

Contagious motivation in the workplace: An examination of how leaders' motivation can
impact the motivation of their subordinates

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Contagious motivation in the workplace: An Examination of how leaders' motivation can
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Abstract

There is substantial research on the importance of autonomous motivation in the workplace; however, little is known on how to change motivation. Drawing on motivation and leadership theories, this dissertation examined the role of leaders in motivating their subordinates at work. Using a longitudinal research design, Study 1 demonstrated that leaders' leadership style, as conceptualized by the full range leadership model, predicted the quantity of subordinates' motivation (e.g., amotivation), but not the quality of subordinates' motivation (e.g., autonomous motivation). Leaders' own work motivation predicted both such that amotivation and autonomous motivation were contagious between leaders and their subordinates. Given the contagious nature of autonomous motivation found in Study 1, Study 2 used an intervention to examine whether the effects of a training and coaching program aimed at enhancing leaders' autonomous motivation would extend to their subordinates as well. This intervention for leaders was delivered and evaluated using a longitudinal control group design. Compared to leaders who did not receive the intervention, leaders who participated in the training and coaching sessions a) experienced increased autonomous motivation, b) perceived greater meaning in their work, and c) took on a more autonomy-supportive style of leadership. Subordinates whose leaders participated in the intervention also experienced increased autonomous motivation and meaningful work.

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Contagious motivation in the workplace: An examination of how leaders' motivation can impact the motivation of their subordinates

Work motivation has garnered substantial attention from both researchers and practitioners in the field of Industrial/Organizational Psychology (for a review see Latham, 2012). Although there is substantial research on the importance of autonomous motivation in the workplace (e.g., Gagné & Deci, 2005), little is known on how to change motivation. The research literature has primarily focused on basic needs satisfaction (Van den Broeck, Ferris, Chang & Rosen, 2016) and job design (Parker & Ohly, 2008) as antecedents of positive forms of motivation (i.e., autonomous motivation). Whereas basic needs satisfaction focuses primarily on the individual's propensity to be motivated (Deci & Ryan, 2000), job design emphasizes the motivating potential of the work itself (Hackman & Oldham, 1976). A unique and interesting avenue worth exploring is the role of leaders in motivating their subordinates at work. Indeed, an integral characteristic of leadership is the motivation of subordinates (Judge & Piccolo, 2004). Given the pervasive role of leaders in organizations, it is vital to determine which leader characteristics (i.e., their own motivation and/or their leadership style) are responsible for motivating subordinates. Despite substantial research on how leadership style influences the attitudes and behaviours of subordinates (for a review see Barling, Christie, & Hopton, 2010), less attention has been directed at leaders' own motivation and how this may impact their subordinates' work motivation.

This dissertation aimed to address the aforementioned gap and need in the research literature by examining the extent to which motivation is contagious between leaders and subordinates at work. That is, can a leader's motivation directly impact the motivation of his or her subordinates? Alternatively, do other characteristics of the leader, such as their leadership style have an effect on their subordinates' work motivation? This dissertation drew on self-determination theory of motivation (Deci & Ryan, 1985) and the full-range leadership model (Bass, 1985) to operationalize, and derive predictions about the role of leaders in motivating their subordinates at work. Both a longitudinal study and an intervention study were used to empirically test which of these two competing theories: a) motivation contagion, as conceptualized by self-determination theory, and/or b) leadership style, as theorized by the full range leadership model, predict subordinate motivation at work.

Motivation

Motivation is operationalized as “an unobservable force that directs, energizes, and sustains behaviour over time and across changing circumstances” (Diefendorff & Chandler, 2010, p. 66). Self-determination theory (Deci & Ryan, 1985; 2008; 2010; Ryan & Deci, 2000; 2008) is one of the most influential theories of human motivation and has frequently been applied to the context of working in organizational settings (Deci, Connell, & Ryan, 1989; Deci & Ryan, 2000; Deci, Ryan, Gagné, Leone, Usunov, & Kornazheva, 2001; Gagné & Deci, 2005; Van den Broeck, 2012; Vansteenkiste, Neyrinck, Niemiec, Soenens, De Witte, & Van den Broeck, 2007). As such, this

dissertation used self-determination theory to examine the motivation of leaders and their subordinates at work.

Self-Determination Theory

Initially, self-determination theory included two types of motivation: intrinsically motivated behaviours and extrinsically motivated behaviours (Deci & Ryan, 1985). While intrinsic motivation involves engaging in an activity for its own sake (Deci, 1975), extrinsic motivation entails participating in an activity due to instrumental reasons (Deci & Ryan, 2002). There is also the possibility that individuals will experience neither intrinsically nor extrinsically motivated behaviours, but rather amotivation, which refers to an absence of motivation (Ryan & Deci, 2000). As depicted in Figure 1, the original conceptualization of self-determination theory has expanded to include different types of motivational regulations that can be placed along a continuum from least self-determined to most self-determined (Deci & Ryan, 2008). This expansion was necessary because there were different sub factors of extrinsic motivation, which implied additional behaviours representative of the overarching construct.

According to this expanded version of self-determination theory, extrinsic motivation encompasses four types of regulations: external regulation, introjected regulation, identified regulation, and integrated regulation. External regulation is the most characteristic of extrinsic motivation, as in this case behaviours are controlled by exterior circumstances such as obtaining a reward (e.g., being appreciated) or avoiding punishment (e.g., being criticized). Given that others administer these rewards and

punishments, external regulation is prominent when individuals put effort into their work because they feel pressure from a supervisor and/or colleague. With introjected regulation, the individuals themselves control their own behaviours. For instance, behaviours may be contingent on one's own feelings of self-worth or guilt. Identified regulation occurs when individuals have identified with the principles of their behaviour and accept them as their own. For example, an employee with identified regulation would be motivated to work because they recognize the importance of their work's contribution. However, identified regulation is still a form of extrinsic motivation, as the behaviours are motivated by external rather than internal factors. Integrated regulation represents the most internalized form of extrinsic motivation, as individuals integrate the behavioural values into their self-concept. Finally, intrinsic regulation reflects intrinsic motivation and occurs when individuals find their work to be inherently interesting and/or enjoyable. These five regulations differ in the degree to which they are self-determined (Gagné et al., 2010). External and introjected regulations represent controlled motivation, whereas identified, integrated, and intrinsic regulations characterize autonomous motivation.

In recent years, self-determination theory has been altered further, and the revised model is presented in Figure 2. Specifically, Gagné et al. (2014) added two subcomponents of external regulation such that rewards and punishments can be categorized as social or material. Social external regulation is prominent when individuals put effort into their work because they feel pressure from a supervisor, while individuals that are motivated to work in order to gain a promotion would have material external regulation. Additionally, the revised self-determination theory model omits integrated

regulation, as integrated regulation is reported to share overlapping variance with identified and intrinsic regulation to the point that it cannot be statistically differentiated (Ryan & Connell, 1989; Tremblay, Blanchard, Taylor, Pelletier, & Villeneuve, 2009; Vallerand, 2001; Vallerand, Pelletier, & Koestner, 2008). In fact, no research has demonstrated that integrated regulation accounts for additional variance in work outcomes over and above identified and intrinsic regulation (Gagné et al., 2010; 2014). According to the most recent model of self-determination theory, individuals with controlled motivation may work in order to obtain a financial reward (i.e., external regulation – material), to get the approval of others (i.e., external regulation – social), and/or due to one’s feelings of self-worth (i.e., introjected regulation), while the behaviours of autonomously motivated individuals are likely the result of knowing the work is meaningful (i.e., identified regulation), and/or enjoying the work (i.e., intrinsic regulation).

Previous research has outlined that autonomous, as opposed to controlled, motivation predicts positive work outcomes such as greater job satisfaction, increased affective organizational commitment, and decreased turnover intention (Gagné et al., 2010). Although there is a wealth of research highlighting the outcomes of autonomous motivation, less is known about the predictors of autonomous motivation (Van den Broeck, 2012). Thus, this dissertation explores leaders’ own motivation as a potential predictor of subordinates’ motivation.

Leadership

Leaders play a crucial role in organizations, as they are the key decision-makers and have influence over their subordinates. Given a leader's position of power in an organization, it is common for subordinates to view their leaders as role models at work (Avolio, Waldman, & Einstein, 1988). Moreover, leaders tend to be viewed as effective when they inspire their employees to reach their full potential at work. According to Barling and colleagues (2010), transformational leadership is the single most studied leadership style. Thus, in order to gain a better understanding of how leaders can motivate their subordinates, it is important to consider the various types of leaders outlined by transactional and transformational theories of leadership.

Transactional Leadership

Transactional leadership comprises different types of leadership styles including laissez-faire leadership, management-by-exception, and contingent reward leadership (Bass, 1985). Laissez-faire leadership represents a lack of leadership, as leaders do not make decisions or exercise control (Hater & Bass, 1988). Management-by-exception describes leaders that take corrective actions to problems that may arise, and do so either actively or passively (Howell & Avolio, 1993). Active management-by-exception involves leaders continuously monitoring the work of their subordinates to ensure they meet performance standards, whereas passive management-by-exception is when leaders do not intervene until their subordinates have failed to achieve a desired outcome (Bass & Avolio, 1989). Thus, these styles represent negative forms of leadership.

In contrast to the aforementioned leadership styles, contingent reward leadership is considered a more positive form of transactional leadership in which subordinates receive rewards (e.g., financial incentives, promotions) or punishments (e.g., poor performance review) contingent upon their level of work performance (Bass, 1985). Contingent reward leadership involves goal setting such that leaders set standards for subordinates and reward or punish them depending on whether the subordinates achieve these predetermined goals. Therefore, contingent reward leadership involves exchanging recognition and rewards for good performance. Contingent reward leaders also provide their subordinates with immediate, unbiased feedback. Transformational leadership (Bass, 1985) is considered another positive leadership style and has been conceptualized as an extension of transactional leadership (Burns, 1979; Lowe, Kroeck, & Sivasubramaniam, 1996).

Transformational Leadership

Transformational leaders “broaden and elevate the interests of their employees, when they generate awareness and acceptance of the purposes and mission of the group, and when they steer their employees to look beyond their own self-interest for the good of the group” (Bass, 1985, p. 21). Specifically, transformational leadership encompasses four dimensions: idealized influence, intellectual stimulation, individualized consideration, and inspirational motivation (Bass, 1985). Idealized influence occurs when leaders do the right thing and gain the trust and respect of their subordinates as a result (Avolio, Waldman, & Yammarino, 1991). Specifically, leaders that display idealized

influence act as role models to their subordinates. Intellectual stimulation involves leaders challenging their subordinates to think about old problems in new ways by generating alternative solutions that challenge the status quo (Avolio et al., 1988). Individualized consideration occurs when leaders identify with their subordinates' needs and treat them as individuals (Bass, 1990). Leaders that exhibit individualized consideration will provide their subordinates with learning opportunities to enhance their subordinates' personal development. Finally, inspirational motivation transpires when leaders inspire and motivate their subordinates to exceed expectations (Avolio, Bass, & Jung, 1999). Particularly, leaders demonstrate inspirational motivation when they clarify objectives, elevate expectations, and encourage their subordinates to put effort into achieving their goals.

Avolio and colleagues (1988) differentiated transformational leadership from transactional leadership on two levels. First, transactional leadership involves recognition of subordinates' needs, whereas transformational leadership focuses on improving the needs of subordinates. Second, transactional leaders' main focus is work performance, whereas transformational leaders aim to achieve this while also transforming their subordinates into leaders. In particular, transformational leaders elevate their subordinates' motives to be focused on the group as opposed to themselves (Burns, 1979).

Due to high correlations between some of these leadership styles, transformational leadership and contingent reward leadership can be combined into a dimension called active-constructive leadership (Gilbert, 2015; Kelloway, Turner, Barling, & Loughlin,

2012). Additionally, laissez-faire leadership and passive management-by-exception collectively represent a dimension called passive-avoidant leadership (Gilbert, 2015; Kelloway, Mullen, & Francis, 2006). Although there are two forms of management-by-exception, active and passive management-by-exception are independent constructs with low or non-significant correlations (Avolio, Bass, & Jung, 1998; Garman, Davis-Lenane, Corrigan, 2003). Thus, active and passive management-by-exception are not combined in this operationalization, and active management-by-exception stands on its own. In comparison to active management-by-exception and passive-avoidant leadership, active-constructive leadership style consistently accounts for greater variance in positive work outcomes (Avolio et al., 1988; Bass, 2010). Thus, it is important to consider how the different styles of a leader may impact their subordinates.

Effects of Leaders on Subordinates

There is a wealth of research supporting the beneficial effects of transformational leadership on subordinate outcomes including enhanced psychological well-being (McKee, Driscoll, Kelloway, & Kelley, 2011), increased workplace safety (Kelloway, Mullen, & Francis, 2006; Mullen & Kelloway, 2009; Mullen, Kelloway & Teed, 2011), increased financial performance (Barling et al., 1996; Howell & Avolio, 1993), and positive work attitudes (Barling, Weber, & Kelloway, 1996; Mester, Visser, & Roodt, 2003) including work motivation. However, researchers have advocated for further exploration of other variables besides transformational leadership that predict subordinate

motivation (Ahmand, Abbas, Latif, & Rasheed, 2014). Particularly, the role of the leader's own motivation has often been ignored.

Indeed, there is minimal research on how leader motivation influences subordinate work motivation. However, previous studies have found support for the contagious nature of certain variables among leaders and subordinates including their stress and well-being (Skakon, Nielsen, Borg, & Guzman, 2010) as well as their moods (Bono, Foldes, Vinson, & Muros, 2007). For instance, when leaders experienced high levels of stress and poor well-being, so did their subordinates (Skakon et al., 2010). Additionally, positive leaders tended to have employees that experienced more positive emotions during the workday (Bono et al., 2007). Thus, similar findings are expected when examining the work motivation of leaders and their subordinates.

Dissertation Research Approach

The research literature on transformational leadership and work motivation, as conceptualized by self-determination theory, is limited in terms of its scope and research design. This dissertation aimed to address these limitations in the research literature through providing a novel contribution that a) integrates these leadership and motivation theories and b) assesses multiple levels of analysis through a longitudinal research design.

