4.2.2. Test of Hypotheses

In Hypothesis 1, I proposed that departing members’ team identification will be attenuated after knowing that they will soon leave a team. I ran both a paired-sample t-test and a growth modeling to test Hypothesis 1. The result of a paired sample t-test shows that a departing member’s team identification was not significantly different between round 2 ($M = 5.19, SD = 1.46$) and round 3 pre-change period ($M = 5.31, SD = 1.47$) $t(51) = -1.75, p = .09$. 

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Given that I have repeated measurements of a departing member’s team identification, I also conducted a growth modeling (Bliese & Ployhart, 2002). Following Bliese and Ployhart’s (2002) step-by-step guidance, I first checked a trajectory of a departing member’s team identification over the three measurement timings (i.e., after round 1, after round 2, and immediately after they left a team in the middle of round 3), which is illustrated in Figure 3. In most teams, a departing member’s team identification had a positive and linear trend over time. However, team identification of a departing member in three teams (i.e., team 5, team 12, team 29) decreased after knowing that they will soon leave a team.

I ran a linear growth model in which time (i.e., round) predicts a departing member’s team identification with a random intercept and a random slope. I included departing member’s Big 5 personality traits, gender, age, and the use of English as their first language as control variables. Table 7 shows the results of growth modeling of departing member’s team identification. The coefficient of time was significant and positive ($B = 0.41, p < .001$). According to Hypothesis 1, team identification of a departing member should decrease between second and third measurements, which would result in a non-linear relationship between team identification and time. However, when I added a squared term of time in the model, the coefficient of a squared term was not significant ($B = -0.05, p = .761$). Therefore Hypothesis 1 was rejected.

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Insert Table 7 about here

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In Hypothesis 2, I proposed that departing members’ team identification will be negatively related to the degree of flux in coordination during the pre-change period. The
The correlation between departing members’ team identification and flux in coordination during the pre-change period was not significant ($r = -0.01, p > .10$). Therefore, Hypothesis 2 was rejected.

In Hypothesis 3, I proposed that coordination between members becomes less effective when members become aware of an upcoming membership change compared to when members had no information about the upcoming change. To test Hypothesis 3, I ran a paired-sample t-test and a growth modeling. The result of a paired sample t-test shows that coordination effectiveness significantly decreased during round 3 pre-change period ($M = 6.20, SD = 0.57$) compared to round 2 ($M = 6.38, SD = 0.50$), $t(50) = 2.82, p < .01$.

Figure 4 shows a trajectory of coordination effectiveness in each team. I ran a linear growth model in which time (i.e., round) predicts coordination effectiveness with a random intercept and a random slope. I included team-level Big 5 personality traits, gender diversity, age, and the proportion of members who use English as their first language as control variables. Table 8 shows the results of growth modeling of coordination effectiveness. The coefficient of time was significant and positive ($B = 0.14, p < .01$). According to Hypothesis 3, coordination effectiveness should decrease between second and third measurements, which would result in a U-shaped relationship between coordination effectiveness and time. When I added a squared term of time in the model, the coefficient of a squared term was significantly negative ($B = -0.45, p < .01$). Therefore Hypothesis 3 was supported.

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Insert Figure 4 about here

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Insert Table 8 & Figure 5 about here
In Hypothesis 4, I proposed that coordination effectiveness partially mediates the negative relationship between flux in coordination during the pre-change period and team performance in the short-term. I operationalized a team’s short-term performance as a team’s round 3 performance, during which membership change happened. As Figure 5 illustrates, coordination effectiveness did not mediate the effects of flux in coordination on team performance. Contrary to the prediction, flux in coordination during the pre-change period had a positive, rather than negative, direct effect on round 3 team performance. The indirect effect was not significant (.006, \( p = .93 \)). Therefore, Hypothesis 4 was rejected.

In Hypothesis 5, I proposed that the relationship between pre-change period flux in coordination and a team’s long-term performance is inverse U-shaped, such that the relationship is positive at a moderate level of pre-change period flux in coordination and is negative at both low and high level of pre-change period flux in coordination. I tested Hypothesis 5 using two analytic approaches—hierarchical regression analysis and growth modeling.

Insert Table 9 & Figure 6 about here

Table 9 presents the results of the hierarchical regression analysis. I introduced flux in coordination during round 3 pre-change period as a predictor of round 4 team performance in model 1. Then, I added a squared term of flux in coordination as another predictor in model 2.

Team performance in round 4 did not have a significant relationship with flux in coordination (\( B = 0.35, p = .54 \)) as well as a squared term of flux in coordination (\( B = -0.03, p = .72 \)). Figure 6 shows a scatter plot that shows the relationship between flux in coordination...
during round 3 pre-change period and round 4 team performance. The red line in the graph is a fitted line of the curvilinear relationship (i.e., \( y \sim x + (x^2) \)).

Given that team performance was repeatedly measured over four rounds, it can be more appropriate to run a growth modeling to test the relationship between flux in coordination and team performance.

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Insert Figure 7 & Table 10 about here

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Visual inspection of Figure 7, which shows a trajectory of team performance over the four rounds of each team, indicates that team performance remained largely constant over time and did not have a linear relationship with time. However, some teams showed interesting patterns which require further examination. For example, the performance of team 9 gradually decreased over time, whereas the performance of team 41 fluctuated across rounds.

I ran a linear growth model in which time (i.e., round) predicts team performance with a fixed intercept and fixed slope. I included team-level Big 5 personality traits, gender diversity, age, and the proportion of members who use English as their first language as control variables. Table 10 shows the results of growth modeling of team performance. In Model 1, the coefficient of time was not significant (\( B = -0.01, p = .544 \)), which indicates that there was no linear relationship between team performance and time. This result is consistent with the result of the one-way repeated measures ANOVA test, which shows that team performance between rounds was not significantly different from each other, \( F(3, 150) = 0.236, p = 0.871 \).

If membership change enhances or undermines team performance, then considering that membership change happened in the middle of round 3, there will be a curvilinear relationship
between time and team performance. However, when I added a squared term of time in Model 2, the coefficient of a squared term was not significant ($B = 0.00, p = .803$). In other words, there was neither a linear nor a non-linear relationship between time and team performance.

Lastly, in Model 3, I added flux in coordination during the pre-change period as a predictor of team performance in round 3 and round 4. I also added a squared term of flux in coordination during the pre-change period as a predictor of team performance in round 4. However, flux in coordination was not a significant predictor of team performance in both round 3 ($B = 0.06, p = .125$) and round 4 ($B = 0.02, p = .937$). The coefficient of squared flux in coordination was also not significant ($B = -0.01, p = .778$). Therefore, Hypothesis 5 was rejected.

### 4.3. Post-Hoc Analyses

I conducted post-hoc analyses to gain further insights into three questions that remained unsolved after testing the hypotheses. First, what are the antecedents and consequences of departing members’ team identification during the pre-change period? Contrary to my expectation, departing members did not identify less with their team during the pre-change period than before. To further understand a departing member’s behavior during the pre-change period, I included two additional measures which were reported by staying members—their attachment with a departing member and a departing member’s task involvement during the pre-change period—and checked their correlation with other variables.

Second, what are the antecedents and consequences of pre-change period flux in coordination? Contrary to my prediction, flux in coordination during the pre-change period was not significantly related to a departing member’s team identification and coordination effectiveness during the same period. If a departing member stayed committed to the team during the pre-change period, it is possible that team members modified their coordination mechanisms
to facilitate their post-change period adaptation. Therefore, I also checked the correlations
between pre-change period flux in coordination and staying members’ acceptance of a
newcomer, interpersonal attachment between a newcomer and staying members, and a
newcomer’s task involvement.

Third, what are the key differences between high-performing teams and low-performing
teams? The results of growth modeling of team performance showed that team performance
remained largely constant over the four rounds despite the membership change. In addition to
coordination, there can be additional team processes and emergent states that may have
influenced team performance. Particularly, the extent to which team members engaged in small
talk during the ice-breaking session may have influenced their subsequent interaction by setting
the initial tone in teams (Coupland, 2003).

4.3.1. Measures

Interpersonal Attachment Between a Departing Member and Staying Members

I measured attachment between a departing member and staying members using a 4-item
survey measure adapted from Rink and Ellemers (2009). Sample items are: “During the third
round, I liked working with the member who just left the team.” and “During the third round, I
felt comfortable with the member who just left the team.” Two staying members completed this
measure once immediately after a departing member left the team in the middle of round 3. The
internal reliability of the four items was high (Cronbach’s alpha = 0.83). I examined the level of
intrarater reliability in two staying members’ ratings. Two staying members exhibited high
intrarater agreement (median rwg = 0.95), so I operationalized departing member’s interpersonal
attachment by using the mean score across two members.
Departing Member’s Task Involvement I measured a departing member’s task involvement using a 4-item survey measure adapted from Rink and Ellemers (2009). Sample items are: “After knowing that they will soon leave this team, the member who just left actively engaged in the discussion.” and “After knowing that they will soon leave this team, the member who just left clearly expressed opinions during the discussion.” Two staying members completed this measure once immediately after a departing member left the team in the middle of round 3. The internal reliability of the four items was high (Cronbach’s alpha = 0.93). I examined the level of interrater reliability in two staying members’ ratings. Two staying members exhibited high interrater agreement (median rwg = 0.93, ICC(2) = 0.28, p < 0.05), so I operationalized departing member’s task involvement using the mean score across two members.

Interpersonal Attachment Between a New Member and Staying Members

I measured attachment between a new member and staying members using a 4-item survey measure adapted from Rink and Ellemers (2009). Sample items are: “During this round, I liked working with a new member.” and “During this round, I felt comfortable with a new member.” Two staying members completed this measure once after the team completed round 3. The internal reliability of the four items was high (Cronbach’s alpha = 0.91). I examined the level of interrater reliability in two staying members’ ratings. Two staying members exhibited high interrater agreement (median rwg = 0.88), so I operationalized a new member’s interpersonal attachment by using the mean score across two members.

New Member’s Task Involvement I measured a new member’s task involvement using a 4-item survey measure adapted from Rink and Ellemers (2009). Sample items are: “During this round, a new member actively engaged in the discussion.” and “During this round, a new member clearly expressed opinions during the discussion.” Two staying members completed this
measure once after the team completed round 3. The internal reliability of the four items was high (Cronbach’s alpha = 0.91). I examined the level of interrater reliability in two staying members’ ratings. Two staying members exhibited high interrater agreement (median rwg = 0.95, ICC(2) = 0.37, p < 0.01), so I operationalized a new member’s task involvement by using the mean score across two members.

**New Member’s Perceived Acceptance** I measured the extent to which a new member felt accepted by staying members using a 3-item self-report survey measure adapted from Bauer and Green (1998). Sample items are: “Existing members in my team clearly explained their ongoing task for me.” and “Existing members in my team helped me become confident in a new team.” A new member completed this measure once after completing round 3. The internal reliability of the three items was high (Cronbach’s alpha = 0.86).

**Small Talk Volume** I measured the amount of small talk by counting the number of words using a transcription of members’ conversation during the ice-breaking session. Zoom provides automated transcriptions of recorded meetings. Although I could not conduct content analysis because the accuracy of automated transcription is questionable, I could measure the volume of conversation using the word count.

**Team Positive Affect** I measured a team’s positive affect using third-party ratings of the recorded interaction of a team. Coders rated the extent to which a team exhibited the following behaviors using five-point scales (1 = not at all, 5 = entire time). Sample behaviors of team positive affect included: “Members seemed highly energized and passionate about the task.” and “Members smiled and laughed.” I examined the level of interrater reliability in judges’ ratings. Two raters exhibited high interrater agreement (median rwg = 0.97, ICC(2) = 0.53, p < 0.01), so I operationalized team positive affect by using the mean score across two raters.
Team Effort I measured the extent to which members put effort into their task using third-party ratings of the recorded interaction of a team. Coders rated the extent to which a team exhibited the following behaviors using five-point scales (1 = not at all, 5 = entire time). Sample behaviors of team positive affect included: “Members seemed trying to complete the video recording as soon as possible by putting minimal efforts. (reverse-coded)” and “Members decided to record a video more than once, including a rehearsal.” I examined the level of interrater reliability in judges’ ratings. Two raters exhibited high interrater agreement (median rwg = 0.94, ICC(2) = 0.32, p < 0.01), so I operationalized team effort by using the mean score across two raters.

Task-related Inertia I measured task-related inertia using a 5-item self-report survey measure adapted from Liao et al. (2008) and Oreg (2003). Sample items are: “I feel defensive about changing how my team does our work.” and “I’d rather maintain and repeat my team’s current work process than change it.” Participants completed this measure after completing each round and after membership change. Cronbach’s alpha for the three items was .62 after round 1, .57 after round 2, .60 after member change, .69 after round 3, and .64 after round 4. Because I was interested in the average level of inertia that team members were feeling, I operationalized task-related inertia by using the mean score across three members.

4.3.2. Results of Post-hoc Analyses

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Insert Table 11 about here

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Table 11 shows the correlations between departing member’s team identification, task involvement, interpersonal attachment, and other variables. Departing members’ team
identification during the pre-change period was positively related to team coordination, team positive affect, and team effort during the earlier rounds. The overall pattern of correlations between departing members’ team identification and other variables was similar to the pattern of correlations between interpersonal attachment and other variables.

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Insert Table 12 about here

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Table 12 shows the correlations between pre-change period flux in coordination, volume of small talk, and other variables. Pre-change period flux in coordination was positively related to team positive affect and team effort in both round 2 and round 3 pre-change periods. Interestingly, flux in coordination was positively related to task-related inertia in both round 2 and round 3 post-change periods. Flux in coordination was also positively related to the extent to which a new member felt accepted by staying members. Small talk volume was positively related to team extraversion and team positive affect through the four rounds.

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Insert Table 13 about here

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Table 13 shows the correlations between team performance and other variables. In general, team performance was positively related to team effort, team positive affect, small talk volume, and team extraversion. In round 1 and round 2, mixed-gender teams performed better than single-gendered teams. Moreover, teams that had a new member who was highly involved in the task performed better in round 3.
As noted in Table 11, 12, and 13, team positive affect was positively related to a departing member’s team identification, task involvement, interpersonal attachment, flux in coordination, small talk volume, and team performance. I further checked the correlations between team positive affect, team compositional factors, and other indicators of social integration.

As shown in Table 14, team positive affect was positively related to team identification across the four rounds. Team positive affect was also positively related to newcomer acceptance and their task involvement. Among the compositional factors, team extraversion was most closely related to team positive affect through the four rounds.
Chapter 5: Discussion

5.1. Discussion of Study Findings

I investigated how the news of upcoming membership change influence team processes and performance by causing flux in coordination. First, I found that team members modified their coordination mechanisms when they learned about upcoming membership change. Second, members less effectively coordinated their activities during the pre-change period compared to when members had no information about the upcoming change. These results suggest that team members start responding to change when they learned about upcoming change rather than waiting until the change actually occurs. However, except for Hypothesis 3 in which I proposed that team coordination becomes less effective during the pre-change period compared to the earlier round, other hypotheses were not supported. Interestingly, some of the relationships were significant but in a direction that is opposite to the prediction.

Contrary to Hypothesis 1, a departing member’s team identification increased rather than decreased during the pre-change period. There can be three explanations for this unexpected finding. First, it is possible that departing members felt more attached to other teammates as they realized that this is their last time together. Kurtz (2008) found that as college students think about the imminent ending of a positive life experience (i.e., graduation), they tend to more appreciate the present experience and increase their college-related activities. Cialdini’s (2009) scarcity principle, which argues that people more value a resource that becomes scarce, can explain this finding. When I interviewed departing members immediately after they left a team, several participants said that they felt sad and even sorry for leaving their teammates in the middle of the projects, although it was not their voluntary decision to leave a team.
In this study, departing members could not receive performance-based team incentives (i.e., extra $10 per member for high-performed teams) and thus were not extrinsically motivated to work hard during the pre-change period. Nonetheless, departing members may have intrinsically enjoyed the process of producing fun videos with their teammates. In the post-hoc analyses, I found that coordination effectiveness, team positive affect, and team effort measured in round 2 were positively correlated with a departing member’s team identification during the pre-change period. As these departing members, especially those from teams that have been effective, working hard, and developed a positive atmosphere, tried to savor the last moment with their teammates, their team identification may have increased during the pre-change period.

Second, team members could have become more united to better deal with the impending challenge to their teamwork—membership change. According to the source model of group threat (Greenaway & Cruwys, 2019), external threats can unite group members so that a group can collectively overcome the threat. In this study, from the perspective of participants, membership change was an externally driven, involuntary event. Some participants viewed membership change as a threat to their performance because newcomers could slow down teamwork and disagree with the ongoing work. Although departing members did not have to be a part of a team’s collective efforts to overcome the challenge, they could have felt compassion with their teammates.

Third, in some teams, participants who were randomly selected as departing members happened to be informal leaders of their team. These informal leaders broke the ice to start a small talk, led task-related discussion by asking questions to other members and proposing ideas, and checked others’ work progress to ensure a team can finish the work by the deadline. These informal leaders tried to stay responsible for their roles until they left. Individuals can develop a
social identity based on their role as well as their group membership (Stets & Burke, 2000; Turner & Tajfel, 1986). As these departing members continued to have a social identity as an informal leader of a team that faces a disruptive event (i.e., membership change), their team identification may have increased during the pre-change period.

Interestingly, flux in coordination during the pre-change period was positively related to team performance in round 1 \((r = .27, p = .052)\) and round 2 \((r = .26, p = .064)\) although the correlations were not statistically significant. Moreover, according to the post-hoc analyses, flux in coordination during the pre-change period was also positively related to team positive affect and team effort in round 2. These patterns suggest that flux in coordination during the pre-change period could have been a manifestation of effective teamwork. When teams learned about an upcoming event that can disrupt their ongoing work, high-performing teams which had been working hard with positive atmosphere quickly responded to the news by adjusting their coordination mechanisms, whereas low-performing teams with low energy level failed to give a proper amount of attention to the important news.

More interestingly, flux in coordination during the pre-change period was positively related to task-related inertia measured after round 2 and after round 3. In other words, members who thought that their current work process was effective and did not require much change at the end of round 2 modified their coordination mechanisms to a greater extent after being informed about impending membership change. Although these members were satisfied with the quality of their coordination mechanisms, that confidence did not deter them from making adjustments in response to the news of upcoming change. Then, after making necessary adjustments in their coordination mechanisms, these team members became re-satisfied with their adjusted mechanisms and thought further changes are not much needed.
Contrary to prediction, there was no significant relationship between flux in coordination and coordination effectiveness during the pre-change period. I theorized that flux in coordination could disrupt team coordination and performance because it takes time and effort to modify the established coordination mechanisms and to adjust to the modified mechanisms. One potential moderator of the relationship between flux in coordination and coordination effectiveness is the complexity of coordination mechanisms. When teams have relied on complex rather than simple coordination mechanisms, developing alternative mechanisms and adjusting to the modified system would require more effort and time. In this study, teams developed relatively simple coordination mechanisms as they were working on a relatively simple task. As a result, it could have been fairly easy for teams to modify their coordination mechanisms and adjust to the modified system, which might have led to a null relationship between flux in coordination and coordination effectiveness during the pre-change period ($r = .038, p > .10$).