Integration of Self-Determination Theory and Leadership Theory

Self-determination theory and transformational leadership theory have dominated their respective literatures. In particular, researchers often use self-determination theory when conducting studies on work motivation (Deci et al., 1989; Fernet, 2013; Gagné &

Deci, 2005). As a result, there is an immense amount of research on the motivation of different types of employees including consultants (Baard, Deci, & Ryan 2004), workers in safety critical organizations (Scott, Fleming, & Kelloway, 2014), and teachers (Carson & Chase, 2009). However, less is known about the motivation of employees in leadership positions. Similarly, transformational leadership theory forms the basis of copious amounts of leadership research (Barling et al., 1996; Barling, Slater, & Kelloway, 2000; Bass, 1999).

With the exception of a few studies (e.g., Gilbert, Horsman, & Kelloway, 2016; Hetland, Hetland, Andreassen, Pallesen, & Notelaers, 2011; Kovjanic, Schuh, Klaus, Van Quaquebeke, & Dick, 2012), transformational leadership theory and self-determination theory are rarely used in conjunction with one another. Thus, there is much knowledge to gain through considering how these theories supplement one another. Accordingly, comparing and contrasting the two theories will contribute to the advancement of knowledge in the field of Industrial/Organizational Psychology.

Level of Analysis

When examining the motivation of leaders and their subordinates, the majority of previous research has failed to test these variables from a dyadic level of analysis (Yammarino, Dionne, Chun, & Dansereau, 2005). For instance, researchers often collect data from the leader without considering the perspectives of the subordinates (e.g., Gilbert et al., 2016). Alternatively, studies frequently include subordinates in their sample while disregarding their leaders (e.g., Barling et al., 1996; Mullen et al., 2011). Therefore,

this dissertation addressed calls in the literature for researchers to apply concepts such as motivation and basic needs satisfaction to leader-subordinate dyads (Yammarino, Murry, & Palanski, 2010). Accordingly, both studies of this dissertation take a multi-level approach to examining the relationships between leaders and subordinates so that the theoretical inferences will match the configuration of the data in these longitudinal research designs (Yammarino & Dubinsky, 1992).

Longitudinal Research

With the exception of a few studies (e.g., Gagné, Chemolli, Forest, and Koestner, 2008), there is limited longitudinal research on work motivation as conceptualized by self-determination theory. Research in this area is important in order to specify the directionality of the relationships and whether the types of motivation fluctuate over time. Given this gap in the literature, there have been several calls for future research in this area from pivotal researchers including Van den Broeck (2012), Fernet (2013), and Gilbert and colleagues (2016). The longitudinal design utilized in this dissertation provides insight into whether motivation and leadership variables are stable or fluctuate over time. Thus, this research design allows for analysis of within-person differences in addition to between-person differences. Following recommendations by Kelloway and Francis (2012), the longitudinal studies in this dissertation include at least three waves of data collection.

Study 1

Motivation Contagion

Social learning theory (Bandura, 1965), norm-focus theory (Cialdini et al., 1990), and the ripple effect of contagion (Barsade, 2002) are theories in the research literature alluding to this dissertation's assumption that leader and subordinate motivation may be contagious. According to emotional contagion (Hatfield, Cacioppo & Rapson, 1994), contagious processes consist of non-conscious mimicry, a feedback stage, as well as synchronized thoughts, feelings, and/or behaviours. Accordingly, this dissertation is the first to examine the potential motivation contagion effect between leaders and their subordinates.

Previous research has used self-determination theory to examine the social contagion of motivation in classroom settings. For instance, intrinsically motivated students were able to contagiously motivate other students such that their peers were also intrinsically motivated to work on group projects (Krishen, 2013). Given that the relationships among peers do not entail the same power dynamics as leaders and subordinates in organizations, it is important to consider alternative samples. Additional studies have found that motivation also spreads from teachers to their students such that when a teacher taught a subject because he or she genuinely enjoyed it (i.e., intrinsic regulation), their students also experienced intrinsic motivation towards schoolwork (Radel, Sarrazin, Legrain, & Wild, 2010). In contrast, students who were taught by a teacher motivated by receiving a pay cheque (i.e., material external regulation) were less intrinsically motivated (Radel et al., 2010). These studies provide support for the notion that motivation can be contagious in educational settings and it is possible that these findings may extend to the workplace.

Hypothesis 1. *Leaders' amotivation for work will predict the amotivation of subordinates such that:*

H1a. Leaders' level of amotivation will be associated with subordinates' level of amotivation.

H1b. Changes in leaders' level of amotivation for work will correspond with changes in subordinates' level of amotivation such that increases in leader amotivation will be associated with increases in subordinate amotivation.

Hypothesis 2. *Leaders' controlled motivation for work will predict the controlled motivation of subordinates such that:*

H2a. Leaders' level of controlled motivation will be associated with subordinates' level of controlled motivation.

H2b. Changes in leaders' level of controlled motivation for work will correspond with changes in subordinates' level of controlled motivation such that increases in leader controlled motivation will be associated with increases in subordinate controlled motivation.

Hypothesis 3. *Leaders' autonomous motivation will predict the autonomous motivation of subordinates such that:*

H3a. Leaders' level of autonomous motivation will be associated with subordinates' level of autonomous motivation.

H3b. Changes in leaders' level of autonomous motivation for work will correspond with changes in subordinates' level of autonomous motivation such that increases in leader autonomous motivation will be associated with increases in subordinate autonomous motivation.

Motivation for Transformational Leadership

In addition to examining leaders' motivation towards work, their motivation for transformational leadership may also be a predictor of their subordinates' motivation. One area in which self-determination theory and the full range leadership model have been integrated is through examining leaders' motivation to engage in effective leadership behaviours as defined by transformational leadership theory. Until recently, the literature has tended to study leader motivation in the context of Chan and Drasgow's (2001) motivation to lead theory. Specifically, motivation to lead is described as an "individual-differences construct that affects a leader's or leader-to-be's decision to assume leadership training, roles, and responsibilities and that affect his or her intensity of effort at leading and persistence as a leader" (Chan & Drasgow, 2001, p. 482). However, when individuals assume formal leadership roles, this does not guarantee that they will engage in effective leadership behaviours.

Gilbert and Kelloway (2014) operationalized a construct called motivation for transformational leadership, which adds to the leadership development literature through conceptualizing the reasons for why individuals put effort into being effective leaders. Therefore, motivation for transformational leadership, which examines individuals'

motives to exhibit transformational leadership behaviours after assuming a leadership role, is distinct from motivation to lead theory, which focuses on what motivates individuals to take on leadership roles. Thus, when examining why leaders put effort into being effective leaders, it makes more sense to focus on motivation for transformational leadership theory as opposed to the theory of motivation to lead.

To date, there have been two published studies that examine motivation for transformational leadership (Gilbert & Kelloway, 2014; Gilbert, et al., 2016). Although previous findings outline the effects of leaders' motivation on the leaders themselves (Gilbert et al., 2016), there is no research on how leaders' motivation for transformational leadership may influence their subordinates, particularly in regard to their subordinates' motivation. It is possible that leaders' motivation for transformational leadership will have an effect on the motivation of their subordinates. As illustrated in Figure 3, there is evidence for the effects of leaders' motivation for transformational leadership on the leaders' leadership styles such that a) identified regulation for being a leader predicted increased contingent reward leadership and increased transformational leadership; b) external regulation for being a leader predicted management-by-exception; and c) amotivation for being a leader predicted increased laissez-faire leadership (Gilbert et al., 2016). However, these findings are based on leaders' self-reported ratings of their leadership style, which could be biased. Accordingly, these findings should be replicated with subordinates' ratings of their leader's effectiveness.

Hypothesis 4. *Leaders' amotivation for transformational leadership will predict passive-avoidant style of leadership such that:*

H4a. Leaders' high level of amotivation for transformational leadership will be associated with passive-avoidant leadership.

H4b. Changes in leaders' level of amotivation for transformational leadership will correspond with changes in leaders' level of passive-avoidant leadership such that increases in leader amotivation for transformational leadership will be associated with increases in passive-avoidant leadership.

Hypothesis 5. *Leaders' controlled motivation for transformational leadership will predict active management-by-exception style of leadership such that:*

H5a. Leaders' high level of controlled motivation for transformational leadership will be associated with active management-by-exception.

H5b. Changes in leaders' level of controlled motivation for transformational leadership will correspond with changes in leaders' level of active management-by-exception such that increases in leader controlled motivation for transformational leadership will be associated with increases in active management-by-exception.

Hypothesis 6. *Leaders' autonomous motivation for transformational leadership will predict active-constructive style of leadership such that:*

H6a. Leaders' high level of autonomous motivation for transformational leadership will be associated with active-constructive leadership.

H6b. Changes in leaders' level of autonomous motivation for transformational leadership will correspond with changes in leaders' level of active-constructive leadership such that increases in leader autonomous motivation for transformational leadership will be associated with increases in active-constructive leadership.

Motivational Effects of Leadership Style

Self-determination theory and transformational leadership theory can also be integrated when examining the styles of leaders. Although previous studies have demonstrated that all facets of transformational leadership are positively correlated with employee motivation (Ahmad, Abbas, Latif, & Rasheed, 2014; Gopal & Chowdhury, 2014), the relationships between the full range leadership model and motivation, as conceptualized by self-determination theory, remain unknown. It is possible that leadership style, conceptualized as either transactional or transformational, could be linked to their subordinates' motivational regulations as categorized by self-determination theory.

Given that laissez-faire leaders do not interact with their subordinates, leaders with this style are not likely to motivate their subordinates in any way (i.e., amotivation). Similarly, subordinates whose leaders have a passive management-by-exception style of leadership are also unlikely to be motivated because their leaders are normally absent. Leaders with an active management-by-exception style may make their subordinates feel shameful when they correct their mistakes, which implies that their subordinates' work motivation could be contingent on the subordinates' own feelings of self-worth (i.e.,

introjected regulation). Additionally, subordinates with leaders whose styles are active management-by-exception are likely to be motivated by external reasons such as avoiding punishment from their supervisors (i.e., external regulation). In contrast, subordinates of contingent reward leaders may view their work as important (i.e., identified regulation), as their leaders support goal setting and provide them with individualized feedback. In contrast to the transactional styles of leadership, transformational leaders are likely to foster solely autonomous forms of motivation among their subordinates. Through inspirational motivation, transformational leaders can encourage their subordinates to work toward something they are passionate about. Additionally, transformational leaders use individualized consideration to appeal to their subordinates' interests and help them pursue their personal values. Therefore, the work motivation of subordinates may differ depending on the style of their leaders.

Hypothesis 7. *Passive-avoidant leadership will predict subordinate amotivation such that:*

H7a. High levels of passive-avoidant leadership will be associated with high levels of amotivation among subordinates.

H7b. Changes in leaders' level of passive-avoidant leadership will correspond with changes in subordinates' level of amotivation such that increases in passive-avoidant leadership will be associated with increases in subordinate amotivation.

Hypothesis 8. *Active management-by-exception will predict subordinate controlled motivation such that:*

H8a. High levels of active management-by-exception will be associated with high levels of controlled motivation among subordinates.

H8b. Changes in leaders' level of active management-by-exception will correspond with changes in subordinates' level of controlled motivation such that increases in active management-by-exception will be associated with increases in subordinate controlled motivation.

Hypothesis 9. *Active-constructive leadership will predict subordinate autonomous motivation such that:*

H9a. High levels of active-constructive leadership will be associated with high levels of autonomous motivation among subordinates.

H9b. Changes in leaders' level of active-constructive leadership will correspond with changes in subordinates' level of autonomous motivation such that increases in active-constructive leadership will be associated with increases in subordinate autonomous motivation.

Hypothesis 10. *Leadership style will mediate the relationship between leaders' motivation for transformational leadership and subordinates' motivation such that:*

H10a. Leader amotivation for transformational leadership will predict passive-avoidant leadership style, which in turn, will predict subordinate amotivation.

H10b. Leader controlled motivation for transformational leadership will predict active management-by-exception leadership style, which in turn, will predict subordinate controlled motivation.

H10c. Leader autonomous motivation for transformational leadership will predict active-constructive leadership style, which in turn, will predict subordinate autonomous motivation.

Theoretical Model

This research posits the following themes depicted in Figure 4: 1) leaders' work motivation will directly impact subordinates' work motivation; 2) leader's leadership styles will directly impact subordinates' work motivation; and 3) leaders' motivation for transformational leadership will indirectly impact subordinates' work motivation through the leaders' leadership styles. Accordingly, Study 1 aimed to assess these relationships. Currently, there is empirical support in the literature for part of the third objective such that leader's motivation for transformational leadership predicts leader's leadership styles (Gilbert et al., 2016). However, previous research in this area was based on leaders' ratings of their own leadership styles as opposed to subordinate ratings (Gilbert, 2015). Additionally, past research has provided partial support for the second objective such that different leadership styles are correlated with subordinates' work motivation (Bass, 1999), but further research is needed to test this in terms of its predictive ability. Given that the contagious nature of motivation outlined by the first objective is based solely on theoretical speculation, this is the primary focus of the dissertation.

Study 1 Method

Participants

The sample consisted of 32 leaders and 45 subordinates that were organizing fundraising campaigns for a national non-profit organization. This campaign is the largest post-secondary fundraiser in the country, and takes place at universities and college campuses across Canada. Thus, the age of participants was fairly young for both leaders ($M = 21.03$; $SD = 1.74$) and their subordinates ($M = 22.04$; $SD = 5.01$). Given that leaders and subordinates were working in the non-profit sector, the sample included a mix of employees and volunteers. Of the 32 leader participants, 44% indicated that they were paid employees and 53% reported being unpaid volunteers. Additionally, 20% of the 45 subordinate participants were paid employees, whereas 80% were unpaid volunteers. Specifically, the leaders and subordinates in this study were members of project teams working together for a total of five months. Data for the leaders were included in the analyses if the leaders completed at least three of the five surveys they received. Data for their subordinates were retained if they completed at least two of the four distributed surveys. Thus, 263 matched surveys were obtained out of a total of 340 possible leader responses (77% response rate). Overall, one of the leader participants had five subordinates, one leader had four subordinates, two leaders had three subordinates, one leader had two subordinates, and 27 leaders had one subordinate participate in the study. A detailed summary of the demographics is presented in Table 1.

Procedure

A longitudinal research design was used to examine motivation and leadership variables over the course of the leaders and subordinates' working relationship, which took place for a span of five months. Participants were recruited through two means. First, an electronic advertisement was emailed to all leaders. Second, the leaders were asked to assist the researcher in recruiting their subordinates to participate in the study through providing the researcher with a list of email addresses for their subordinates. Since some leaders did not respond to the researcher's request for their subordinates' contact information, an exact subordinate response rate cannot be determined. However, these recruitment techniques resulted in a range of one to five subordinates per leader ($M = 1.36$; $SD = 0.96$).