Contrary to Hypothesis 4 and 5, in this study flux in coordination during the pre-change period was positively, rather than negatively, related to subsequent team performance. Although pre-change period flux in coordination was not a significant predictor of round 3 and round 4 team performance in the growth modeling which included several control variables, zero-order correlations between flux in coordination, team performance in round 3 and round 4 were positive. There can be two explanations for this finding. First, as discussed above, if flux in coordination is one of the characteristics of effective teams, a positive relationship between pre-change period flux in coordination and team performance in round 3 and 4 could have been a statistical artifact given that team performance across rounds were highly correlated with each other (all correlations were greater than .85).
Second, it is also possible that some teams could perform better because they modified coordination mechanisms. After receiving the news of upcoming change, several teams expressed concerns that they might fail to complete the task within a given time because passing the work from a departing member to a new member would take time. Some teams were even annoyed by the change because they liked each other and thought that they worked well as a team. From the perspective of staying members, working with a new member who joins a team in the middle of a project entails uncertainty. A new member may dislike their ideas, and thus they may have to rework. A new member may be incompetent at presenting their ideas and thus fail to replace the role of a departing member. During the pre-change period, some teams coped with the uncertainty by speeding up their work process and completing the task within 10 minutes before the change occurs.

Other teams prepared newcomer onboarding by taking notes of team discussion and individual work. Although these teams only verbally discussed their work without sharing notes during the first two rounds, during the pre-change period, they took notes so that they could easily explain their ongoing work to a new member. These modifications during the pre-change period could have facilitated newcomer adjustment and thus helped teams perform better during the post-change period. Consistent with this explanation, in the post-hoc analysis, I found that new members felt more accepted by staying members in teams that experienced a higher level of pre-change period flux in coordination. It is also possible that, through the process of modifying their coordination mechanisms, team members became more mindful about how the work is being done in a team and thus could better explain their ongoing work to a new member.

In this study, teams that were composed of extraverted members and members of mixed gender, effectively coordinated their work, put more effort (e.g., taking several rehearsals),
expressed positive affect, and actively engaged in small talk during the ice-breaking session performed well. Effective coordination and persistence are desirable attributes for teams operating in diverse contexts. Depending on the task type and working environment, desirable personality traits can vary. In this study, newly-formed teams were asked to produce interesting and informative short video-clips. Extraverted individuals, compared to introverted individuals, could have found presenting their ideas more comfortable.

Consistent with previous research findings (Knight & Eisenkraft, 2015), team positive affect was positively related to several indicators of social integration such as team identification, interpersonal attachment, and newcomer acceptance. Given the reciprocal relationship between affective experience and the quality of social relationships (Kelly & Barsade, 2001), shared positive affect could have helped members become united despite membership change.

Lastly, in this study, membership change did neither enhance nor undermine team performance. Team performance remained largely constant over time. Teams with a good start maintained their high performance until the end of the study despite the membership change, whereas teams with a poor start failed to utilize membership change as a turning point to make a fresh start (Ericksen & Dyer, 2004).

5.2. Theoretical Contributions

In my dissertation, I expanded a temporal framework of team membership change in two ways—by including the pre-change period and by distinguishing between short-term and long-term performance. To understand the effects of team membership change on team performance, researchers have mainly investigated the post-change period, which is the time after a member leaves or joins a team. In my dissertation, I complemented the current focus on the post-change period by investigating the pre-change period of membership change that is likely to exist in
various real-world cases of team membership change. By doing so, I could identify another impact that membership change can make on team processes, that is, causing flux in coordination during the pre-change period. After learning about the upcoming change, members can modify their coordination mechanisms to deal with the concurrent issues during the pre-change period (e.g., reduce damage to teamwork due to departing members’ low team commitment) and to preemptively cope with the expected future issues (e.g., prepare to help newcomers quickly adjust once they join a team). Although I focused on flux in coordination during the pre-change period in this research, there can be additional shifts in team processes and emergent states that are unique to the pre-change period, which can be revealed in future research.

Moreover, I explained how the effects of flux in coordination on team performance might vary over time by distinguishing between short-term and long-term team performance. By doing so, I provided one way to reconcile two opposing views on the effects of membership change on team performance that can be summarized as membership change is beneficial vs. detrimental (Choi & Thompson, 2005; Summers, Humphrey, & Ferris, 2012; see the structure of literature review by Humphrey & Aime, 2014). To understand why the effects of membership change on team performance may vary, researchers so far have examined static factors such as a network position and a role of a member being replaced as potential moderators (Stuart, 2017; Stuart & Moore, 2017). By adopting a dynamic perspective, I suggested a possibility that the effects of team membership change on team performance may vary not only across situations but also across times.

My approach to link preceding and following events in a team is consistent with Rink et al.’s (2013) approach who explained that the effects of newcomer entry on team performance could depend on the members’ responses. According to Rink et al. (2013), if team members
reflect upon and modify their work processes, if team members utilize and adopt newcomers’ knowledge, and if team members accept newcomers as a full team member, then the entry of newcomers can enhance the long-term survival of teams. In my dissertation, I explained how members’ efforts to modify their coordination mechanisms during the pre-change period have downstream effects on team performance. A path-dependent perspective that focuses on team members’ behavior during the pre-change period is consistent with recent research trends in the organizational change literature, which can be briefly summarized as “the growing consensus about the key role that change recipients’ reactions to change have in determining the change’s potential to succeed” (Oreg et al., 2011, p. 462).

This research also contributes to social identity theory by identifying potential moderators of the anticipatory deidentification process of departing members (Ashforth, 2000). Drawing on social identity theory, I proposed that departing members identify less with their team during the pre-change period because they no longer share goals with their team. However, contrary to my prediction, in this study, departing members’ team identification increased after they learned that they would soon leave a team. I discussed two potential factors—the quality of the existing relationship between team members and departing members’ post-exit plan—that can determine departing members’ team-based social identity during the pre-change period. When departing members had positive relationships with staying members, they can become more committed to their team during the pre-change period to savor the last moment with their teammates.

When departing members plan to move to another work unit within the same organization or to stay in the industry in which one’s reputation among colleagues matters, they can stay committed to their team and role during the pre-change period. On the other hand, when
departing employees plan to significantly change their career path after exiting the current team, they can become less committed to their team and role and instead focus on preparing their post-exit career. In other words, to understand the extent to which an individual identifies with their team during the pre-change period, it is not enough to simply consider the extent to which an individual shares goals with their team at the moment. Researchers also need to consider what an individual experienced before (e.g., the quality of relationship with teammates) and what will happen to them after their exit.

My dissertation encourages researchers to study features of change that have been neglected in the literature to properly understand how members would react to membership change. As reviewed above, unlike HR researchers, team researchers have yet to distinguish between voluntary and involuntary change. However, according to the source model of group threat (Greenaway & Cruwys, 2019), the initiator or reason for membership change can be a key factor that determines whether members are more or less united during the pre-change period. For example, when a member voluntarily leaves a team due to their dissatisfaction with the vision of their team or a conflict with a supervisor, members are likely to be divided (e.g., those who are happy vs. unhappy in the team) rather than united during the pre-change period. On the other hand, when membership change happens due to exogenous factors (e.g., furlough due to financial crises; firm-level policy on personnel rotation), members can be united during the pre-change period to better cope with the externally originated threats.

Lastly, this research also contributes to the literature on coordination by providing a framework to explain why some events that disrupt coordination in the short-term may enhance coordination and team performance in the long-term. Membership change is one of the many events that can cause flux in coordination. As Okhuysen and Bechky (2009, p. 494) noted,
“coordination is under persistent attack by the regular dynamics of organizations.” Various kinds of changes, such as the introduction of new technology (Edmondson et al., 2001), technology failure (LePine, 2005), and change in an incentive system (Johnson et al., 2006), can shift established interaction patterns between members and require teams to modify their coordination mechanisms. For example, technology failure (e.g., network outage) can prevent members from fulfilling their roles (e.g., update a Google document) as planned and thus require teams to adjust their original time plan and routines. Although these disruptive events are often considered undesirable events that should be prevented, as I theorized, the experience of modifying coordination mechanisms can enhance a team’s adaptability to other changes. My perspective also complements the current understanding of flux in coordination, which is conceptualized as a dysfunctional, chaotic state that undermines team performance (Summers et al., 2012).

5.3. Practical Implications

As noted in the introduction of this dissertation, managers in organizations can consider changing team membership for several reasons—to replace underperforming members, develop versatile employees, transfer knowledge between work units, and keep members motivated (Eriksson & Ortega, 2006; Kane et al., 2005; Staw, 1980). Although disruption on coordination is a valid concern when changing team membership, at least in this study, membership change per se did neither enhance nor undermine team performance. If managers can expect some clear organization-level, team-level, or employee-level benefits by changing team membership, managers may implement change without worrying too much about potential disruption on ongoing teamwork.

Compared to team members, team leaders often have better access to information regarding membership change. As a result, leaders need to decide whether to share the news
about upcoming membership change with their members or keep the news to themselves until the actual change. Some managers may consider hiding the news from their members to prevent members from being distracted by the change. In this study, pre-change period flux in coordination was positively related to subsequent team performance and a newcomer’s perception of being accepted by a team. This finding suggests that managers may better share the news about impending change and give some time for team members to prepare for the upcoming change. Particularly, in addition to taking away a chance to modify coordination mechanisms, hiding the news about upcoming change can lower employees’ trust toward their leaders. For example, Brockner et al. (1994) found that when supervisors explained the reason for layoff and shared the news in advance with employees, layoff severity did not decrease downsizing survivors’ trust toward the organization.

One of the key challenges for leaders of teams that face membership change is how to maintain social integration, specifically how to keep departing members stay committed to the team and how to quickly involve new members into a team’s ongoing project. In this study, team positive affect was positively related to several indicators of social integration during both pre-change and post-change periods. This finding suggests that, in teams that are expected to experience membership change, team leaders may strategically foster a positive atmosphere. Team leaders can encourage members to share and express positive feelings. Given that team extraversion and team positive affect was positively correlated in this study, one way to build teams with positive affect can be to recruit extraverted individuals as team members.

5.4. Limitations and Future Research

There are three limitations of the study. First, because this research was an experimental study with a university student sample, it remains unknown whether real-world teams experience flux
in coordination during the pre-change period of membership change. Future field research is
needed to check whether real-world teams would also experience flux in coordination during the
pre-change period. However, it can be challenging to capture the moment when teams become
aware of the upcoming membership change and track team processes until the moment of
membership change. One research opportunity is to conduct a study with employees who are just
admitted to the full-time MBA programs. The applicants of the MBA programs typically receive
recommendation letters from their supervisors and thus share their turnover plan with their
supervisors. If the accepted applicants share their admission news with their supervisors and
colleagues, the time between the announcement and their departure will be the pre-change
period. By tracking how teams respond to planned turnovers of members who are leaving the
team to join the MBA program, researchers can examine whether real-world teams also
experience flux in coordination during the pre-change period.

Another opportunity for future research is to examine how professional sports teams
respond to upcoming member trades. Many professional sports leagues, including NBA, have
trade deadlines in the middle of the season. There are rumors about which players are highly
likely to be traded. Researchers can examine how players who are involved in trade rumors may
change their playstyle as they approach trade deadlines and how teams adjust their playing
patterns prior to the actual trade.

Second, the duration of the experiment (i.e., two-hour-long) might have been too short
for participants to develop team identification and stabilize coordination mechanisms. To
theorize the effects of upcoming membership change on ongoing team processes, I assumed that
members had already developed a social identity based on their team membership and
established coordination mechanisms before they learned about the upcoming change. In the
study, teams were informed about the impending change after they completed two rounds, which was approximately 50 minutes after the team was initially assembled. However, as I found a positive linear relationship between a departing member’s team identification and time, it is possible that if teams had a longer history of working together, members could have had even stronger team identification.

Third, the current findings are specific to the type of team task used in the study and cannot be generalized to teams that work on different tasks. I used a relatively simple team task in this study so that teams could quickly develop and stabilize their coordination mechanisms. However, a relatively simple team task led participants to develop and rely on simple coordination mechanisms, which could have mitigated potential negative shock of flux in coordination on team performance. According to McGrath’s (1984) circumplex model of group tasks, this study used a mixture of creativity and performance tasks given that teams came up with videos’ format and content and also recorded the videos by presenting their ideas. Previous research showed that membership change could be a positive factor if a team engages in a creativity task (Choi & Thompson, 2005). Future work that uses various team tasks is needed to determine whether the effects of membership change on team performance may vary across task types.

Although membership change was introduced to all teams following the same procedure in this study, future research can compare how different introductions of membership change influence team processes and performance. How researchers introduce membership change in experiments can moderate the change’s effects on team performance because the procedure of change can influence members’ trust toward their managers and perception of change. As I reviewed above, so far, in most experimental studies on membership change, researchers shared
barely any information about the change with participants, which could have led participants to distrust the experimenter and have negative attitudes against the change (Brockner et al., 1994).

5.5. Conclusion

In my dissertation, I investigated what happens in a team when members become aware of the upcoming membership change and potential shifts in team performance. I proposed and found that members modify their coordination mechanisms when they receive information about the upcoming change. Unexpectedly, I found that team identification of a departing member increased rather than decreased during the pre-change period. Also, flux in coordination during the pre-change period was positively related to team performance in rounds that preceded the change as well as that followed the change. Membership change per se did neither improve nor undermine team performance. This dissertation contributes to the literature on team membership change, social identity, and coordination by investigating the pre-change period, elaborating on the de-identification process of departing members, and testing a complex relationship between flux in coordination and team performance.
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https://doi.org/10.1287/orsc.1090.0469


### Tables

**Table 1. Conceptualization of Membership Change**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Definition or description about membership change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ziller (1965)</td>
<td>“members may be added, removed, or replaced.”</td>
</tr>
<tr>
<td>Arrow &amp; McGrath (1995)</td>
<td>“includes any departure from the status quo ante in the boundaries of the group and in the positioning of members in relation to those boundaries and to one another. It includes fleeting changes (temporary absence from a group meeting, temporary change in leadership) and permanent changes such as turnover.”</td>
</tr>
<tr>
<td>Choi &amp; Thompson (2005)</td>
<td>“occurs as new members join the group and a subset of existing members leaves the group (cf. Ziller, 1965).”</td>
</tr>
<tr>
<td>Lewis et al. (2007)</td>
<td>“when newcomers join a group or one or more original members leave the group (Ziller, 1965).”</td>
</tr>
<tr>
<td>Hirst (2009)</td>
<td>“occurs as new members join the group and a subset of existing members leaves the group (Ziller, 1965).”</td>
</tr>
<tr>
<td>Baer et al. (2010)</td>
<td>“occurs when a new member joins and an existing member departs a group (Choi &amp; Thompson, 2005; Ziller, 1965).”</td>
</tr>
<tr>
<td>Summers et al. (2012)</td>
<td>“members change for many reasons (e.g., new opportunities for a departing member, or low performance, or lack of critical skills).”</td>
</tr>
<tr>
<td>Stuart (2017)</td>
<td>“the entry and exit of individuals from groups or teams (Ziller, 1965).”</td>
</tr>
<tr>
<td>Construct</td>
<td>Authors</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Group longevity</td>
<td>Katz (1982)</td>
</tr>
<tr>
<td>Familiarity</td>
<td>Goodman &amp; Leyden (1991)</td>
</tr>
<tr>
<td>Familiar teams</td>
<td>Hollenbeck et al. (1995)</td>
</tr>
<tr>
<td>Stable teams</td>
<td>Hollenbeck et al. (1995)</td>
</tr>
<tr>
<td>Membership dynamics</td>
<td>Arrow &amp; McGrath (1995)</td>
</tr>
<tr>
<td>Membership continuity</td>
<td>Arrow &amp; McGrath (1995)</td>
</tr>
<tr>
<td>Membership stability</td>
<td>Arrow &amp; McGrath (1995)</td>
</tr>
<tr>
<td>Familiar teams</td>
<td>Harrison et al. (2003)</td>
</tr>
<tr>
<td>Team fluidity</td>
<td>Dineen &amp; Noe (2003)</td>
</tr>
<tr>
<td>Team downsizing</td>
<td>DeRue et al. (2008)</td>
</tr>
<tr>
<td>Team viability</td>
<td>Mathieu et al. (2008)</td>
</tr>
<tr>
<td>Team familiarity</td>
<td>Huckman et al. (2009)</td>
</tr>
<tr>
<td>Team turnover</td>
<td>Van der Vegt et al. (2010)</td>
</tr>
<tr>
<td>Temporal stability</td>
<td>Hollenbeck et al. (2012)</td>
</tr>
<tr>
<td>Member replacement</td>
<td>Bunderson et al. (2014)</td>
</tr>
<tr>
<td>Dynamic team membership</td>
<td>Mathieu et al. (2014)</td>
</tr>
<tr>
<td>Stability</td>
<td>Valentine &amp; Edmondson (2014)</td>
</tr>
<tr>
<td>Team fluidity</td>
<td>Mortensen &amp; Haas (2018)</td>
</tr>
</tbody>
</table>
## Table 3. Operationalization of Membership Change In Experimental Research