Following informed consent, leaders completed measures of work motivation and motivation for transformational leadership. Subordinates responded to the same measure of work motivation, and were also asked to rate the leadership styles of their leaders. Additionally, all participants completed a demographics survey. The electronic questionnaires were emailed to participants every month for a total of five time intervals over the course of the 5-month fundraising campaign, as depicted in the timeline in Figure 5. Specifically, data were collected from the leaders at all five time points, whereas data from the subordinates were collected at four time points. Data at Time 1 were collected from leaders only because the participants were new to their leadership role at this point and had not yet formed their teams of subordinates. Thus, this measurement eliminates the possibility of third variables influencing group dynamics between the leaders and their subordinates. Data at Time 2 were collected one week after

the leaders and subordinates had started working together. Data at Time 3 and Time 4 were collected during the course of their working relationship, whereas data collection at Time 5 occurred when the leaders and subordinates finished working together on the five-month fundraising campaign. At each of these time points, participants completed the series of measures listed below on Qualtrics. Following completion of each survey, participants received an electronic feedback letter. The intercorrelations for the examined measures are shown in Table 2.

Measures

Motivation for work. The Multidimensional Work Motivation Scale (MWMS; Gagné et al., 2014) was used to assess both leader and subordinate work motivation, as conceptualized by self-determination theory. Using a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*), leaders and subordinates indicated the extent to which they agreed with 19 items assessing why they put effort into their work. Specifically, the scale included seven subscales: amotivation (leader $\alpha = 0.52$; subordinate $\alpha = 0.90$) as measured by three items (e.g., “because I really feel that I’m wasting my time”), external regulation – social (leader $\alpha = 0.71$; subordinate $\alpha = 0.77$) as measured by three items (e.g., “to get others’ approval”), external regulation – material (leader $\alpha = 0.58$; subordinate $\alpha = 0.58$) as measured by three items (e.g., “because I risk losing my position if I don’t put enough effort into it”), introjected regulation (leader $\alpha = 0.66$; subordinate $\alpha = 0.60$) as measured by four items (e.g., “because otherwise I will feel bad about myself”), identified regulation (leader $\alpha = 0.79$; subordinate $\alpha = 0.70$) as measured by

three items (e.g., “because I personally consider it important to put effort into this position”), and intrinsic regulation (leader $\alpha = 0.89$; subordinate $\alpha = 0.90$) as measured by three items (e.g., “because I have fun doing this work”). For the purpose of Study 1, motivation was conceptualized as amotivation (leader $\alpha = 0.52$; subordinate $\alpha = 0.90$), controlled motivation (leader $\alpha = 0.78$; subordinate $\alpha = 0.79$), and autonomous motivation (leader $\alpha = 0.87$; subordinate $\alpha = 0.85$).

Motivation for leadership. The Motivation for Transformational Leadership Scale (MFTL; Gilbert et al., 2016) was used to measure leaders’ motivation to be an effective leader, as conceptualized by transformational leadership theory and self-determination theory. Using a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*), leaders indicated the extent to which they agreed with 15 items assessing why they put effort into being a leader. Of the 15 items, three items were used to measure each of the five subscales: amotivation (e.g., “I don’t care about being a good leader”; $\alpha = 0.40$), external regulation (e.g., “to avoid losing financial benefits”; $\alpha = 0.66$), introjected regulation (e.g., “because otherwise I will feel guilty”; $\alpha = 0.82$), identified regulation (e.g., “because it aligns with my values”; $\alpha = 0.77$), and intrinsic regulation (e.g., “because what I do as a leader is exciting”; $\alpha = 0.90$). The integrated regulation subscale was not included due to recent changes in self-determination theory (see Figure 2). For the purpose of Study 1, leaders’ motivation for transformational leadership was conceptualized as amotivation ($\alpha = 0.40$), controlled motivation ($\alpha = 0.75$), and autonomous motivation ($\alpha = 0.86$) towards being a transformational leader.

Leadership style. The Multifactor Leadership Questionnaire (MLQ; Bass & Avolio, 1994) was completed by subordinates in order to assess the leadership styles of their leaders. All items measuring full-range leadership were retained, whereas items examining leader outcomes were removed in order to shorten the length of the survey. Using a 5-point scale from 0 (*not at all*) to 4 (*frequently, if not always*), leader participants answered how they thought their subordinates would rate them on the 35 items, while subordinates provided ratings of their leaders on the same items. Specifically, the survey included eight subscales. The transformational leadership construct includes the following subscales: inspirational motivation (e.g., “talks optimistically about the future”), idealized influence (e.g., “talks about their most important values and beliefs”), individualized consideration (e.g., “helps me develop my strengths”), and intellectual stimulation (e.g., “gets me to look at problems from many different angles”). The Cronbach’s alpha for the combined transformational leadership subscale was high ($\alpha = 0.94$). Additional subscales include: active management-by-exception (e.g., “concentrates his/her full attention on dealing with mistakes, complaints, and failures” ; $\alpha = 0.83$), passive management-by-exception (e.g., “shows that he/she is a firm believer in ‘if it ain’t broke, don’t fix it’”; $\alpha = 0.85$), contingent reward leadership (e.g., “makes clear what one can expect to receive when performance goals are achieved”; $\alpha = 0.82$), and laissez-faire leadership (e.g., “avoids making decisions”; $\alpha = 0.84$). For the purpose of Study 1, the laissez-faire and passive management-by-exception subscales were combined to assess passive-avoidant leadership ($\alpha = 0.89$); the active management-by-exception was also used ($\alpha = 0.87$); and

the transformational leadership and contingent reward leadership subscales were combined to measure active-constructive leadership ($\alpha = 0.95$).

Demographics. Demographic characteristics were assessed using standard survey questions that asked about participants' age, gender, ethnicity, city, province, workplace location, and position (see Appendix A). Additionally, both leaders and subordinates were asked to indicate their email addresses as part of the demographics survey in order to match the surveys between the team members, as well as across the data collection time points.

Study 1 Results

Analytic Overview

After matching the leader and subordinate data, 263 observations were available for analysis. Specifically, the data included the following clusters: five measurement time points (that were clustered in leaders), four measurement time points (that were clustered in subordinates), and subordinates (who were clustered in leaders). Given the clusters in this data set, multilevel (also known as hierarchical linear or mixed) models were chosen as the analytical technique. According to Bliese (1998, 2000), the research design as opposed to the distribution of variance, should dictate the analytic strategy. However, in order to further confirm that the use of multilevel modeling was suitable for this longitudinal study, interclass correlations (ICC) for each variable were computed for the between-person variables of the restricted models. Given that the majority of ICC values exceeded .40, which is common in longitudinal research (Spybrook, Raudenbush, Liu,

Congdon, & Martinez, 2008), this provides further support that multilevel modeling was a fitting statistical approach.

Using SPSS software, analyses were first run on the unrestricted models in which levels were specified without predictors and then on the random intercept models, which included all predictors (Heck, Thomas, & Tabata, 2010). Equations were estimated as three level multilevel models with observations nested within individuals which, in turn, were nested within leaders. The estimate of fit was specified at the -2 restricted log likelihood. The -2 restricted log likelihood values decreased from the restricted models to the random intercept models for each of the variables. Thus, the random intercept models provided a better fit to the data. As demonstrated in Table 3, three fixed predictors were entered into each equation. Specifically, 1) time, 2) leader work motivation, as well as 3) time and leader work motivation, were entered as fixed predictors of subordinate work motivation (hypotheses 1, 2, 3). In order to predict leaders' leadership style, 1) time, 2) leader motivation for transformational leadership, as well as 3) the interaction between time and leader motivation for transformational leadership, were entered as fixed predictors (hypotheses 4, 5, 6). Additionally, 1) time, 2) leaders' leadership style, as well as 3) time and leaders' leadership style, were entered as fixed predictors of subordinate work motivation (hypothesis 7, 8, 9). The Wilks' criterion was used to determine whether the aforementioned independent variables had a significant effect on the dependent variables.

Findings

For hypothesis 1, the effect of leaders' amotivation for work on their subordinates' amotivation was tested over time. For subordinate amotivation, there was no significant effect of time, as subordinates' amotivation did not significantly change over time, $F(1, 52.11) = 0.34, p = 0.56, (95\% \text{ CI} [-0.86, 0.16])$. There was a significant person-level effect of leader amotivation such that leaders' amotivation was significantly associated with amotivation among their subordinates, $F(1, 59.75) = 3.45, p = 0.05, (95\% \text{ CI} [-0.84, 0.31])$, providing support for hypothesis 1a. There was also a significant interaction of time and amotivation such that increases in leaders' work amotivation were associated with increases in subordinates' work amotivation, $F(1, 60.63) = 5.38, p = 0.02, (95\% \text{ CI} [0.02, 0.27])$ over time, providing support for hypothesis 1b.

For hypothesis 2, the effect of leaders' controlled motivation for work on their subordinates' controlled motivation was tested over time. For subordinate controlled motivation, there was no significant effect of time, demonstrating that subordinates' controlled motivation did not significantly change over time, $F(1, 49.84) = 0.07, p = 0.79, (95\% \text{ CI} [-0.09, 0.07])$. Contrary to hypothesis 2a, there was no significant person-level effect of leader controlled motivation such that leaders' controlled motivation was not associated with higher controlled motivation among subordinates, $F(1, 68.21) = 1.02, p = 0.32, (95\% \text{ CI} [-0.14, 0.44])$. Hypothesis 2b was also not supported, as there was no significant effect of time and leader controlled work motivation when predicting subordinates' controlled work motivation over time, $F(1, 51.68) = 0.09, p = 0.76, (95\% \text{ CI} [-0.09, 0.07])$. Thus, hypothesis 2 was not supported.

For hypothesis 3, the effect of leaders' autonomous motivation for work on their subordinates' autonomous motivation was tested over time. For subordinate autonomous motivation, there was a no significant effect of time, demonstrating that subordinates' autonomous motivation did not change over time, $F(1, 60.27) = 0.43, p = 0.52, (95\% \text{ CI } [-0.10, 0.20])$. In support of hypothesis 3a, there was a significant person-level effect of leaders' autonomous work motivation, as it was associated with increased subordinates' autonomous work motivation, $F(1, 71.73) = 4.42, p = 0.04, (95\% \text{ CI } [0.03, 1.27])$. However, hypothesis 3b was not supported, as there was no significant interaction of time and leaders' autonomous motivation when predicting subordinates' autonomous motivation, $F(1, 59.32) = 0.99, p = 0.32, (95\% \text{ CI } [-0.25, 0.08])$.

For hypothesis 4, the effect of leaders' amotivation for transformational leadership on passive-avoidant leadership was tested over time. For passive-avoidant leadership, there was no significant effect of time, as leaders' passive-avoidant leadership style did not significantly change over time, $F(1, (56.78) = 0.04, p = 0.84, (95\% \text{ CI } [-0.15, 0.12])$. Contrary to hypothesis 4a, amotivation for transformational leadership was not a significant predictor of passive-avoidant leadership style, $F(1, 76.87) = 0.97, p = 0.33, (95\% \text{ CI } [-0.15, 0.12])$. Contrary to hypothesis 4b, time and amotivation for transformational leadership did not significant interact to predict subordinates' amotivation, $F(1, 66.39) = 0.03, p = 0.86, (95\% \text{ CI } [-0.16, 0.14])$. Thus, hypothesis 4 was not supported.

For hypothesis 5, the effect of leaders' controlled motivation for transformational leadership on active management-by-exception was tested over time. For active-management-by-exception, there was not a significant effect of time, as leaders' active management-by-exception leadership style did not significantly change over time, $F(1, 49.91) = 2.15, p = 0.15, (95\% \text{ CI} [-0.22, 0.03])$. Contrary to hypothesis 5a, controlled motivation for transformational leadership did not significantly predict active management-by-exception, $F(1, 56.16) = 0.92, p = 0.34, (95\% \text{ CI} [-0.72, 0.25])$. Contrary to hypothesis 5b, there was no significant interaction of time and controlled motivation for transformational leadership when predicting active management-by-exception, $F(1, 54.73) = 0.66, p = 0.42, (95\% \text{ CI} [-0.91, 0.22])$. Thus, hypothesis 5 was not supported.

For hypothesis 6, the effect of leaders' autonomous motivation for transformational leadership on active-constructive leadership was tested over time. For active-constructive leadership, there was no significant effect of time, as leaders' active-constructive leadership style did not significantly change over time, $F(1, 53.25) = 0.63, p = .43, (95\% \text{ CI} [-0.05, 0.10])$. In support of hypothesis 6a, there was a significant positive person-level effect of leaders' autonomous motivation for transformational leadership on active-constructive leadership style such that leaders who were autonomously motivated to engage in effective leadership had increased positive leadership ratings from their subordinates, $F(1, 72.89) = 3.87, p = 0.05, (95\% \text{ CI} [-0.00, 0.64])$. Contrary to hypothesis 6b, there was no significant interaction of time and autonomous motivation for transformational leadership when predicting active constructive leadership, $F(1, 52.58) = 0.99, p = 0.32, (95\% \text{ CI} [-0.13, 0.04])$. Thus,

hypothesis 6 was only partially supported. Although not initially hypothesized, it is interesting to note that there was a significant negative person-level effect of autonomous motivation for transformational leadership on passive-avoidant leadership style such that leaders who were autonomously motivated to engage in effective leadership received decreased negative leadership ratings from their subordinates, $F(1, 73.26) = 5.52, p = 0.02, (95\% \text{ CI} [-1.20, -0.99])$.

For hypothesis 7, the effect of leaders' passive-avoidant leadership on their subordinates' amotivation was tested over time. For subordinate amotivation, there was no significant effect of time, as subordinates' amotivation did not significantly change over time, $F(1, 56.28) = 0.70, p = 0.41, (95\% \text{ CI} [-0.07, 0.16])$. In support of hypothesis 7a, there was a significant positive person-level effect of passive-avoidant leadership on subordinate amotivation such that leaders' passive-avoidant leadership style predicted increased subordinate amotivation, $F(1, 68.24) = 9.03, p = 0.00, (95\% \text{ CI} [0.20, 0.96])$. Contrary to hypothesis 7b, time and passive-avoidant leadership style did not significantly interact to predict subordinate amotivation, $F(1, 63.70) = 1.65, p = 0.20, (95\% \text{ CI} [-0.20, 0.43])$. Thus, hypothesis 7 was partially supported.