<table>
<thead>
<tr>
<th>Authors</th>
<th>Construct</th>
<th>Operationalization</th>
<th>Who was changed?</th>
<th>Duration</th>
<th>Timing</th>
<th>Initiator</th>
<th>Pre-noticed?</th>
<th>Rationale of change provided?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrow &amp; McGrath (1993); Arrow (1997); O’Connor et al. (1993) (shared the same data)</td>
<td>membership change</td>
<td>Voluntary drop-out, absences, and member replacement</td>
<td>unspecified</td>
<td>a mix of temporary and permanent change</td>
<td>throughout the course; week 11-12 out of week-13 long project</td>
<td>researchers &amp; members</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Hollenbeck et al. (1995) (study 1)</td>
<td>stability of team membership</td>
<td>one member was replaced between teams</td>
<td>randomly chosen</td>
<td>until the task completion</td>
<td>midpoint of the simulation</td>
<td>researchers</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Gruenfeld et al. (2000)</td>
<td>temporary membership change</td>
<td>one member was replaced between teams</td>
<td>randomly chosen</td>
<td>temporary (two weeks out of 10-week course)</td>
<td>seventh week of 10-week course</td>
<td>researchers</td>
<td>yes (one week before the change)</td>
<td>no</td>
</tr>
<tr>
<td>Levine &amp; Choi (2004)</td>
<td>membership change</td>
<td>one member was replaced between teams</td>
<td>role of a replaced member differed across conditions</td>
<td>until the task completion</td>
<td>midpoint of a two-day-long task</td>
<td>researchers</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Kane et al. (2005)</td>
<td>personnel rotation</td>
<td>one member was replaced between teams</td>
<td>randomly chosen</td>
<td>until the task completion</td>
<td>after training, before main performance</td>
<td>researchers</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Choi &amp; Thompson (2005) (study 1)</td>
<td>membership change</td>
<td>one member was replaced between teams</td>
<td>randomly chosen</td>
<td>until the task completion</td>
<td>midpoint of a two-parted task</td>
<td>researchers</td>
<td>yes (at the beginning of an experiment)</td>
<td>yes (to simulate real-life challenges)</td>
</tr>
<tr>
<td>Choi &amp; Thompson (2005) (study 2)</td>
<td>membership change</td>
<td>one member was replaced between teams</td>
<td>randomly chosen</td>
<td>until the task completion</td>
<td>midpoint of a two-parted task</td>
<td>researchers</td>
<td>yes (at the beginning of an experiment)</td>
<td>yes (to simulate real-life challenges)</td>
</tr>
<tr>
<td>Dineen (2005)</td>
<td>membership change</td>
<td>one or two members were replaced between teams</td>
<td>randomly chosen</td>
<td>until the task completion</td>
<td>sporadic throughout the experiment</td>
<td>researchers</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Lewis et al. (2007)</td>
<td>membership change</td>
<td>either one or all members were replaced between teams</td>
<td>randomly chosen</td>
<td>until the task completion</td>
<td>after training, before main performance</td>
<td>researchers</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Nemeth &amp; Ormiston (2007)</td>
<td>membership change</td>
<td>all members were replaced between teams</td>
<td>all members in a team</td>
<td>until the task completion</td>
<td>midpoint of a two-parted task</td>
<td>researchers</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>DeRue et al. (2008)</td>
<td>downsizing</td>
<td>one member was removed</td>
<td>role of a departing member differed across conditions</td>
<td>until the task completion</td>
<td>midpoint of a two-parted task</td>
<td>researchers</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Authors</td>
<td>Construct</td>
<td>Operationalization</td>
<td>Who was changed?</td>
<td>Duration</td>
<td>Timing</td>
<td>Initiator</td>
<td>Pre-noticed?</td>
<td>Rationale of change provided?</td>
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<tr>
<td>Rink &amp; Ellemers (2009) (study 2)</td>
<td>temporary and permanent member entry</td>
<td>either temporary or permanent member was added to a team randomly chosen</td>
<td>temporary and permanent midpoint of a two-parted task</td>
<td>researchers</td>
<td>no</td>
<td>yes (to simulate real-life challenges)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rink &amp; Ellemers (2009) (study 3)</td>
<td>temporary and permanent member entry</td>
<td>either temporary or permanent member was added to a team randomly chosen</td>
<td>temporary and permanent after second task in a three-parted-task</td>
<td>researchers</td>
<td>no</td>
<td>yes (to simulate real-life challenges)</td>
<td></td>
<td></td>
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<tr>
<td>Woolley (2009)</td>
<td>membership change</td>
<td>one member was replaced with a newcomer randomly chosen until the task completion</td>
<td>mid-point of 40-minute-long task</td>
<td>researchers</td>
<td>no</td>
<td>yes (worked on something else)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bae et al. (2010)</td>
<td>membership change</td>
<td>one member was replaced between teams randomly chosen until the task completion</td>
<td>midpoint of a two-parted task</td>
<td>researchers</td>
<td>yes</td>
<td>yes (to simulate real-life challenges)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kane (2010)</td>
<td>personnel movement</td>
<td>one member was replaced between teams a member in a specific role until the task completion</td>
<td>Mid-point of four-parted task</td>
<td>researchers</td>
<td>no</td>
<td>no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gorman &amp; Cooke (2011)</td>
<td>membership mix</td>
<td>all members were replaced between teams all members in a team until the task completion</td>
<td>midpoint of a two-parted task</td>
<td>researchers</td>
<td>no</td>
<td>no</td>
<td></td>
<td></td>
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<tr>
<td>Summers et al. (2012)</td>
<td>membership change</td>
<td>one member was replaced between teams NA until the task completion mid-point of four-week-long simulation</td>
<td>researchers</td>
<td>no</td>
<td>no</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bunderson et al. (2014)</td>
<td>membership replacement</td>
<td>one member was replaced between teams randomly chosen until the task completion</td>
<td>mid-point of three-week-long simulation</td>
<td>researchers</td>
<td>yes (at the beginning of a simulation) yes (to simulate real-life challenges)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christian et al. (2014)</td>
<td>unplanned member loss</td>
<td>one member was removed criticality of roles differed across conditions until the task completion uncertain</td>
<td>researchers</td>
<td>no</td>
<td>no</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kane and Rink (2015) (study 1)</td>
<td>membership change</td>
<td>one member was removed and a newcomer (confederate) joined a departing member was in a specific role and a newcomer was a confederate temporary mid-point of six-round task</td>
<td>researchers</td>
<td>no</td>
<td>yes (to simulate real-life challenges)</td>
<td></td>
<td></td>
<td></td>
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<td>Kane and Rink (2015) (study 2)</td>
<td>membership change</td>
<td>(scenario vignette says) a newcomer joined a team NA NA NA NA</td>
<td>researchers</td>
<td>no</td>
<td>yes (to simulate real-life challenges)</td>
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<td>Kane and Rink (2016) (study 1)</td>
<td>newcomer entry</td>
<td>(scenario vignette says) a departing member was in a specific role and a newcomer was a confederate temporary or permanent mid-point of six-round task</td>
<td>researchers</td>
<td>no</td>
<td>yes (to simulate real-life challenges)</td>
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<td>Kane and Rink (2016) (study 2)</td>
<td>membership change</td>
<td>one member was removed and a newcomer (confederate) joined temporary or permanent mid-point of six-round task</td>
<td>researchers</td>
<td>no</td>
<td>yes (to simulate real-life challenges)</td>
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Table 4. Measurement of Membership Change in Field and Archival Research

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<th>Authors</th>
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<th>Duration</th>
<th>Timing</th>
<th>Initiator</th>
<th>Context</th>
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<td>Katz (1982)</td>
<td>field survey, archival data</td>
<td>group longevity</td>
<td>the average length of time project members had worked together</td>
<td>unspecified</td>
<td>unspecified</td>
<td>unspecified</td>
<td>unspecified</td>
<td>R&amp;D teams</td>
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<td>Chandler et al. (2004)</td>
<td>field survey</td>
<td>departures, additions</td>
<td>asked firm owners about member additions and departures</td>
<td>unspecified</td>
<td>permanent</td>
<td>sporadic</td>
<td>unspecified</td>
<td>venture firms</td>
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<tr>
<td>Reagans et al. (2005)</td>
<td>archival data</td>
<td>team experience</td>
<td>the number of previous working together</td>
<td>unspecified</td>
<td></td>
<td></td>
<td>unspecified</td>
<td>Surgical teams</td>
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<td>Kacmar et al. (2006)</td>
<td>archival data</td>
<td>turnover</td>
<td>the monthly percentage of turnover of hourly employees</td>
<td>hourly employees</td>
<td>permanent</td>
<td>sporadic</td>
<td>both voluntary and involuntary turnover</td>
<td>fastfood restaurants</td>
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<tr>
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<td>field survey</td>
<td>member addition</td>
<td>asked firm owners about member additions</td>
<td>unspecified</td>
<td>permanent</td>
<td>sporadic</td>
<td>management</td>
<td>venture firms</td>
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<td>Hirst (2009)</td>
<td>field survey</td>
<td>membership change</td>
<td>project leaders reported the number of times team members left and were replaced during the past 6 months</td>
<td>voluntary departures</td>
<td>permanent</td>
<td>sporadic</td>
<td>individual members</td>
<td>R&amp;D teams</td>
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<td>Huckman et al. (2009)</td>
<td>field survey, archival data</td>
<td>familiarity</td>
<td>the average number of times that each team member has worked with every other member of the team</td>
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<td></td>
<td>unspecified</td>
<td>software project teams</td>
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<td>Smith-Jentsch et al. (2009)</td>
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<td>familiarity</td>
<td>self-reports on teammates’ experience working together</td>
<td>unspecified</td>
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<td></td>
<td>unspecified</td>
<td>air traffic controllers</td>
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<td>Van der Vegt et al. (2010)</td>
<td>field survey, archival data</td>
<td>team turnover</td>
<td>divided the number of departures between t1 and t2 by group size at t1</td>
<td>voluntary departures</td>
<td>permanent</td>
<td></td>
<td>individual members</td>
<td>automobile production teams</td>
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<td>Stuart &amp; Moore (2017)</td>
<td>archival data</td>
<td>unexpected exit</td>
<td>injury data</td>
<td>high context-specific expertise</td>
<td>unknown</td>
<td>unplanned</td>
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<td>hockey teams</td>
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<td>archival data</td>
<td>unexpected exit</td>
<td>injury data</td>
<td>hockey players</td>
<td>unknown</td>
<td>unplanned</td>
<td>NA</td>
<td>hockey teams</td>
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<tr>
<td>De Stefano et al. (2018)</td>
<td>archival data</td>
<td>planned turnover</td>
<td>the number of temporary workers leaving the unit due to contract expiration divided by the average number of temporary workers</td>
<td>temporary workers</td>
<td>temporary</td>
<td>sporadic</td>
<td>contract</td>
<td>food and beverage stores</td>
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</table>
Table 5. Means, Standard Deviations, and Correlations of Main Study Variables

| Variable                                                        | M   | SD  | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   |
|                                                               |     |     |      |      |      |      |      |      |      |      |      |      |      |
| 1. Departing Member’s Team Identification (round 1)            | 4.74| 1.47|      |      |      |      |      |      |      |      |      |      |      |
| 2. Departing Member’s Team Identification (round 2)            | 5.19| 1.46| .86**|      |      |      |      |      |      |      |      |      |      |
| 3. Departing Member’s Team Identification (round 3 pre-change)| 5.31| 1.47| .76**| .90**|      |      |      |      |      |      |      |      |      |
| 4. Flux in Coordination (round 3 pre-change)                   | 2.91| 0.87| .00  | .04  | -.01 |      |      |      |      |      |      |      |      |
| 5. Coordination Effectiveness (round 1)                        | 6.04| 0.69| .49**| .44**| .44**| .15  |      |      |      |      |      |      |      |
| 6. Coordination Effectiveness (round 2)                        | 6.38| 0.50| .53**| .53**| .51**| .12  | .71**|      |      |      |      |      |      |
| 7. Coordination Effectiveness (round 3 pre-change)             | 6.20| 0.57| .59**| .60**| .62**| .04  | .62**| .67**|      |      |      |      |      |
| 8. Team Performance (round 1)                                  | 3.13| 0.68| .24  | .19  | .13  | .27  | .34* | .43**| .29* |      |      |      |      |
| 9. Team Performance (round 2)                                  | 3.10| 0.67| .04  | .01  | -.06 | .26  | .20  | .29* | .16  | .89**|      |      |      |
| 10. Team Performance (round 3)                                 | 3.10| 0.65| .16  | .13  | .08  | .33* | .28* | .33* | .21  | .91**| .88**|      |      |
| 11. Team Performance (round 4)                                 | 3.09| 0.59| .20  | .17  | .15  | .22  | .26  | .26  | .21  | .85**| .86**| .87**|      |

Note. N = 51 three-person teams. M and SD are used to represent mean and standard deviation, respectively. † indicates p < .10; * indicates p < .05; ** indicates p < .01
Table 6. Means, Standard Deviations of Control Variables and their Correlations with Main Study Variables

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<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Departing Member's Team Identification (round 1)</th>
<th>Departing Member's Team Identification (round 2)</th>
<th>Departing Member's Team Identification (round 3 pre-change)</th>
<th>Flux in Coordination (round 3 pre-change)</th>
<th>Coordination Effectiveness (round 1)</th>
<th>Coordination Effectiveness (round 2)</th>
<th>Coordination Effectiveness (round 3 pre-change)</th>
<th>Team Performance (round 1)</th>
<th>Team Performance (round 2)</th>
<th>Team Performance (round 3)</th>
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<td>1. Team Extraversion</td>
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<td>0.26†</td>
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<td>0.30*</td>
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<td>0.28†</td>
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*Note. N= 52 three-person teams. M and SD are used to represent mean and standard deviation, respectively.† indicates p < .10; * indicates p < .05; ** indicates p < .01
Table 7. Results of Growth Modeling of Departing Member’s Team Identification

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<th>SE</th>
<th>Model 2 B</th>
<th>SE</th>
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<td>(Intercept)</td>
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<td>(0.13)</td>
<td>-0.06</td>
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<td>0.01</td>
<td>(0.20)</td>
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<td>(0.24)</td>
<td>0.20</td>
<td>(0.24)</td>
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<td>(0.19)</td>
<td>0.25</td>
<td>(0.19)</td>
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<td>(0.14)</td>
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<td>(0.59)</td>
<td>0.00</td>
<td>(0.59)</td>
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<tr>
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</table>

*Note.* N = 156 nested in 52 teams. Time is coded as Round 1 = 1, Round 2 = 2, Round 3 pre-change = 2.5. Standard errors are in parentheses. † indicates p < .10; * indicates p < .05; ** indicates p < .01
Table 8. Results of Growth Modeling of Team Coordination Effectiveness

<table>
<thead>
<tr>
<th>Fixed Effects</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>(Intercept)</td>
<td>0.10</td>
<td>(-1.77)</td>
</tr>
<tr>
<td>Team Extraversion</td>
<td>0.14†</td>
<td>(0.09)</td>
</tr>
<tr>
<td>Team Agreeableness</td>
<td>0.21*</td>
<td>(0.10)</td>
</tr>
<tr>
<td>Team Conscientiousness</td>
<td>0.39**</td>
<td>(0.12)</td>
</tr>
<tr>
<td>Team Emotional Stability</td>
<td>-0.02</td>
<td>(0.09)</td>
</tr>
<tr>
<td>Team Openness</td>
<td>0.06</td>
<td>(0.12)</td>
</tr>
<tr>
<td>Team Gender Diversity</td>
<td>-0.04</td>
<td>(0.13)</td>
</tr>
<tr>
<td>Team Age</td>
<td>0.09</td>
<td>(0.08)</td>
</tr>
<tr>
<td>Team English</td>
<td>-0.16</td>
<td>(0.34)</td>
</tr>
<tr>
<td>Time</td>
<td>0.14**</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Time^2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Random Effects</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.59</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>Log-Likelihood</td>
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</tr>
<tr>
<td>Akaike Information Criterion</td>
<td>250.28</td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 156 nested in 52 teams. Time is coded as Round 1 = 1, Round 2 = 2, Round 3 pre-change = 2.5. Standard errors are in parentheses. † indicates p < .10; * indicates p < .05; ** indicates p < .01
Table 9. Hierarchical Regression Results Predicting Team Performance in Round 4

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>2.64 **</td>
<td>2.38 **</td>
</tr>
<tr>
<td></td>
<td>(0.29)</td>
<td>(0.80)</td>
</tr>
<tr>
<td>Flux in Coordination</td>
<td>0.15</td>
<td>0.35</td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>(0.58)</td>
</tr>
<tr>
<td>Flux in Coordination Squared</td>
<td></td>
<td>-0.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.10)</td>
</tr>
<tr>
<td>Observations</td>
<td>51</td>
<td>51</td>
</tr>
<tr>
<td>R²</td>
<td>0.05</td>
<td>0.05</td>
</tr>
</tbody>
</table>

*Note.* Standard errors in parentheses; † indicates $p < .10$; * indicates $p < .05$; ** indicates $p < .01$;
Table 10. Results of Growth Modeling of Team Performance

<table>
<thead>
<tr>
<th>Fixed Effects</th>
<th>Model 1</th>
<th>SE</th>
<th>Model 2</th>
<th>SE</th>
<th>Model 3 Round 3 Team Performance</th>
<th>SE</th>
<th>Model 3 Round 4 Team Performance</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>3.09**</td>
<td>(1.03)</td>
<td>3.11**</td>
<td>(1.04)</td>
<td>4.24**</td>
<td>(1.13)</td>
<td>4.24**</td>
<td>(1.13)</td>
</tr>
<tr>
<td>Team Extraversion</td>
<td>0.01</td>
<td>(0.04)</td>
<td>0.01</td>
<td>(0.04)</td>
<td>-0.04</td>
<td>(0.05)</td>
<td>0.06</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Team Agreeableness</td>
<td>0.01</td>
<td>(0.07)</td>
<td>0.01</td>
<td>(0.07)</td>
<td>-0.07</td>
<td>(0.07)</td>
<td>-0.08</td>
<td>(0.07)</td>
</tr>
<tr>
<td>Team Conscientiousness</td>
<td>0.14*</td>
<td>(0.06)</td>
<td>0.14*</td>
<td>(0.06)</td>
<td>0.12†</td>
<td>(0.07)</td>
<td>0.14*</td>
<td>(0.07)</td>
</tr>
<tr>
<td>Team Emotional Stability</td>
<td>-0.04</td>
<td>(0.06)</td>
<td>-0.04</td>
<td>(0.06)</td>
<td>0.02</td>
<td>(0.06)</td>
<td>0.03</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Team Openness</td>
<td>0.01</td>
<td>(0.06)</td>
<td>0.01</td>
<td>(0.06)</td>
<td>0.00</td>
<td>(0.07)</td>
<td>-0.03</td>
<td>(0.07)</td>
</tr>
<tr>
<td>Team Gender Diversity</td>
<td>0.17*</td>
<td>(0.09)</td>
<td>0.17*</td>
<td>(0.09)</td>
<td>0.16</td>
<td>(0.10)</td>
<td>0.04</td>
<td>(0.10)</td>
</tr>
<tr>
<td>Team Age</td>
<td>-0.06</td>
<td>(0.04)</td>
<td>-0.06</td>
<td>(0.04)</td>
<td>-0.06</td>
<td>(0.05)</td>
<td>-0.04</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Team English</td>
<td>0.39*</td>
<td>(0.20)</td>
<td>0.39*</td>
<td>(0.20)</td>
<td>0.73**</td>
<td>(0.24)</td>
<td>0.79**</td>
<td>(0.25)</td>
</tr>
<tr>
<td>Time</td>
<td>-0.01</td>
<td>(0.02)</td>
<td>-0.03</td>
<td>(0.08)</td>
<td>-0.57</td>
<td>(0.53)</td>
<td>-0.57</td>
<td>(0.53)</td>
</tr>
<tr>
<td>Time^2</td>
<td>0.00</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Change Flux in Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.06</td>
<td>(0.04)</td>
<td>0.02</td>
<td>(0.25)</td>
</tr>
<tr>
<td>Pre-Change Flux in Coordination^2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.01</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Log-Likelihood</td>
<td>-86.53</td>
<td></td>
<td>-89.71</td>
<td></td>
<td></td>
<td></td>
<td>-48.69</td>
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</tr>
<tr>
<td>Akaike Information Criterion</td>
<td>197.06</td>
<td></td>
<td>205.42</td>
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<td></td>
<td>185.38</td>
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</tr>
</tbody>
</table>