For hypothesis 8, the effect of leaders' active management-by-exception on their subordinates' controlled motivation was tested over time. For subordinate controlled motivation, there was no significant effect of time, as subordinates' controlled motivation did not significantly change over time, $F(1, 50.37) = 0.00, p = 0.98, (95\% \text{ CI} [-0.08, 0.78])$. Contrary to hypothesis 8a, there was no significant effect of active management-

by-exception on subordinate controlled motivation, $F(1, 64.52) = 0.19, p = 0.67, (95\% \text{ CI } [-0.36, 0.23])$. Contrary to hypothesis 8b, time and active management-by-exception leadership style did not significantly interact to predict subordinate controlled motivation, $F(1, 51.76) = 0.33, p = 0.57, (95\% \text{ CI } [-0.06, 0.10])$. Thus, hypothesis 8 was not supported.

For hypothesis 9, the effect of leaders' active-constructive leadership on their subordinates' autonomous motivation was tested over time. For subordinate autonomous motivation, there was no significant effect of time, as subordinates' autonomous motivation did not significantly change over time, $F(1, 59.39) = 0.14, p = 0.71, (95\% \text{ CI } [-0.13, 0.18])$. Contrary to hypothesis 9a, active-constructive leadership was not a significant predictor of subordinate autonomous motivation, $F(1, 73.85) = 2.39, p = 0.13, (95\% \text{ CI } [-0.13, 1.03])$. Contrary to hypothesis 9b, time and active constructive leadership style did not significantly interact to predict subordinate autonomous motivation, $F(1, 62.54) = 0.49, p = 0.49, (95\% \text{ CI } [-0.22, 0.11])$. Thus, hypothesis 9 was not supported.

A summary of the aforementioned models can be found in Tables 4 and 5. Given the lack of support for hypotheses 4, 5, 8, and 9, there was no sufficient evidence for the expected indirect effect of leaders' motivation for transformational leadership on subordinates' work motivation through leader's leadership style. Particularly, only hypothesis 6 was supported in which autonomous motivation for transformational leadership predicted active-constructive leadership style. However, active-constructive

leadership style did not, in turn, predict subordinate motivation. Thus, there was not enough evidence to warrant a test for mediation.

Study 1 Discussion

The purpose of Study 1 was to determine which characteristics of leaders (i.e., their work motivation, motivation for transformational leadership, and/or leadership style) influenced subordinates' work motivation. To date, the majority of research examining work motivation has been largely cross-sectional in nature (Gagné et al., 2014; Van den Broeck, 2012), so this longitudinal study contributes to the literature through its replication and extension of previous findings, as well as its novel results.

Study 1 provided a novel contribution through demonstrating that both amotivation and autonomous work motivation are contagious between leaders and subordinates. Contrary to expectations, leaders' controlled motivation did not predict the controlled motivation of subordinates. Regardless, the evidence that leaders' autonomous work motivation predicts subordinates' autonomous motivation is more aligned with stances in the researcher literature. For instance, Van den Broeck (2012) advocated that research should tap into the antecedents of high quality motivation (i.e., autonomous motivation) as opposed to extrinsic values (i.e., controlled motivation). Moreover, there is not enough research evidence on the potential negative work outcomes of controlled motivation to warrant efforts at predicting it.

Interestingly, neither amotivation nor controlled motivation for transformational leadership predicted passive-avoidant and active management-by-exception leadership

styles. Thus, autonomous motivation, as opposed to amotivation or controlled motivation, for transformational leadership appears to be a stronger predictor of effective leadership styles. Specifically, leaders who were autonomously motivated to engage in transformational leadership behaviours had increased active-constructive leadership styles and decreased passive-avoidant leadership styles. This is consistent with previous findings demonstrating that the autonomous reasons why leaders lead influence how they will lead (Gilbert, 2015). This study also examined whether leaders' motivation for transformational leadership had trickle down effects such that it could ultimately influence subordinates' motivations through the leaders' leadership styles.

As expected, passive-avoidant leadership predicted subordinate amotivation. That is, leaders with these negative styles of leadership (i.e., laissez-faire and passive management-by-exception) had less motivated subordinates. However, neither active management-by-exception nor active-constructive leadership predicted controlled or autonomous work motivation among subordinates. Interestingly, leaders' leadership styles predicted the absence of motivation, but did not predict the type of motivation among subordinates. Thus, it may be useful to consider leaders' leadership styles when attempting to predict whether subordinates are motivated for work; however, leaders' work motivation can explain both the absence of subordinate work motivation, as well as whether subordinates have autonomous motivation.

Limitations and Future Research

Although these findings are promising, Study 1 is not without limitations. First, the relatively small sample size of 32 leaders and 45 subordinates may have skewed the interpretability of the findings. Guidelines on the appropriate sample sizes for multi-level modeling analyses tend to vary from 10 (Snijders & Bosker, 1999) to 30 (Kreft & De Leeuw, 1998) to 50 (Maas & Hox, 2005) level-two units. The current sample aligns with previous research that recommends 30 as the minimum acceptable number of level-two units (Scherbaum & Ferretter, 2009); however, 50 level-two units were not obtained due to participant drop out. Thus, attempts were made to account for potential bias that may have resulted from the relatively small sample size. Specifically, the number of parameters estimated in the model was reduced, no control variables were included in the analyses, and the maximum likelihood with robust errors estimator was used (Kelloway, 2014). Future research should aim to replicate these findings using larger samples and with an equal number of subordinates per leader if possible.

Second, the recruitment tactics for obtaining data from subordinate participants could be improved. In order to participate in the research, leaders were encouraged to assist the researcher in recruiting subordinates to complete the survey starting at Time 2. Although the researcher was responsible for contacting the subordinate participants directly, it is possible that the leader only provided the contact information for the subordinates with whom they had the best rapport. If this was the case, the findings may be skewed, so future researchers should consider alternative recruitment tactics.

Third, two of the motivation measures used in this study had low Cronbach alphas. Specifically, leaders' responses to the amotivation towards work subscale (leader $\alpha = 0.52$) and the amotivation towards transformational leadership subscale (leader $\alpha = 0.40$) were lower than the recommended value of .70 (Cortina, 1993; Cronbach, 1951; Novick & Lewis, 1967). Accordingly, this brings into question the reliability of the amotivation measures used in Study 1. For the amotivation towards work subscale, none of the three items completed by the leaders were highly correlated with each other. Interestingly, the same set of items is highly correlated when the subordinates completed the subscale. When examining the inter-item correlations of the amotivation for transformational leadership subscale, it appears that the item "I don't care about being a leader" is not as highly correlated with the remaining items in the subscales. Thus, the psychometric properties of the amotivation measures are of concern, which bring into question Study 1's findings related to leaders' amotivation towards work and transformational leadership. Accordingly, the findings related to autonomous motivation in this study make a greater contribution given the reliability and validity of those subscales.

Finally, the scope of the leadership construct in Study 1 was limited to the full-range leadership model, and it is possible that other leadership variables may be more applicable when predicting subordinates' autonomous motivation. Thus, future research should consider other leadership styles such as autonomy-supportive leadership as a potential antecedent of subordinates' autonomous motivation. Particularly, future intervention studies should consider the role of autonomy-supportive leadership and

additional variables such as meaningful work, which could stimulate autonomous motivation of both leaders and their subordinates.

Study 2

Given that the findings of Study 1 supported that leaders' autonomous motivation for work changed over time, this dissertation aligns with research stances in the literature that autonomous motivation is considered a state as opposed to a trait (Chen, Gully, Whiteman, & Kilcullen, 2000; Van den Broeck, 2012). Therefore, Study 2 designed and evaluated a workplace intervention to examine whether leaders can be trained and coached to have increased autonomous work motivation. The focus of leadership development interventions is unique in the sense that the training and subsequent coaching is targeted at leaders, but the effects of the intervention are expected to extend to the leaders' subordinates as well. Thus, Study 2 addressed various calls documented in the research literature for studies that evaluate the extent to which workplace interventions influence employee motivation (e.g., Gilbert et al., 2016; Van den Broeck, 2012).

Contagious Autonomous Motivation

The length, focus, and activities of the leadership development intervention were guided by previous findings reported in the literature as well as the results of Study 1. Specifically, the intervention was designed with the goal of enhancing aspects of the leaders', as well as their subordinates', autonomous motivation for work. Study 1 demonstrated that leaders' autonomous motivation for work is particularly important in

enhancing subordinates' autonomous motivation. Thus, by training and coaching leaders, the effects of the intervention would likely extend to the leaders' subordinates as well given Study 1's support for the contagious nature of autonomous motivation in the workplace.

Hypothesis 1. *The intervention will have a significant impact on the work motivation of leaders and subordinates such that:*

H1a. Compared to leaders in the control group, leaders who received the intervention will have increased identified regulation for work at Time 2 and Time 3.

H1b. Compared to subordinates whose leaders were in the control group, subordinates whose leaders received the intervention will have increased identified regulation for work at Time 2 and Time 3.

H1c. Compared to leaders in the control group, leaders who received the intervention will have increased intrinsic regulation for work at Time 2 and Time 3.

H1d. Compared to subordinates whose leaders were in the control group, subordinates whose leaders received the intervention will have increased intrinsic regulation for work at Time 2 and Time 3.

Meaningful Work

Given the findings of Study 1, it is worthwhile to consider similar variables to autonomous motivation such as meaningful work. Previously described as a "fundamental human motive" (Britt, Adler, & Bartone, 2001, p. 54), meaningful work is similar to

identified regulation in particular. The construct of meaningful work tends to be conceptualized differently across researchers. For example, some researchers view meaningful work as the interplay between three entities: a sense of self, the work itself, and a sense of balance (Chalofksy, 2003). Others have conceptualized meaningful work more narrowly in scope such that the construct is defined as finding purpose in work that goes beyond the work's extrinsic outcomes (Arnold, Turner, Barling, Kelloway, & McKee, 2007). This dissertation uses the latter operationalization, as it examines meaningful work in the context of self-determination theory of motivation. Similar to autonomous motivation, meaningful work has been associated with positive employee outcomes such as enhanced psychological well-being (Arnold et al., 2007).

***Hypothesis 2.** The intervention will have a significant impact on leaders' and subordinates' perceptions of meaningful work such that:*

H2a. Compared to leaders in the control group, leaders who received the intervention will have increased perceptions of meaningful work at Time 2 and Time 3.

H2b. Compared to subordinates whose leaders were in the control group, subordinates whose leaders received the intervention will have increased perceptions of meaningful work at Time 2 and Time 3.

Basic Needs Satisfaction

Basic needs satisfaction is another construct that is commonly examined in the context of autonomous motivation. In fact, basic needs satisfaction is one of the mini theories underlying self-determination theory (Gagné & Deci, 2005), which postulates

that individuals are autonomously motivated to perform at work when the work satisfies their basic psychological needs (Deci & Ryan, 1985). Specifically, Deci and Ryan (2000) outlined three basic needs: the need for autonomy, which is met when individuals experience ownership and choice over their behaviour; the need for competence, which is satisfied when people attain the outcomes they aspire to achieve; and the need for relatedness, which is achieved when individuals connect with others. Whereas basic needs satisfaction leads to positive outcomes such as psychological adjustment and optimal work performance (Baard et al., 2004; Deci et al., 2001; Van den Broeck et al., 2016), unmet needs can result in maladaptive consequences such as emotional exhaustion (Vander Elst, Van den Broeck, De Witte, & De Cuyper, 2012; Van den Broeck et al., 2016). Some of the previous research on basic needs satisfaction has neglected to differentiate between the three basic needs, but rather, examined them using an aggregated score of need satisfaction (e.g., Gagné & Deci, 2005). However, more recent studies have demonstrated that satisfaction of certain needs (e.g., autonomy) account for greater variance in positive work outcomes than others (Dysvik, Kuvaas, & Gagné, 2013). Thus, all three needs are unique and should be viewed as distinct variables (Haivas, Hofmans, & Pepermans, 2012; Ryan & Deci, 2008; Van den Broeck et al., 2016).

***Hypothesis 3.** The intervention will have a significant impact on the basic needs satisfaction of leaders and subordinates such that:*

H3a. Compared to leaders in the control group, leaders who received the intervention will have increased autonomy needs satisfaction at Time 2 and Time 3.

H3b. Compared to subordinates whose leaders were in the control group, subordinates whose leaders received the intervention will have increased autonomy need satisfaction at Time 2 and Time 3.

H3c. Compared to leaders in the control group, leaders who received the intervention will have increased competence need satisfaction at Time 2 and Time 3.

H3d. Compared to subordinates whose leaders were in the control group, subordinates whose leaders received the intervention will have increased competence need satisfaction at Time 2 and Time 3.

H3e. Compared to leaders in the control group, leaders who received the intervention will have increased relatedness need satisfaction at Time 2 and Time 3.

H3f. Compared to subordinates whose leaders were in the control group, subordinates whose leaders received the intervention will have increased relatedness need satisfaction at Time 2 and Time 3.

Of particular relevance to the current research, conditions that satisfy individuals' autonomy, competence, and relatedness have been found to foster autonomous forms of motivation (Deci & Vansteenkiste, 2004). Therefore, it is conceivable that satisfying leaders' and subordinates' needs for autonomy, competence, and relatedness would increase their autonomous motivation. Given that situational factors significantly predict need satisfaction at work (Deci, et al., 1989; 2001), it is possible that interventions that satisfy employees' basic needs could stimulate autonomous motivation.

Hypothesis 4. *The relationship between the intervention and leader and subordinate autonomous motivation will be mediated by the basic need satisfaction of leaders and subordinates.*

Self-determination theory's basic needs satisfaction framework has been previously explored in the context of transformational leadership (Hetland et al., 2011; Kovjanic et al., 2012). Past research has demonstrated that transformational leadership predicts increased autonomy (Mennon, 1999; Shamir, House, & Arthur, 1993), competence (Menon, 1999), and relatedness (House & Shamir, 1992; Sarros, Tanewski, Winter, Santora, & Densten, 2002) satisfaction among subordinates. Through providing individualized consideration and encouraging intellectual stimulation, transformational leaders fulfill their subordinates' needs for autonomy by taking their subordinates' opinions into consideration and allowing their subordinates to choose how to complete work tasks (Bass, 1997). Additionally, transformational leaders can satisfy subordinates' needs for competence through idealized influence and inspirational motivation in which leaders provide opportunities for subordinates to expand their capabilities and reach their full potential (Deci & Ryan, 2000; Ryan & Deci, 2008). Finally, transformational leaders are willing to put the needs of the group above their own needs (Avolio, 1999), which fosters a sense of connectedness, which relates to relatedness satisfaction (Deci & Ryan, 2000). Although transformational leadership may predict subordinates' basic needs satisfaction, it did not predict subordinates' autonomous motivation in Study 1. Thus, alternative forms of leadership (e.g., autonomy-supportive leadership) are also worth considering.