*Note. N = 204 nested in 51 teams. Time is coded as Round 1 = 1, Round 2 = 2, Round 3 = 3, and Round 4 = 4. Standard errors are in parentheses. † indicates p < .10; * indicates p < .05; ** indicates p < .01*
Table 11. Correlations between Departing Member’s Team Identification, Task Involvement, Interpersonal Attachment and Other Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Departing Member’s Team Identification (round 3 pre-change)</th>
<th>Departing Member’s Task Involvement (round 3 pre-change)</th>
<th>Departing Member’s Interpersonal Attachment (round 3 pre-change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Coordination Effectiveness (round 1)</td>
<td>0.45**</td>
<td>0.10</td>
<td>0.28*</td>
</tr>
<tr>
<td>2. Coordination Effectiveness (round 2)</td>
<td>0.51**</td>
<td>0.13</td>
<td>0.34*</td>
</tr>
<tr>
<td>3. Team Positive Affect (round 1)</td>
<td>0.28*</td>
<td>0.20</td>
<td>0.52**</td>
</tr>
<tr>
<td>4. Team Positive Affect (round 2)</td>
<td>0.29*</td>
<td>0.31*</td>
<td>0.54**</td>
</tr>
<tr>
<td>5. Small Talk Volume (ice-breaking session)</td>
<td>0.18</td>
<td>-0.01</td>
<td>0.15</td>
</tr>
<tr>
<td>6. Team Effort (round 1)</td>
<td>0.24†</td>
<td>0.09</td>
<td>0.33*</td>
</tr>
<tr>
<td>7. Team Effort (round 2)</td>
<td>0.25†</td>
<td>0.05</td>
<td>0.24†</td>
</tr>
<tr>
<td>8. Departing Member Extraversion</td>
<td>0.02</td>
<td>0.10</td>
<td>0.30*</td>
</tr>
<tr>
<td>9. Departing Member Agreeableness</td>
<td>-0.04</td>
<td>0.00</td>
<td>0.04</td>
</tr>
<tr>
<td>10. Departing Member Conscientiousness</td>
<td>0.09</td>
<td>0.04</td>
<td>0.24†</td>
</tr>
<tr>
<td>11. Departing Member Emotional Stability</td>
<td>0.11</td>
<td>0.04</td>
<td>0.05</td>
</tr>
<tr>
<td>12. Departing Member Openness</td>
<td>0.20</td>
<td>0.11</td>
<td>0.15</td>
</tr>
<tr>
<td>13. Departing Member Female</td>
<td>-0.22</td>
<td>-0.05</td>
<td>-0.31*</td>
</tr>
<tr>
<td>14. Departing Member Age</td>
<td>0.09</td>
<td>-0.03</td>
<td>0.00</td>
</tr>
<tr>
<td>15. Departing Member English</td>
<td>-0.03</td>
<td>-0.04</td>
<td>-0.02</td>
</tr>
</tbody>
</table>

Note. N = 52 teams. Measurement timings are in parentheses. † indicates p < .10; * indicates p < .05; ** indicates p < .01
<table>
<thead>
<tr>
<th>Variable</th>
<th>Flux in Coordination (round 3 pre-change)</th>
<th>Small Talk Volume (ice-breaking session)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Team Positive Affect (round 1)</td>
<td>0.06</td>
<td>0.21</td>
</tr>
<tr>
<td>2. Team Positive Affect (round 2)</td>
<td>0.25†</td>
<td>0.31*</td>
</tr>
<tr>
<td>3. Team Positive Affect (round 3 pre-change)</td>
<td>0.59****</td>
<td>0.31*</td>
</tr>
<tr>
<td>4. Team Positive Affect (round 3 post-change)</td>
<td>0.47***</td>
<td>0.24†</td>
</tr>
<tr>
<td>5. Team Positive Affect (round 4)</td>
<td>0.28+</td>
<td>0.16</td>
</tr>
<tr>
<td>6. Team Effort (round 1)</td>
<td>0.22</td>
<td>0.11</td>
</tr>
<tr>
<td>7. Team Effort (round 2)</td>
<td>0.29*</td>
<td>0.06</td>
</tr>
<tr>
<td>8. Team Effort (round 3 pre-change)</td>
<td>0.24+</td>
<td>0.34*</td>
</tr>
<tr>
<td>9. Team Effort (round 3 post-change)</td>
<td>0.21</td>
<td>0.13</td>
</tr>
<tr>
<td>10. Team Effort (round 4)</td>
<td>0.34*</td>
<td>0.15</td>
</tr>
<tr>
<td>11. Task-related Inertia (round 1)</td>
<td>0.04</td>
<td>0.05</td>
</tr>
<tr>
<td>12. Task-related Inertia (round 2)</td>
<td>0.26†</td>
<td>-0.08</td>
</tr>
<tr>
<td>13. Task-related Inertia (round 3 pre-change)</td>
<td>0.16</td>
<td>0.01</td>
</tr>
<tr>
<td>14. Task-related Inertia (round 3 post-change)</td>
<td>0.35*</td>
<td>-0.05</td>
</tr>
<tr>
<td>15. Task-related Inertia (round 4)</td>
<td>0.21</td>
<td>0.04</td>
</tr>
<tr>
<td>16. Newcomer Acceptance (round 3 post-change)</td>
<td>0.28†</td>
<td>-0.05</td>
</tr>
<tr>
<td>17. Newcomer Task Involvement (round 3 post-change)</td>
<td>0.19</td>
<td>0.00</td>
</tr>
<tr>
<td>18. Newcomer Interpersonal Attachment (round 3 post-change)</td>
<td>-0.05</td>
<td>0.26†</td>
</tr>
<tr>
<td>19. Team Extraversion (pre-change)</td>
<td>0.13</td>
<td>0.41**</td>
</tr>
<tr>
<td>20. Team Agreeableness (pre-change)</td>
<td>0.02</td>
<td>0.05</td>
</tr>
<tr>
<td>21. Team Conscientiousness (pre-change)</td>
<td>0.10</td>
<td>0.21</td>
</tr>
<tr>
<td>22. Team Emotional Stability (pre-change)</td>
<td>-0.08</td>
<td>-0.01</td>
</tr>
<tr>
<td>23. Team Openness (pre-change)</td>
<td>-0.01</td>
<td>0.08</td>
</tr>
</tbody>
</table>

*Note. N = 52 teams. Measurement timings are in parentheses. † indicates p < .10; * indicates p < .05; ** indicates p < .01*
<table>
<thead>
<tr>
<th>Variable</th>
<th>Team Performance (round 1)</th>
<th>Team Performance (round 2)</th>
<th>Team Performance (round 3)</th>
<th>Team Performance (round 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Team Positive Affect (round 1)</td>
<td>0.31*</td>
<td>0.20</td>
<td>0.21</td>
<td>0.28*</td>
</tr>
<tr>
<td>2. Team Positive Affect (round 2)</td>
<td>0.38**</td>
<td>0.29*</td>
<td>0.32*</td>
<td>0.38**</td>
</tr>
<tr>
<td>3. Team Positive Affect (round 3 pre-change)</td>
<td>0.33*</td>
<td>0.27†</td>
<td>0.35*</td>
<td>0.25†</td>
</tr>
<tr>
<td>4. Team Positive Affect (round 3 post-change)</td>
<td>0.38**</td>
<td>0.35*</td>
<td>0.41**</td>
<td>0.40**</td>
</tr>
<tr>
<td>5. Team Positive Affect (round 4)</td>
<td>0.20</td>
<td>0.11</td>
<td>0.23†</td>
<td>0.23</td>
</tr>
<tr>
<td>6. Team Effort (round 1)</td>
<td>0.24†</td>
<td>0.13</td>
<td>0.22</td>
<td>0.19</td>
</tr>
<tr>
<td>7. Team Effort (round 2)</td>
<td>0.26†</td>
<td>0.20</td>
<td>0.22</td>
<td>0.24†</td>
</tr>
<tr>
<td>8. Team Effort (round 3 pre-change)</td>
<td>0.30*</td>
<td>0.22</td>
<td>0.22</td>
<td>0.29*</td>
</tr>
<tr>
<td>9. Team Effort (round 3 post-change)</td>
<td>0.12</td>
<td>0.02</td>
<td>0.04</td>
<td>0.00</td>
</tr>
<tr>
<td>10. Team Effort (round 4)</td>
<td>0.15</td>
<td>0.11</td>
<td>0.19</td>
<td>0.21</td>
</tr>
<tr>
<td>11. Small Talk Volume (ice-breaking session)</td>
<td>0.23</td>
<td>0.19</td>
<td>0.25†</td>
<td>0.33*</td>
</tr>
<tr>
<td>12. Newcomer Acceptance (round 3 pre-change)</td>
<td>0.11</td>
<td>0.12</td>
<td>0.12</td>
<td>0.19</td>
</tr>
<tr>
<td>13. Newcomer Task Involvement (round 3 pre-change)</td>
<td>0.33*</td>
<td>0.22</td>
<td>0.28*</td>
<td>0.15</td>
</tr>
<tr>
<td>14. Newcomer Interpersonal Attachment (round 3 pre-change)</td>
<td>0.18</td>
<td>0.04</td>
<td>0.14</td>
<td>0.14</td>
</tr>
<tr>
<td>15. Team Extraversion</td>
<td>0.34*</td>
<td>0.44**</td>
<td>0.32*</td>
<td>0.41**</td>
</tr>
<tr>
<td>16. Team Agreeableness</td>
<td>0.19</td>
<td>0.06</td>
<td>-0.08</td>
<td>-0.09</td>
</tr>
<tr>
<td>17. Team Conscientiousness</td>
<td>0.19</td>
<td>0.19</td>
<td>0.05</td>
<td>0.07</td>
</tr>
<tr>
<td>18. Team Emotional Stability</td>
<td>-0.11</td>
<td>-0.15</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>19. Team Openness</td>
<td>0.25†</td>
<td>0.28†</td>
<td>-0.04</td>
<td>-0.04</td>
</tr>
<tr>
<td>20. Team Gender Diversity</td>
<td>0.35*</td>
<td>0.49**</td>
<td>0.21</td>
<td>0.14</td>
</tr>
<tr>
<td>21. Team Age</td>
<td>0.03</td>
<td>-0.04</td>
<td>-0.14</td>
<td>-0.16</td>
</tr>
<tr>
<td>22. Team English</td>
<td>0.18</td>
<td>0.15</td>
<td>0.24†</td>
<td>0.23</td>
</tr>
</tbody>
</table>