Autonomy-Supportive Leadership

According to Study 1, leadership styles categorized by the full range leadership model (i.e., laissez-faire leadership, passive management-by-exception, active management-by-exception, contingent reward leadership, transformational leadership) did not predict subordinates' controlled or autonomous motivation. However, past research has demonstrated that other forms of leadership such as autonomy-supportive leadership have a significant effect on autonomous motivation (e.g., Conroy & Coatsworth, 2007). Specifically, leaders provide autonomy support when they provide their subordinates with greater choice and encourage their subordinates to be self-sufficient at work (Hocine, Zhang, Song, & Ye 2014). Indeed, making the organizational context more supportive of autonomy can satisfy employees' needs for autonomy and promote higher internalization at work (Baard, 2002). These findings have been illustrated in previous intervention research. For example, autonomy-supportive coaching has been found to improve athletes' perceived autonomy, competence, and relatedness, which, in turn, led to increases in their self-determined motivational orientation (Amorose & Anderson-Butcher, 2006). Similar findings have occurred in a workplace context such that managers who were trained to adopt a more autonomy-supportive managerial style had employees with higher autonomous motivation compared to those who did not receive the training (Hardré & Reeve, 2009). Thus, it is worthwhile to measure autonomy-supportive leadership when evaluating the effectiveness of workplace interventions aimed at enhancing autonomous motivation.

***Hypothesis 5.** The intervention will have a significant impact on the leadership styles of leaders such that compared to leaders in the control group, leaders who received the intervention will demonstrate increased autonomy-supportive leadership at Time 2 and Time 3.*

Leadership Development Interventions

Previous leadership development interventions have taken multiple forms including training workshops (e.g., Dvir, Eden, Avolio, & Shamir, 2002), coaching sessions (e.g., Kombarakaran, Young, Baker, & Fernandes, 2008), as well as a combination of both techniques (e.g., Barling et al., 1996; Kelloway Barling, & Helleur, 2000). Past research has demonstrated that either technique is effective for enhancing transformational leadership such that incorporating both methods does not increase the main effects of the leadership intervention (Kelloway et al., 2000). However, the purpose of the current intervention was not to increase transformational leadership, but rather, to foster autonomy-supportive leadership, meaningful work, basic needs satisfaction, and subsequently, autonomous motivation. Given the minimal evidence on which intervention techniques raise leaders' autonomous motivation, both components (i.e., training and coaching) of previous interventions were integrated into the current intervention.

Training

Training is a common intervention technique (Goldstein, 1980; 1989; 1993) that can comprise a multitude of activities such as lecture-based modules and interactive case studies (Saks & Haccoun, 2011), or role-playing exercises, simulations, and videos (e.g.,

Dvir, Eden, Avolio, & Shamir, 2002). For example, leadership training models (e.g., Bass, 1990) often include workshops in which leaders are required to brainstorm effective (e.g., transformational) and ineffective (e.g., laissez-faire) leadership behaviours. Particularly, one-day leadership training workshops have been based on this approach in which trainers have trainees identify the behaviours of good leaders through writing and delivering a “leader of the year” nomination speech, as well as the behaviours of bad leaders through a brainstorming activity (e.g., Barling et al., 1996; Kelloway et al., 2000). These leadership behaviours are then linked to transformational and transactional theories of leadership (Kelloway et al., 2000). Accordingly, training participants are educated on theories of leadership through lectures and subsequent discussions. The current intervention built on this approach such that leaders were educated on theories of work motivation, meaningful work, basic needs satisfaction, and autonomy-supportive leadership. As a result, leaders were made aware of both their own motivation as well as the motivation of their subordinates.

Coaching

Coaching constitutes another leadership development intervention technique, which often incorporates goal setting (e.g., Barling et al., 1996). Previous research has demonstrated that individuals who set goals were able to a) focus their attention and action, b) exert more energy, c) continue even when faced with failure, and d) develop strategies better than individuals without goals (Locke, Shaw, Saari, & Latham, 1981). In terms of the types of goals, goal setting theory stipulates that specific, difficult, and

assigned goals result in higher performance (Locke & Latham, 1984; 1990). In order to achieve these high performance goals, coaching involves participation by at least two parties (i.e., the coach and the leader).

Indeed, goal setting with a coach tends to incorporate both participation and feedback components (Barling et al., 1996). Participation refers to the coach and leader participatively setting the goals of the leader. Generally, the coaching results in five specific and manageable goals (Kelloway et al., 2000). Although leaders may commit to self-assigned goals, these goals are generally not as challenging as goals assigned with the assistance of a coach (Locke, 1997). Accordingly, participatively set goals result in better strategy formulation for reaching goals (Latham, Winters, & Locke, 1994). Feedback is considered a moderator of goal setting results (Locke & Latham, 2002), as it can increase both effort and goal difficulty (Latham & Pinder, 2005). For instance, a coach may provide a leader with feedback on the leader's self-rated leadership style, as well as how their subordinates rated them. Any substantial inconsistencies between how leaders perceive themselves and how their subordinates perceive them are identified by the coach, so that the leader can set specific goals to enhance their transformational leadership behaviours (Kelloway Barling, & Hueller, 2000). Therefore, feedback is particularly useful when goals need to be revised or changed (Latham, 2000). It is plausible that intervention techniques for enhancing autonomous motivation, meaningful work, basic need satisfaction, and autonomy-supportive leadership should also draw on goal setting through coaching. Thus, the current intervention incorporated goal setting with a coach, but utilized a novel approach such that leaders were encouraged to set

autonomously motivating goals. Further details on the format of the intervention can be found in the procedure section below.

Study 2 Method

Participants

A total of 87 leaders from a national non-profit organization were invited to participate in the intervention and its associated research study. Thirty-four leaders from the intervention group and 28 leaders from the control group responded to the pre-intervention survey and at least one or both of the post-intervention surveys, rendering a leader response rate of 71%. These leaders were working for a non-profit organization with offices and chapters located across Canada. Thus, while some leaders (71%) volunteered as presidents of their local chapters or as organizers of specific fundraising campaigns, other leaders (29%) were full-time paid employees working at either the organization's head office or at a regional office. Leader participants could not be randomly assigned to the intervention or control group condition, as the non-profit organization only agreed to have the trainer at certain office locations. Due to these practical considerations, group assignment was based on the geographic locations of the leaders. Detailed leader demographics are reported in Table 6.

These leaders were asked to invite all of their subordinates to participate in the research study as well. In order to participate, the leaders and their subordinates had to be working together by the first data collection time point. Although the total number of potential subordinate participants could not be obtained, the non-profit organization

reported that leaders supervise one to five subordinates on average. Overall, one of these leader participants had five subordinates, one leader had four subordinates, two leaders had three subordinates, two leaders had two subordinates, while 45 leaders had one subordinate and 13 leaders had no subordinates participate in the study.

In total, 64 subordinates responded to the pre-intervention questionnaire and at least one or both of the post-intervention questionnaires. Of these subordinates, 34 of them had leaders assigned to the intervention group while 30 of them had leaders in the control group. Subordinates were asked to respond to questions about themselves as well as their leader. Subordinates were not told whether or not their leader was part of the intervention or control group. See Table 7 for detailed subordinate demographics.

Procedure

Leaders that received the intervention attended a training session in which the trainer educated the leaders on the importance of autonomous motivation in predicting work outcomes at both the individual and organizational level. The training session commenced with having trainees discuss what motivates them to work. The trainer then sorted these reasons onto the self-determination theory continuum to illustrate which motives resemble controlled versus autonomous forms of work motivation, or amotivation. This intervention technique was used as a unique way to educate the trainees about the differential outcomes associated with each type of motivation, and how these motives can fluctuate over time. Additionally, the trainees brainstormed meaningful rationales for their tasks in order to find greater meaning in their work and promote an

autonomy-supportive organizational context (Deci et al., 1994). Leaders were also encouraged to include their subordinates in decision-making and provide them with autonomy at work. Attempts to satisfy the leaders' basic needs were made in order to enhance their autonomous motivation. For example, educating leaders on how to be autonomy-supportive leaders in their workplace aimed to fulfill their need for competence, while providing them with the tools they needed to carry out their work on their own intended to satisfy their need for autonomy, whereas training discussions were used to satisfy their need for relatedness. Given that leader support has been identified as an antecedent of basic need satisfaction (Baard, et al., 2004), this intervention incorporated a novel technique through educating leaders on how they could satisfy their subordinates' basic needs for autonomy, competence, and relatedness.

The second part of the intervention involved coaching. Specifically, each of the leaders' advisors were educated by the trainer on how to coach participants over the course of the intervention. Each coach asked their leader participants to describe what they would consider to be their personal best version of themselves at work and how they could achieve this, an activity that has been effective in previous interventions (e.g., Forest, Mageau, Crevier-Braud, Bergeron, Dubreuil, & Lavigne, 2012; Seligman, Steen, Park, & Peterson, 2005). Specifically, past research has demonstrated that when employees feel that they are reaching their full potential at work, they are likely to have increased autonomous motivation as opposed to controlled motivation (Vallerand et al., 2003). However, the current intervention also added novel techniques such as having the coach encourage their leader to set meaningful work goals that promote autonomous work

motivation. For instance, if a leader was motivated for extrinsic reasons (e.g., “I am motivated to work for this organization because I need to hit my financial target in order to keep my job”), the coach encouraged the leaders to set goals that also tapped into forms of autonomous motivation. An example of an autonomously motivated goal with identified regulation is “I plan to learn more about how the funds my organization raises are allocated toward advancements in research and treatment in order to motivate me for the work I do”. The coaching relationship aimed to also satisfy leaders’ basic needs for relatedness (through joint goal setting), autonomy (through goal commitment), and competence (through feedback).

As depicted in the timeline in Figure 6, a group (intervention vs. control) x time (pre-, post-, and follow-up) research design was used such that leaders assigned to the intervention group responded to an online questionnaire at the following time points: one week prior to the intervention (Time 1), one week post-intervention (Time 2), and one month post-intervention (Time 3). The leaders in the control group completed the online questionnaire at the same times as the intervention group in order to provide a comparison to assess the effectiveness of the intervention. However, the leaders in the control group did not receive the intervention. All leader participants were asked to recruit their subordinates to also complete an online survey at each of the specified time points. While leaders were asked to provide self-reported responses surrounding their own perceptions, subordinates were asked to provide both self-reported responses, as well as other-reported responses about their leaders’ behaviours. The measures in the two versions of the online survey are listed below. The intercorrelations for the examined measures completed by

leaders are presented in Table 8, while the intercorrelations for the subordinate data are shown in Table 9.

Measures

Work motivation. The Multidimensional Work Motivation Scale (MWMS; Gagné, et al., 2014) described in Study 1 was used to assess the work motivation of leaders and subordinates in Study 2. Alpha reliabilities in Study 2 were as follows: amotivation (leader $\alpha = 0.84$; subordinate $\alpha = 0.88$), external regulation – material (leader $\alpha = 0.60$; subordinate $\alpha = 0.74$), external regulation – social (leader $\alpha = 0.73$; subordinate $\alpha = 0.81$), introjected regulation (leader $\alpha = 0.89$; subordinate $\alpha = 0.90$), identified regulation (leader $\alpha = 0.72$; subordinate $\alpha = 0.74$), and intrinsic regulation (leader $\alpha = 0.88$; subordinate $\alpha = 0.84$). For Study 2, the individual regulations of autonomous motivation (leader $\alpha = 0.83$; subordinate $\alpha = 0.80$) were examined in order to identify which specific components (i.e., identified and/or intrinsic regulation) were increased by the intervention.

Meaningful work. Six items drawn from Spreitzer (1995) as well as May, Gilson, and Harter (2004) were used to measure the degree of meaning that leaders and subordinates drew from their work-related activities. Using a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*), leaders and subordinates indicated the extent to which they agreed with each item (e.g., “My job activities are personally meaningful to me”). The Cronbach’s alpha in the current study was .89 for leaders and .90 for subordinates.

Needs satisfaction. The Work-Related Basic Needs Satisfaction Scale (Van den Broeck, Vansteenkiste, De Witte, Soenens, & Lens, 2010) was used to measure the needs satisfactions of leaders and their subordinates. Using a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*), participants indicated the extent to which they agreed with 15 items measuring their needs satisfaction at work. Specifically, the scale included three subscales: autonomy satisfaction (e.g., “I feel free to do my work the way I think it could best be done”), competence satisfaction (e.g., “I feel that can accomplish the most difficult tasks at work”), and relatedness satisfaction (e.g., “At work, I feel part of a group”). Alpha reliabilities in Study 2 were as follows: autonomy satisfaction (leader $\alpha = 0.73$; subordinate $\alpha = 0.69$), competence satisfaction (leader $\alpha = 0.85$; subordinate $\alpha = 0.78$), and relatedness satisfaction (leader $\alpha = 0.86$; subordinate $\alpha = 0.78$).

Autonomy-supportive leadership. A short form of the Work Climate Questionnaire (Baard et al., 2004) was used to measure perceived autonomy-supportive leadership. Using a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*), subordinates rated the autonomy-supportive leadership of their leaders on six items (e.g., “My leader provides me with choice and options”). The Cronbach’s alpha in the current study was 0.96.

Transformational leadership. Four subscales (i.e., inspirational motivation, idealized influence, individualized consideration, intellectual stimulation) of the Multifactor Leadership Questionnaire (MLQ; Bass & Avolio, 1994) described in Study 1 were used to measure the transformational leadership of leaders, as rated by their

subordinates, in Study 2. The Cronbach's alpha for transformational leadership in the current study was 0.96.

Demographics. Demographic characteristics were assessed using standard survey questions that asked about participants' age, gender, ethnicity, city, province, workplace location, and position (see Appendix A). Participants' email addresses were also collected in the demographics questionnaire in order to match responses.