*Note. N = 52 teams. Measurement timings are in parentheses. † indicates p < .10; * indicates p < .05; ** indicates p < .01*
Table 14. Correlations between Team Positive Affect and Other Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Team Positive Affect (round 1)</th>
<th>Team Positive Affect (round 2)</th>
<th>Team Positive Affect (round 3 pre-change)</th>
<th>Team Positive Affect (round 3 post-change)</th>
<th>Team Positive Affect (round 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Team Identification (round 1)</td>
<td>0.42**</td>
<td>0.45**</td>
<td>0.26†</td>
<td>0.33*</td>
<td>0.27†</td>
</tr>
<tr>
<td>2. Team Identification (round 2)</td>
<td>0.49**</td>
<td>0.50**</td>
<td>0.28*</td>
<td>0.30*</td>
<td>0.28*</td>
</tr>
<tr>
<td>3. Team Identification (round 3 pre-change)</td>
<td>0.46**</td>
<td>0.53**</td>
<td>0.38**</td>
<td>0.36*</td>
<td>0.33*</td>
</tr>
<tr>
<td>4. Team Identification (round 3 post-change)</td>
<td>0.45**</td>
<td>0.45**</td>
<td>0.37**</td>
<td>0.23</td>
<td>0.39**</td>
</tr>
<tr>
<td>5. Team Identification (round 4)</td>
<td>0.46**</td>
<td>0.45**</td>
<td>0.36**</td>
<td>0.32*</td>
<td>0.38**</td>
</tr>
<tr>
<td>6. Newcomer Acceptance (round 3 post-change)</td>
<td>0.06</td>
<td>0.14</td>
<td>0.08</td>
<td>0.28*</td>
<td>0.22</td>
</tr>
<tr>
<td>7. Newcomer Task Involvement (round 3 post-change)</td>
<td>0.07</td>
<td>0.20</td>
<td>0.17</td>
<td>0.25†</td>
<td>0.31*</td>
</tr>
<tr>
<td>8. Newcomer Interpersonal Attachment (round 3 post-change)</td>
<td>0.17</td>
<td>0.12</td>
<td>0.02</td>
<td>0.16</td>
<td>0.14</td>
</tr>
<tr>
<td>9. Team Extraversion</td>
<td>0.32*</td>
<td>0.27†</td>
<td>0.29*</td>
<td>0.35*</td>
<td>0.26†</td>
</tr>
<tr>
<td>10. Team Agreeableness</td>
<td>0.28†</td>
<td>0.25†</td>
<td>0.12</td>
<td>0.20</td>
<td>0.14</td>
</tr>
<tr>
<td>11. Team Conscientiousness</td>
<td>-0.11</td>
<td>0.05</td>
<td>0.06</td>
<td>0.01</td>
<td>-0.1</td>
</tr>
<tr>
<td>12. Team Emotional Stability</td>
<td>0.01</td>
<td>0.02</td>
<td>-0.01</td>
<td>-0.13</td>
<td>-0.13</td>
</tr>
<tr>
<td>13. Team Openness</td>
<td>0.34*</td>
<td>0.29*</td>
<td>0.10</td>
<td>-0.15</td>
<td>-0.06</td>
</tr>
<tr>
<td>14. Team Gender Diversity</td>
<td>-0.10</td>
<td>-0.11</td>
<td>-0.10</td>
<td>0.13</td>
<td>0.02</td>
</tr>
<tr>
<td>15. Team Age</td>
<td>0.04</td>
<td>0.12</td>
<td>0.01</td>
<td>0.06</td>
<td>-0.03</td>
</tr>
<tr>
<td>16. Team English</td>
<td>-0.23†</td>
<td>-0.06</td>
<td>0.06</td>
<td>0.25†</td>
<td>0.38**</td>
</tr>
</tbody>
</table>

*Note. N = 52 teams. Measurement timings are in parentheses. † indicates p < .10; * indicates p < .05; ** indicates p < .01*
Figures

Figure 1. Antecedent and Consequence of Flux in Coordination During Pre-Change Period
Figure 2. Timeline of the Experiment

Note. SM = Staying Member. DM = Departing Member. NM = New Member.
Figure 3. Longitudinal Pattern of a Departing Member’s Team Identification
Figure 4. Longitudinal Pattern of Coordination Effectiveness
Figure 5. Mediation Effect of Coordination Effectiveness on the Relationship between Flux in Coordination and Short-term Team Performance

Note. Unstandardized coefficients are displayed, with standard errors in parentheses.
Figure 6. Relationship Between Pre-Change Period Flux in Coordination and Round 4 Team Performance
Figure 7. Longitudinal Pattern of Team Performance
Appendices

Appendix A. Survey Scales

Please rate the following items by reflecting on your experience during this round. (1 = Strongly Disagree; 7 = Strongly Agree)

**Coordination Effectiveness** (adapted from Hoegl et al., 2004)
1. The work done was closely harmonized.
2. My team avoided duplication of effort.
3. Tasks were well coordinated in my team.

**Team Identification** (adapted from Van Der Vegt & Bunderson, 2005)
1. I feel emotionally attached to my team.
2. I feel a strong sense of belonging to my team.
3. I feel as if the team's problems are my own.
4. I feel like part of the family in my team.

**Task-related Inertia** (adapted from Liao et al., 2008; Oreg, 2003)
1. I feel defensive about changing how my team does our work.
2. I think my team’s current work process is effective enough and therefore does not require any changes.
3. I’d rather maintain and repeat my team’s current work process than change it.
4. I want to incorporate new skills and ideas to improve my team’s current performance. (reverse-coded)
5. I want to try out different ways to do my team’s job (reverse-coded).

**Departing Member’s Task Involvement** (adapted from Rink & Ellemers, 2009)
1. After knowing that they will soon leave this team, the member who just left actively engaged in the discussion.
2. After knowing that they will soon leave this team, the member who just left tried to offer an unique contribution to the team.
3. After knowing that they will soon leave this team, the member who just left tried to provide a solution.
4. After knowing that they will soon leave this team, the member who just left clearly expressed opinions during the discussion.

**Attachment Between a Departing Member and Staying Members** (adapted from Rink & Ellemers, 2009)
1. During the second round, I fitted well together with the member who just left the team.
2. During the second round, I felt comfortable with the member who just left the team.
3. During the second round, I liked working with the member who just left the team.
4. The member who just left the team was similar to me.

**New Member’s Task Involvement** (adapted from Rink & Ellemers, 2009)
1. During this round, a new member was actively involved in the discussion.
2. During this round, a new member tried to offer an unique contribution to the team.
3. During this round, a new member tried to provide a solution.
4. During this round, a new member clearly expressed opinions during the discussion.

**Attachment Between a New Member and Staying Members** (adapted from Rink & Ellemers, 2009)
1. I fitted well together with a new member.
2. I felt comfortable with a new member.
3. I liked working with a new member.
4. The member who newly joined the team was similar to me.

**Newcomer Acceptance** (adapted from Bauer et al., 2007; Bauer & Green, 1998)
1. Existing members in my team clearly explained their ongoing task for me.
2. Existing members in my team helped me become confident in a new team.
3. Existing members in my team welcomed me.

**10-item Big-five Personality** (Gosling et al., 2003)
Please rate the extent to which the pair of traits applies to you.
1. Extraverted, enthusiastic. (Extraversion)
2. Critical, quarrelsome. (Agreeableness, reverse-coded)
3. Dependable, self-disciplined. (Conscientiousness)
4. Anxious, easily upset. (Emotional Stability, reverse-coded)
5. Open to new experiences, complex. (Openness)
6. Reserved, quiet. (Extraversion, reverse-coded)
7. Sympathetic, warm. (Agreeableness)
8. Disorganized, careless. (Conscientiousness, reverse-coded)
9. Calm, emotionally stable. (Emotional Stability)
10. Conventional, uncreative. (Openness, reverse-coded)
Appendix B. Instructions for Observation Coding

**Team Performance** (1 = Strongly Disagree; 5 = Strongly Agree)
1. Overall, the video quality was high.
2. The video grabbed your attention throughout the clip.
3. The video shared useful and interesting information related to the topic.
4. The video had non-obvious, witty, creative features.
5. YouTubers made convincing arguments.
6. If multiple people presented, transitions between people were smooth with no or little awkward pauses/silences between them (If only one person presented, then please type N/A).
7. There was no or little overlapping between what each person talked (If only one person presented, then please type N/A).
8. Contents of the video well matched the video title. (if there was no video title, please type N/A).

**Flux in Coordination During the Pre-Change Period** (1 = Not at all; 5 = Entire time)
Flux in coordination refers to changes in group plans, interaction patterns, work processes, and roles of members. Followings are some representative examples of this construct.

1. Compared to the earlier rounds, interaction patterns (e.g., who talks first, who talks most) between members changed.
2. Members shifted roles (e.g., note-taking) due to the upcoming member change.
3. Members discussed about how to modify their work processes due to the member change.
4. Members discussed about completing the video recording before the member change (even if they ended up not recording the video before the member change).

**Team Effort** (1 = Not at all; 5 = Entire time)
Team effort refers to whether team members exert all efforts to the team’s tasks. Followings are some representative examples of this construct.

1. Members seemed trying to complete the video recording as soon as possible by putting minimal efforts. (reverse-coded)
2. Members decided to record a video more than once.
3. Members suggested additional video titles after one person made the first suggestion.
4. There were members who were disengaged from the task and remained silent for most times. (reverse-coded)

**Team Positive Affect** (1 = Not at all; 5 = Entire time)
Team positive affect refers to positive emotion that is shared, or held in common, by the group members. Followings are some representative examples of this construct.

1. Members seemed highly energized and passionate about the task.
2. Members smiled and laughed.
3. Members seemed uninterested in the task. (reverse-coded)