In summary, three of the aforementioned questionnaires as well as the standard demographic questions were administered to leaders. In addition to these three questionnaires, subordinates also provided other-ratings of their leaders' autonomy-supportive leadership and transformational leadership styles.

Study 2 Results

Analytic Overview

Prior to conducting analyses on SPSS, the data were checked for univariate and multivariate outliers (at $\alpha = .05$ level), as well as to ensure all statistical assumptions were satisfied. Furthermore, there were no significant differences between the control and intervention groups on any of the demographic variables, which implied that there was no need to control for demographic variables when conducting the following analyses.

The analytic approach used in Study 2 was twofold. Repeated measure multivariate analysis of variance (MANOVA) was used to test group differences on the dependent variables over three time points (pre-, 1 week post-, and 1-month post

intervention). Specifically, the first repeated measures MANOVA tested group differences on seven dependent variables (identified regulation, intrinsic regulation, meaningful work, autonomy need satisfaction, competence need satisfaction, relatedness need satisfaction, autonomy-supportive leadership) at the leader-level. The second repeated measures MANOVA tested group differences on six dependent variables (i.e., identified regulation, intrinsic regulation, meaningful work, autonomy need satisfaction, competence need satisfaction, relatedness need satisfaction) at the subordinate-level.

Next, multilevel modeling was used to test whether differences in leaders' autonomous motivation, as a result of the intervention, were associated with differences in subordinates' autonomous motivation. The data included the following clusters: three measurement time points (that were clustered in leaders), three measurement time points (that were clustered in subordinates), and subordinates (who were clustered in leaders). Given the importance of determining the causal effects of the intervention over time, scores were only maintained for leaders and subordinates who responded to the pre-intervention measure as well as at least one of the post-intervention measures.

Findings

Leader-level results. Repeated measures MANOVA demonstrated a significant multivariate group by time interaction at the leader-level ($F(7, 148) = 3.12, p = 0.01$). As demonstrated by the univariate effects (see Table 10), three of the dependent variables were significantly affected by the intervention, providing partial support for hypotheses 1, 2, and 4. Specifically, significant increases over time were observed for leader's

identified regulation (hypothesis 1a) and intrinsic regulation (hypothesis 1c), as well as meaningful work (hypothesis 2a), and autonomy-supportive leadership (hypothesis 5). To better understand the significant univariate effects at the leader level, a series of post-hoc paired *t*-tests were conducted.

Leaders' identified regulation. Significant increases in leaders' self-reported identified regulation were observed from Time 1 ($M = 5.54, SD = 1.19$) to Time 2 ($M = 6.30, SD = 0.62; p = 0.00$), and from Time 1 to Time 3 ($M = 6.41, SD = 0.32; p = 0.01$), but not from Time 2 to Time 3 for the intervention group. No significant changes were observed between any time increments for the control group. These findings lend support for hypothesis 1a.

Leaders' intrinsic regulation. Significant increases in leaders' self-reported intrinsic regulation were observed from Time 1 ($M = 5.40, SD = 1.25$) to Time 2 ($M = 6.09, SD = 0.86; p = 0.02$), but not from Time 1 to Time 3 ($M = 6.00, SD = 0.99; p = 0.20$), or Time 2 to Time 3, for the intervention group. No significant changes were observed between any time increments for the control group. These findings lend support for hypothesis 1c.

Leaders' perceptions of meaningful work. Significant increases in leaders' self-reported perceptions of meaningful work were observed from Time 1 ($M = 5.94, SD = 0.99$) to Time 2 ($M = 6.36, SD = 0.60; p = 0.04$), but not from Time 1 to Time 3 ($M = 6.28, SD = 0.79; p = 0.39$) or Time 2 to Time 3, for the intervention group. No significant

changes were observed between any time increments for the control group. These findings lend support for hypothesis 2a.

Leaders' autonomy need satisfaction. No significant increases between leaders' self-reported autonomy need satisfaction were observed between any of the time increments for either the intervention group or the control group. These findings do not provide support for hypothesis 3a.

Leaders' competence need satisfaction. No significant increases between leaders' self-reported competence need satisfaction were observed between any of the time increments for either the intervention group or the control group. These findings do not provide support for hypothesis 3c.

Leaders' relatedness need satisfaction. No significant increases between leaders' self-reported relatedness need satisfaction were observed between any of the time increments for either the intervention group or the control group. These findings do not provide support for hypothesis 3e.

Leaders' basic need satisfaction. Given the lack of support for hypotheses 3 in which the intervention had no effect on the basic need satisfaction of leaders, there was no sufficient evidence to warrant a test for mediation for hypothesis 4. That is, no analyses were conducted to examine whether basic need satisfaction served as a mediator of the effects of the intervention on leader and subordinate autonomous motivation.

Leaders' autonomy-supportive leadership. No significant increases between leaders' autonomy-supportive leadership, as rated by their subordinates, were observed

between the intervention group and control group from Time 1 ($M = 3.56$, $SD = 1.08$) to Time 2 ($M = 4.08$, $SD = 0.95$; $p = 0.09$) or Time 2 to Time 3. However, there was a significant increase in leaders' autonomy-supportive leadership from Time 1 to Time 3 ($M = 4.26$, $SD = 0.74$; $p = 0.01$) for the intervention group only. These findings provide partial support for hypothesis 5.

Leaders' transformational leadership. Although not hypothesized, the effects of the intervention on leaders' transformational leadership were included as a post hoc analysis. Particularly, this manipulation check was used to ensure that the intervention did not change leaders' transformational leadership styles, as the purpose was to alter their autonomy-supportive leadership, perceptions of meaningful work, and autonomous motivation. As demonstrated in Figure 7, no significant increases between leaders' transformational leadership, as rated by their subordinates, were observed between any of the time increments for either the intervention group or the control group.

Subordinate-level results. At the subordinate-level, a repeated measures MANOVA also resulted in a significant multivariate group by time interaction ($F(6, 126) = 3.36$, $p = 0.00$). As shown in Table 11, three subordinate-level dependent variables were significantly affected by the intervention, providing further support for hypotheses 1 and 2. Specifically, significant increases over time were observed for subordinates' identified regulation (hypothesis 1b), and intrinsic regulation (hypothesis 1d), as well as meaningful work (hypothesis 2b). To better understand the significant univariate effects at the subordinate level, a series of post-hoc paired t -tests were conducted.

Subordinates' identified regulation. Significant increases in subordinates' self-reported identified regulation were observed from Time 1 ($M = 5.43, SD = 0.75$) to Time 2 ($M = 6.36, SD = 0.55; p = 0.00$), and from Time 1 to Time 3 ($M = 6.08, SD = 0.64; p = 0.01$), but not from Time 2 to Time 3, for subordinates whose leaders were in the intervention group. No significant changes were observed between any time increments for subordinates whose leaders were in the control group. These findings lend support for hypothesis 1b.

Subordinates' intrinsic regulation. Significant increases in subordinates' self-reported intrinsic regulation were observed from Time 1 ($M = 5.64, SD = 0.99$) to Time 2 ($M = 6.08, SD = 0.46; p = .03$), but not from Time 1 to Time 3 ($M = 6.01, SD = 0.78; p = 0.11$), or Time 2 to Time 3, for subordinates whose leaders were in the intervention group. No significant changes were observed between any time increments for subordinates whose leaders were in the control group. These findings lend partial support for hypothesis 1d.

Subordinates' perceptions of meaningful work. Significant increases in subordinates' self-reported perceptions of meaningful work were observed from Time 1 ($M = 5.75, SD = 0.78$) to Time 2 ($M = 6.32, SD = 0.58; p = 0.02$), and from Time 1 to Time 3 ($M = 6.22, SD = 0.54; p = 0.05$), but not from Time 2 to Time 3, for subordinates whose leaders were in the intervention group. No significant changes were observed between any time increments for subordinates whose leaders were in the control group. These findings lend support for hypothesis 2b.

Subordinates' autonomy need satisfaction. No significant increases between subordinates' self-reported autonomy need satisfaction were observed between any of the time increments for subordinates whose leaders were in the intervention group or the control group. These findings do not provide support for hypothesis 3b.

Subordinates' competence need satisfaction. No significant increases between subordinates' self-reported competence need satisfaction were observed between any of the time increments for subordinates whose leaders were in the intervention group or the control group. These findings do not provide support for hypothesis 3d.

Subordinates' relatedness need satisfaction. No significant increases between subordinates' self-reported relatedness need satisfaction were observed between any of the time increments for subordinates whose leaders were in the intervention group or the control group. These findings do not provide support for hypothesis 3f.

Leader and subordinate motivation contagion results. As reported in Table 12, multilevel modeling analyses demonstrated that autonomous motivational variables had a significant effect on subordinate autonomous motivational variables over time, providing further support for hypothesis 1. Specifically, a change in leaders' identified regulation significantly predicted a change in subordinates' identified regulation. Also, leaders' high levels of intrinsic regulation was associated with high levels of intrinsic regulation among subordinates.

The effects of leaders' identified regulation on their subordinates' identified regulation were tested over time. There was no significant effect of time, demonstrating

that subordinates' identified regulation did not change over time, $F(1, 126.52) = 2.30, p = 0.13$, (95% CI [-0.03, 0.20]). There was no significant person-level effect of leader identified regulation such that leaders' identified regulation was not associated with higher identified regulation among their subordinates, $F(1, 167.09) = 0.29, p = 0.59$, (95% CI [-0.17, 0.30]). As expected, there was a significant interaction of time and leader identified regulation such that increases in leaders' identified regulation were associated with increases in subordinates' identified regulation, $F(1, 153.70) = 7.08, p = 0.01$, (95% CI [0.04, 0.28]) over time.

For subordinates intrinsic regulation, there was no significant effect of time, demonstrating that subordinates' intrinsic regulation did not change over time, $F(1, 119.70) = 0.61, p = 0.44$, (95% CI [-0.07, 0.16]). There was a significant person-level effect of leader intrinsic regulation such that leaders' intrinsic regulation was associated with higher intrinsic regulation among subordinates, $F(1, 138.09) = 11.46, p = 0.00$, (95% CI [0.17, 0.64]). Contrary to expectations, there was no significant effect of time and leader intrinsic regulation when predicting subordinates' intrinsic regulation over time, $F(1, 122.92) = 0.19, p = 0.66$, (95% CI [-0.09, 0.14]).

Study 2 Discussion

The intervention resulted in significant changes in the identified regulation and intrinsic regulation of leaders and subordinates such that increases in leaders' autonomous motivation were associated with increases in subordinates' autonomous motivation. Specifically, leaders' identified regulation continued to increase from Time 1 to Time 2 to

Time 3 for the intervention group; however, these leaders' intrinsic regulation peaked at Time 2 and then their intrinsic regulation slightly decreased at Time 3. This pattern of change implies that the intervention had a more lasting effect on increasing identified as opposed to intrinsic regulation. On the contrary, the intervention did not result in significant reductions in leaders' and subordinates' controlled motivation. Although interesting, this finding is not surprising given that the focus of the intervention was on promoting autonomous motivation as opposed to reducing controlled motivation.

Significant increases were also observed for the perceived meaningful work of both leaders and subordinates in the intervention group. Given the high correlation between identified regulation and meaningful work, it makes sense that finding meaning in one's work would contribute to advancements in autonomous motivation. However, this construct has rarely been examined in intervention research aimed at raising autonomous motivation. Thus, this finding in particular provides a novel contribution to the literature on motivation interventions. Interestingly, leaders and subordinates in the intervention group had peak levels of meaningful work at Time 2 (immediately following the intervention); however, these gradually decreased at Time 3 (one month following the intervention). This pattern of results implies that ongoing coaching may be needed for leaders in order to maintain their increased perceptions of meaningful work.

The subordinate data also demonstrated significant increases in the autonomy-supportive leadership of leaders in the intervention group from Time 1 (one week pre-intervention) to Time 3 (one month post intervention), but not from Time 1 to Time 2

(one week post intervention). It is not surprising that the intervention's effects on autonomy-supportive leadership were not observed until Time 3 because it may take longer for subordinates to observe changes in their leaders' behaviours. In contrast, it may be easier to measure fluctuations through self-reported measures of the participants' own motivation, perceived meaningful work, and basic needs satisfaction. Thus, the timing of the measurement may have contributed to when these effects were detected. The effects of the intervention on leaders' transformational leadership were tested as a manipulation check to ensure that the intervention achieved its intended purpose of enhancing autonomy-supportive leadership, as opposed to transformational leadership. Through assessing transformational leadership, this can be viewed as a test of discriminant validity in the sense that the intervention enhanced autonomous motivation, meaningful work, and autonomy-supportive leadership, but not transformational leadership. It also provides a defense against common method bias, as it shows that the intervention did not simply result in a positive increase for every variable that was measured using the questionnaires.

Despite the intervention's significant impact on autonomous motivation, meaningful work and autonomy-supportive leadership, it did not lead to significant increases in basic needs satisfaction. Thus, basic needs satisfaction does not explain the impact of the intervention on leader and subordinate autonomous motivation as initially hypothesized. Despite attempts, the training did not successfully fulfill leaders' needs for: 1) autonomy (through resources); 2) competence (through education); and 3) relatedness (through training discussions). Additionally, the coaching did not effectively fulfill leaders' needs for: 1) autonomy (through goal commitment); competence (through

feedback); and relatedness (through joint goal setting). Therefore, it is likely that other mechanisms besides basic needs satisfaction were responsible for the effectiveness of the intervention. It is also possible that collecting data at more frequent time points is needed in order to observe fluctuations in need satisfaction. Perhaps these changes are more obvious from day-to-day, and could have been missed due to the design of the study, which has some limitations.

Limitations and Future Research

Although Study 2 addressed many of the limitations of Study 1, there are still a few limitations worth acknowledging. Specific limitations include the lack of random assignment, not having a waitlist-control group, a limited sample, and the relatively short time period between data collection points.

Due to practical constraints set by the organization sampled in Study 2, training could only be offered at conferences and staff retreats held in Atlantic Canada and Ontario. Thus, leaders were not randomly assigned to the intervention and control group. Furthermore, there was no waitlist-control group, as leaders in the control group did not receive the intervention even after the research study concluded. Despite this limitation, a couple leaders from Alberta and Saskatchewan attended the training session held in Ontario. Moreover, a few leaders from Atlantic Canada and Ontario were in the control group, as they were unable to attend the training sessions in their home provinces. Importantly, there were no significant differences between Eastern and Western Canada on any variables pre- intervention. Although lack of random assignment was not ideal,

there did not appear to be any major confounds due to the geographic location of the leaders.

The sample may be considered another limitation of Study 2 for various reasons. First, the lack of change detected for certain variables such as basic needs satisfaction could be considered a result of lack of power due to low sample size. However, the absolute magnitude of the effects suggests that even with a larger sample size, there still may be no significant change. The small effect sizes imply that the outcome is unlikely to be simply a result of low power, and it is likely that they will remain small even with higher power (Mathieu, Aguinis, Culpepper, & Chen, 2012). The generalizability of the sample may also be a concern, as it is difficult to generalize findings based on leaders and subordinates from a medium-sized non-profit organization to leaders and subordinates in organizations of different sizes and industries. For instance, the levels of autonomous motivation are likely to be higher in a non-profit organization than other organizational contexts. However, the fact that significant increases in autonomous motivation were found for leaders in the non-profit sector is actually one of the study's strengths. Given that a ceiling effect may have been assumed for this type of sample, it is likely that even greater increases could be observed in organizations outside of the non-profit sector. Additionally, the initial levels of autonomous versus controlled motivation were not the main focus of this research, but rather, the relationship between the leaders' and subordinates' motivation was tested. However, future studies should still continue to evaluate the effectiveness of this intervention in organizations of different sizes in other

industries and cultures in order to determine the extent to which the results generalize to more conventional leader and subordinate relationships.

Finally, the timing between data collection time points may be critiqued. Given the practical constraints posed by the sample organization, further follow-up of the lasting effects of this intervention was not possible after three months. Although there are minimal guidelines in the literature on precisely when to measure change following an intervention, the current intervention used similar data measurement points as previous intervention studies (e.g., Barling et al., 1996; Mullen & Kelloway, 2009). However, further knowledge could have been gained on the underlying changes in motivation if data were collected more frequently (e.g., between coaching sessions) and for a longer duration (e.g., six months post intervention). Thus, future research should use different time lags in order to capture the underlying mechanisms responsible for the changes in the examined variables.

General Discussion

This dissertation provides insight into how leaders motivate their subordinates at work. Using a longitudinal research design, Study 1 provided support for the contagious nature of motivation at work. Specifically, increases in leaders' autonomous motivation were associated with increases in subordinates' autonomous motivation. Similarly, changes in amotivation of leaders and subordinates occurred in the same directions over time. Using a longitudinal control group design, Study 2 provided empirical support for

the effectiveness of a training and coaching intervention on both leaders' and subordinates' autonomous motivation, as well as their perceptions of meaningful work.

This dissertation challenges the status quo by suggesting that the effects (i.e., autonomously motivated subordinates) often attributed to transformational leadership (e.g., Trepanier, Fernet, & Austin, 2012) may in fact be the result of a motivation contagion effect. However, that is not to say that transformational leadership is unimportant when examining subordinate motivation. In fact, both the inspirational motivation and idealized influence facets of transformational leadership in particular relate to subordinate motivation (Avolio, Bass, & Jung, 1999). Furthermore, certain styles of the full range leadership model (i.e., laissez faire and passive management-by-exception) predicted subordinate amotivation in Study 1. Thus, transformational leadership training may be valuable for helping to increase the likelihood that subordinates are motivated at work, whereas motivation training and coaching would ensure that the subordinates' motivation is autonomous.

Future Research

Future intervention research studies could explore whether transformational leadership training and motivation training/coaching should be used in conjunction with one another. It is possible that interventions that tap into both leadership and motivation would be effective in developing transformational leadership, autonomy-supportive leadership, autonomous work motivation, perceptions of meaningful work, as well as autonomous motivation for transformational leadership.

Another direction for future research is to examine the relationship between team members' work motivation. Similar to how intrinsic motivation is contagious among student peers (Krishen, 2013), it would be interesting to explore whether motivation is also contagious among coworkers. If so, motivation may have an even stronger effect on organizations than currently anticipated. Determining whether leaders or colleagues have a greater impact on employee motivation would have important implications for organizations from both a practical and theoretical stance.

Theoretical Implications

In summary, the dissertation drew on both self-determination theory and the full-range leadership model to determine what characteristics of leaders (i.e., their work motivation, motivation for transformational leadership, and/or leadership style) influence subordinates' work motivation. Through proposing and testing two conceptually different processes, this dissertation has significant theoretical implications. Specifically, findings demonstrated that the quality of work motivation of a leader (i.e., autonomous motivation) influences their subordinates' quality of motivation over time. Alternatively, the leadership style of a leader can have an impact on the quantity of their subordinates' motivation (i.e., amotivation). That is, passive-avoidant leadership predicted whether or not their subordinates were amotivated to work. Overall, these findings demonstrate that leadership is just one predictor of subordinate work motivation, which is a complex multi-determined construct that can also be predicted by other factors such as their leaders' own work motivation. Indeed, these findings create awareness of the importance of leaders'

own motivation, a construct that is often ignored in the Industrial/Organizational Psychology and Management literatures.

Practical Implications

Although researchers and practitioners often fixate on changing leaders' leadership style as the main way to motivate subordinates (Ahmand, Abbas, Latif, & Rasheed, 2014; Avolio, Bass, & Jung, 1999; Bass, 1985), this dissertation suggests that organizations should put emphasis on leader motivation when training and selecting autonomously motivated leaders. Hiring leaders with autonomous motivation as opposed to leaders that are amotivated or have controlled motivation is particularly important given the positive work outcomes associated with autonomous motivation (e.g., Gagné & Deci, 2005). Although further validation research is necessary before using the Multidimensional Work Motivation Scale (Gagné et al., 2014) and Motivation for Transformational Leadership Scales for selection purposes, these assessments are valuable for screening leaders into training programs. Another practical use of this research is applying strategies from the current intervention such as goal-setting during leader succession planning, which would help further develop these individuals as they transition into leadership positions.

The findings of Study 1 suggest that interventions focusing on the work motivation of leaders may be more applicable when aiming to improve subordinates' autonomous work motivation. Workplace interventions should be developed to stimulate leaders' identified regulation in particular, or autonomous motivation as a whole, as

opposed to solely intrinsic regulation. This is important because past research has demonstrated that identified regulation is a better predictor of tasks requiring effort than intrinsic regulation, which predicts tasks that are interesting and fun (Gagné & Deci, 2005). By increasing leaders' identified regulation and/or autonomous work motivation, subordinates' identified regulation and/or autonomous work motivation should be affected as well. While Study 1 demonstrated that autonomous motivation for work fluctuates over time, Study 2 supported that leaders can be trained to have increased autonomous work motivation. By increasing leaders' autonomous work motivation, subordinates' autonomous work motivation was also increased. However, interventions intending to change the leaders' leadership style should focus on fostering leaders' autonomy-supportive style of leadership as opposed to transformational leadership style in order to increase autonomous work motivation.

In conclusion, this research drew on both self-determination theory and leadership theory to examine how characteristics of leaders (i.e., their work motivation and/or leadership style) influence subordinates' work motivation. Both studies demonstrated that the autonomous motivation of leaders influences their subordinates' autonomous motivation over time. Similarly, autonomy-supportive leadership was associated with subordinates' autonomous motivation; however, transformational leadership was not. Thus, this research highlights that transformational leadership style, as conceptualized by the full-range leadership model, appears to have an impact on the quantity (i.e., amount) of subordinates' autonomous motivation, but not the quality (i.e., autonomous or controlled) of subordinates' motivation, whereas leader motivation has an impact on both.

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Table 1

Study 1 Participant demographics

Study Variable	Position					
	Leaders (<i>N</i> = 32)			Subordinates (<i>N</i> = 45)		
	<i>n</i>	%	<i>M</i> (<i>SD</i>)	<i>n</i>	%	<i>M</i> (<i>SD</i>)
Age			21.03 (1.74)			22.04 (5.01)
Sex						
Female	25	78.1		28	62.2	
Male	6	18.8		16	35.6	
Province						
Alberta	2	6.3		2	4.4	
Manitoba	1	3.1		5	11.1	
New Brunswick	5	15.6		6	13.3	
Newfoundland	1	3.1		0	0	
Nova Scotia	5	15.6		10	22.2	
Ontario	12	37.5		16	35.6	
Prince Edwards Island	2	6.2		3	6.7	
Saskatchewan	3	9.4		3	6.7	
Employment Status						
Employee	14	43.8		9	20.0	
Volunteer	17	53.1		36	80.0	

Table 2
Study 1 Correlations between leader and subordinate variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
1. Lead Amotivation	1.29	0.51	--											
2. Sub Amotivation	1.65	0.84	.13	--										
3. Lead Controlled	2.40	0.67	-.05	.12	--									
4. Sub Controlled	2.10	0.57	-.06	.40**	.24*	--								
5. Lead Autonomous	6.18	0.88	-.51**	-.18	.18*	.15	--							
6. Sub Autonomous	5.81	0.89	-.31**	-.59**	.07	-.22**	.40**	--						
7. Lead Amotivation TFL	1.45	0.60	.41**	.26*	.10	.03	-.55**	-.18	--					
8. Passive-Avoidant	0.75	0.81	.29*	.67**	.02	.12	-.46**	-.44**	.42**	--				
9. Lead Controlled TFL	3.58	1.00	-.12	.11	.54**	-.13	.04	-.06	.10	.17	--			
10. Active Management	1.80	0.98	.03	.17*	.16	.03	.28	-.10	-.05	.20**	.08	--		
11. Lead Autonomous TFL	6.25	0.80	-.50**	-.08	.14	.25*	.81**	.29**	-.60**	-.41**	.00	.05	--	
12. Active Constructive	3.19	0.62	-.29*	-.22**	.29**	-.02	.53**	.44**	-.36**	-.48**	-.07	.01	.45**	--

Table 3
Results for Hypotheses 1, 2, and 3

Equations	<i>b</i>	SE <i>b</i>	<i>t</i>	<i>p</i>
H1: Subordinate Amotivation				
Time	0.04	0.06	0.59	0.56
1a: Leader Amotivation	-0.40*	0.22	-1.86	0.05
1b: Time*Leader Amotivation	0.15**	0.06	2.32	0.02
H2: Subordinate Controlled Motivation				
Time	-0.01	0.04	-0.26	0.79
2a: Leader Controlled Motivation	0.15	0.15	1.01	0.32
2b: Time*Leader Controlled Motivation	-0.01	0.04	-0.31	0.76
H3: Subordinate Autonomous Motivation				
Time	0.05	0.08	0.66	0.52
3a: Leader Autonomous Motivation	0.65*	0.31	2.10	0.04
3b: Time*Leader Autonomous Motivation	-0.08	0.08	-0.99	0.32

Table 4
Results for Hypotheses 4, 5, and 6

Equations	<i>b</i>	SE <i>b</i>	<i>t</i>	<i>p</i>
H4: Passive Avoidant Leadership				
Time	-0.01	0.07	-0.21	0.84
4a: Leader Amotivation for Leadership	0.29	0.29	0.98	0.33
4b: Time*Leader Amotivation for TFL	-0.13	0.08	-0.18	0.86
H5: Active Management-by-Exception				
Time	-0.09	0.06	-1.47	0.15
5a: Leader Controlled Motivation for TFL	-0.23	0.24	-0.96	0.34
5b: Time*Leader Controlled Motivation for TFL	0.05	0.08	0.81	0.42
H6: Active Constructive Leadership				
Time	0.03	0.04	0.79	0.34
6a: Leader Autonomous Motivation for TFL	0.32*	0.16	1.97	0.05
6b: Time*Leader Autonomous Motivation for TFL	-0.04	0.04	-0.99	0.32

Table 5
Results for Hypotheses 7, 8, and 9

Equations	<i>b</i>	SE <i>b</i>	<i>t</i>	<i>p</i>
H7: Subordinate Amotivation				
Time	0.05	0.06	0.84	0.41
7a: Passive Avoidant Leadership	0.58**	0.19	3.05	0.00
7b: Time*Passive Avoidant Leadership	-0.78	0.06	-1.23	0.20
H8: Subordinate Controlled Motivation				
Time	-0.00	0.04	-0.02	0.98
8a: Active Management-by-Exception	-0.06	0.15	-0.44	0.67
8b: Time*Active Management-by-Exception	0.02	0.04	0.58	0.57
H9: Subordinate Autonomous Motivation				
Time	0.03	0.08	0.37	0.71
9a: Active Constructive Leadership	0.45	0.29	1.55	0.13
9b: Time*Active Constructive Leadership	-0.06	0.08	-0.70	0.49

Table 6
Study 2 Leader demographics

Study Variable	Condition					
	Intervention Group (<i>N</i> = 34)			Control Group (<i>N</i> = 28)		
	<i>n</i>	%	<i>M</i> (<i>SD</i>)	<i>n</i>	%	<i>M</i> (<i>SD</i>)
Age			28.88 (14.67)			28.93 (10.90)
Sex						
Female	27	79.4		21	75.0	
Male	7	20.6		7	25.0	
Province						
Alberta	1	2.9		1	3.6	
British Columbia	0	0		1	3.6	
Manitoba	0	0		2	7.1	
New Brunswick	6	17.6		2	7.1	
Newfoundland	2	5.9		2	7.1	
Nova Scotia	7	20.6		6	21.4	
Ontario	16	47.1		10	35.7	
Prince Edwards Island	1	2.9		3	6.7	
Saskatchewan	1	2.9		4	14.3	
Employment Status						
Paid Employee	10	29.4		8	28.6	
Unpaid Volunteer	24	70.6		20	71.4	

Table 7
Study 2 Subordinate demographics

Study Variable	Condition					
	Intervention Group (<i>N</i> = 34)			Control Group (<i>N</i> = 30)		
	<i>n</i>	%	<i>M</i> (<i>SD</i>)	<i>n</i>	%	<i>M</i> (<i>SD</i>)
Age			25.44 (10.79)			25.27 (7.13)
Sex						
Female	20	58.8		21	70.0	
Male	14	41.2		9	30.0	
Province						
Alberta	1	2.9		1	3.3	
British Columbia	0	0		1	3.3	
Manitoba	0	0		5	16.7	
New Brunswick	7	20.6		4	13.3	
Newfoundland	2	5.9		2	6.7	
Nova Scotia	5	14.7		4	13.3	
Ontario	17	50.0		12	40.0	
Prince Edwards Island	1	2.9		0	0	
Saskatchewan	1	2.9		1	3.3	
Employment Status						
Paid Employee	6	17.6		3	10.0	
Unpaid Volunteer	28	82.4		27	90.0	

Table 8
Study 2 correlations between leaders variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1. Identified – T1	--																		
2. Identified – T2	.37**																		
3. Identified – T3	.63**	.56**																	
4. Intrinsic – T1	.47**	.17	.19																
5. Intrinsic – T2	.32**	.59**	.55**	.51**															
6. Intrinsic – T3	.28	.48**	.35*	.74**	.67**														
7. Meaning – T1	.66**	.36**	.44**	.69**	.49**	.62**													
8. Meaning – T2	.16	.63**	.45**	.23	.55**	.50**	.29*												
9. Meaning – T3	.49**	.54**	.47**	.52**	.56**	.61**	.74**	.71**											
10. Autonomy – T1	.36**	.21	.03	.46**	.22	.48**	.48**	.15	.37*										
11. Autonomy – T2	.17	.39**	.35*	.04	.34**	.31	.22	.43**	.35*	.48**									
12. Autonomy – T3	.17	.19	.16	.36*	.15	.53**	.29	.35*	.43**	.57**	.33								
13. Competence – T1	.39**	.18	.04	.40*	.22	.50**	.51**	.24	.55**	.68**	.24	.37*							
14. Competence – T2	.33**	.46**	.39	.32*	.47**	.50**	.46**	.61**	.58**	.40**	.49**	.33	.47**						
15. Competence – T3	.21	.14	.11	.33*	.27	.50**	.47**	.40*	.61**	.50**	.42*	.43**	.84**	.66**					
16. Relatedness – T1	.48**	.23	.17	.66**	.44**	.61**	.58**	.23	.43**	.64**	.17	.51**	.48**	.36**	.22				
17. Relatedness – T2	.28*	.38**	.39*	.46**	.58**	.67**	.29*	.47**	.51**	.23	.49**	.31	.09	.47**	.23	.43**			
18. Relatedness – T3	.39*	.14	.18	.1*	.31	.66**	.55**	.29	.53**	.2**	.27	.62**	.40	.50	.37*	.79**	.67**		

Table 9
Study 2 correlations between subordinate variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
1. Identified – T1	--																					
2. Identified – T2	.34**																					
3. Identified – T3	.68**	.73**																				
4. Intrinsic – T1	.35**	.24	.27																			
5. Intrinsic – T2	.08	.56**	.46**	.32**																		
6. Intrinsic – T3	.44*	.53**	.33	.68**	.74**																	
7. Meaning – T1	.67**	.38**	.38*	.57**	.21	.50**																
8. Meaning – T2	.27*	.85**	.68**	.23	.69**	.58**	.38**															
9. Meaning – T3	.27**	.66**	.49**	.37	.65**	.62**	.41*	.68**														
10. Autonomy – T1	.36**	.21	.03	.46**	.22	.48**	.48**	.15	.30*													
11. Autonomy – T2	.17	.39**	.35*	.04	.34**	.31	.22	.40**	.28*	.48**												
12. Autonomy – T3	.17	.19	.16	.36*	.15	.53**	.29	.27*	.52**	.57**	.23											
13. Competence – T1	.39**	.18	.04	.40*	.22	.50**	.51**	.21	.45**	.68**	.30	.37*										
14. Competence – T2	.33**	.46**	.39	.32*	.47**	.50**	.46**	.71**	.51**	.40**	.51**	.33	.60**									
15. Competence – T3	.21	.14	.11	.33*	.27	.50**	.47**	.40*	.61**	.50**	.32*	.43**	.80**	.70**								
16. Relatedness – T1	.48**	.23	.17	.66**	.44**	.61**	.58**	.23	.53**	.64**	.20	.41**	.61**	.40**	.27							
17. Relatedness – T2	.28*	.38**	.39*	.46**	.58**	.67**	.29*	.47**	.51**	.23	.52**	.35	.10	.52**	.32	.43**						
18. Relatedness – T3	.39*	.14	.18	.71*	.31	.66**	.55**	.29	.53**	.62**	.30*	.62**	.20	.50*	.40*	.79**	.67**					
19. Autonomy Lead – T1	.11	.10	.18	.25	.13	.55**	.24	.20	.29	.57**	.32*	.31	.38	.33*	.47*	.50	.58**	.43*				
20. Autonomy Lead – T2	.08	.27*	.38	.07	.30*	.51*	.18	.39**	.73**	.32*	.66**	.37	.39	.27*	.60**	.30	.60*	.52*	.47**			
21. Autonomy Lead – T3	.32	.31	.20	.36	.51*	.67**	.38	.38	.65**	.38	.58*	.74**	.37	.42*	.70**	.39*	.51*	.65*	.36	.55**		

Table 10

Study 2 Univariate effects for repeated measures MANOVA (leaders)

Variable	Intervention Group			Control Group			<i>F</i>
	Mean (SD)			Mean (SD)			
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3	
Identified	5.54 (1.19)	6.30 (0.62)	6.41 (0.32)	5.96 (0.65)	5.90 (0.88)	6.00 (0.89)	6.28**
Intrinsic	5.40 (1.25)	6.09 (0.86)	6.00 (0.99)	6.02 (0.92)	5.67 (1.09)	5.83 (1.17)	5.95**
Meaningful Work	5.94 (0.99)	6.36 (0.60)	6.28 (0.79)	6.38 (0.62)	6.05 (0.89)	6.53 (0.87)	4.10*
Autonomy	4.93 (0.99)	5.17 (0.78)	4.80 (0.91)	5.58 (0.65)	5.06 (0.86)	5.20 (0.62)	1.57
Competence	5.09 (1.09)	5.54 (0.97)	5.13 (1.23)	5.80 (0.83)	5.53 (0.82)	6.20 (0.54)	1.37
Relatedness	5.38 (1.28)	6.02 (0.94)	5.56 (1.49)	5.87 (0.87)	5.51 (1.19)	5.66 (0.78)	2.33
Autonomy-Supportive	3.56 (1.08)	4.08 (0.95)	4.43 (0.74)	3.73 (1.12)	3.83 (0.74)	3.62 (1.22)	2.85
Transformational	3.82 (0.86)	4.20 (0.74)	3.99 (0.99)	4.04 (0.81)	3.94 (0.66)	3.94 (0.59)	0.31

Note: *F* test is for the time*group interaction. ***p* < .01; **p* < .05

Table 11

Study 2 Univariate effects for repeated measures MANOVA (subordinates)

Variable	Intervention Group			Control Group		
	Mean (SD)			Mean (SD)		
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
Identified	5.54 (0.75)	6.36 (0.55)	6.08 (0.64)	5.89 (0.99)	5.55 (1.03)	5.81 (1.07)
Intrinsic	5.63 (0.99)	6.08 (0.46)	6.01 (0.78)	5.89 (0.79)	5.37 (0.98)	5.78 (0.97)
Meaningful Work	5.75 (0.78)	6.32 (0.58)	6.22 (0.54)	5.93 (0.89)	5.66 (1.20)	5.67 (1.16)
Autonomy	4.81 (0.88)	5.00 (0.84)	5.15 (0.85)	4.87 (0.73)	4.67 (0.91)	4.38 (1.31)
Competence	5.47 (0.91)	5.52 (1.00)	5.56 (0.94)	5.52 (0.81)	5.50 (0.71)	5.07 (0.85)
Relatedness	5.73 (0.77)	5.74 (1.03)	5.75 (0.58)	5.69 (1.08)	5.53 (1.02)	5.55 (1.27)

Note: *F* test is for the time*group interaction. ** $p < .01$; * $p < .05$

Table 12

Study 2 Model Summary

Equations	b	SE b	t	p
H1b: Subordinate Identified Regulation				
Time	.09	.06	1.51	.13
Leader Identified Regulation	.06	.12	0.54	.59
Time*Leader Identified Regulation	.16**	.06	2.66	.01
H1d: Subordinate Intrinsic Regulation				
Time	.04	.06	0.78	0.44
Leader Intrinsic Regulation	.40**	.12	3.38	0.00
Time*Leader Intrinsic Regulation	.03	.06	0.44	0.66

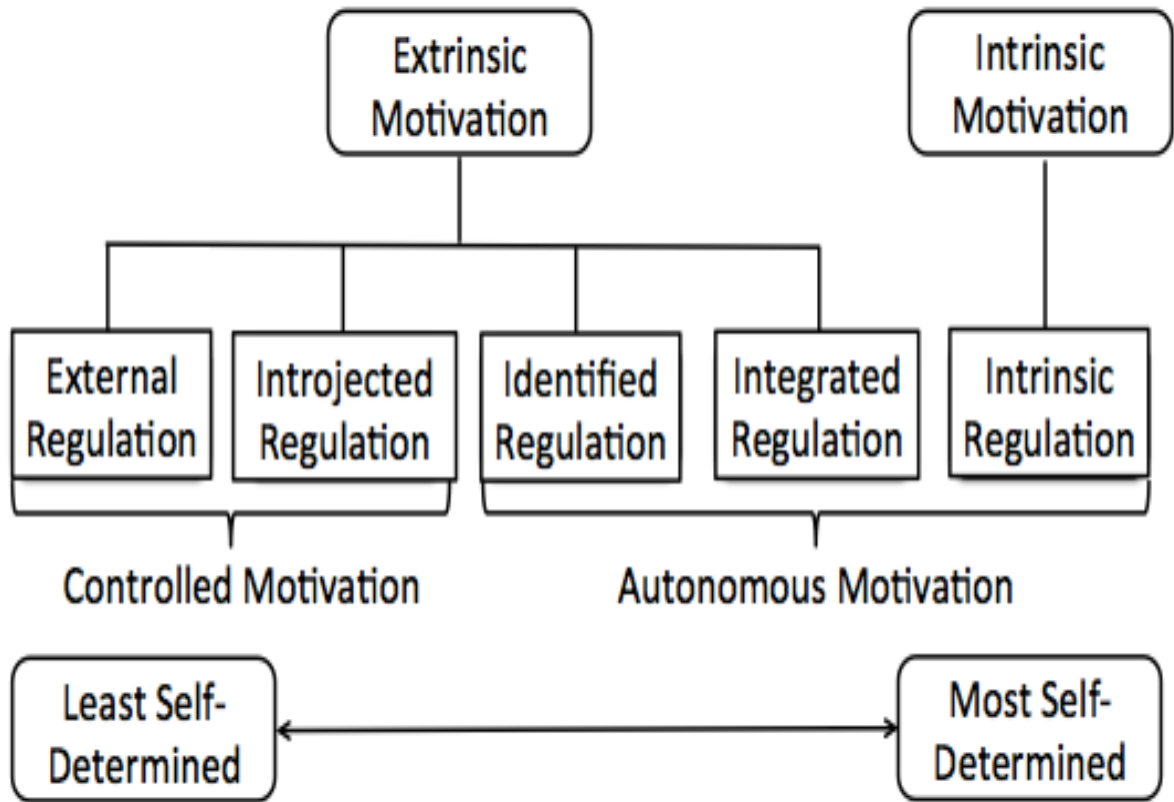


Figure 1. Model of Self-Determination Theory (adapted from Deci & Ryan 2008).

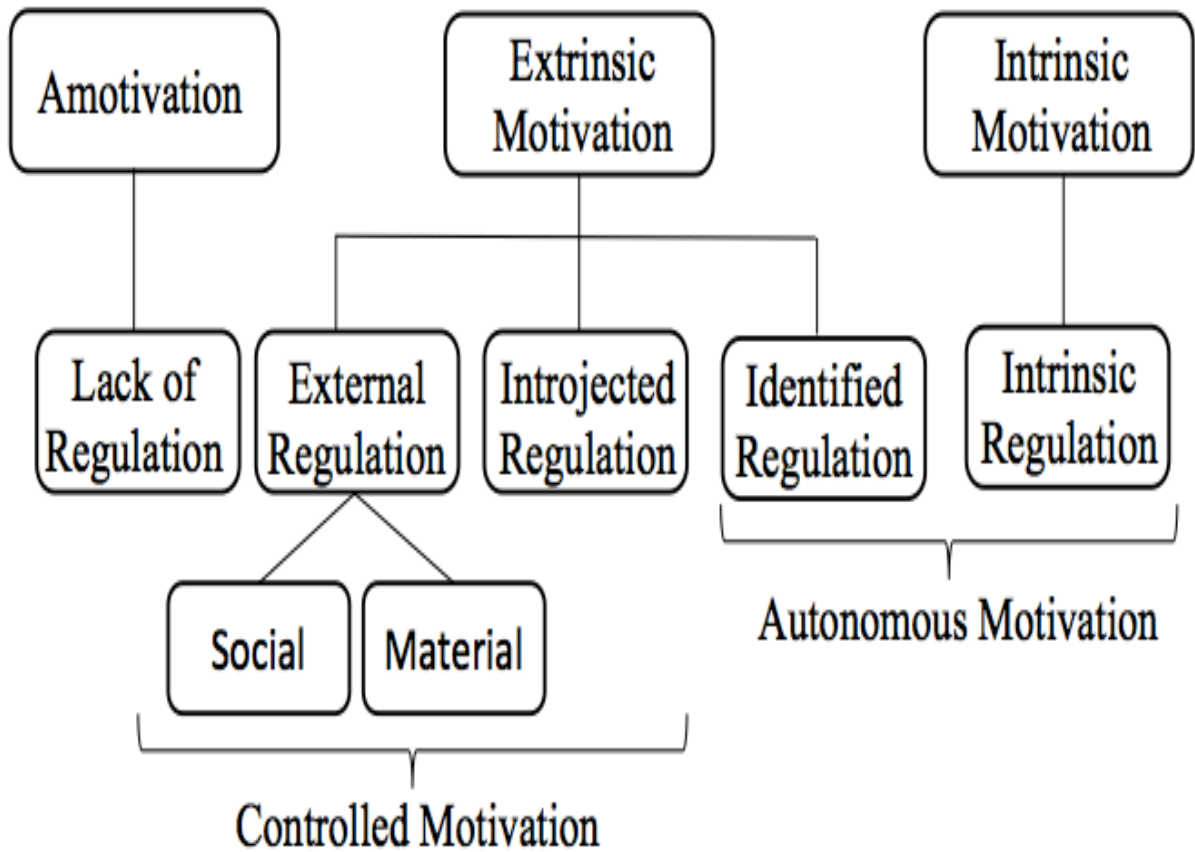


Figure 2. Revised Model of Self-Determination Theory (adapted from Deci & Ryan 2008; Gagné et al., 2014).

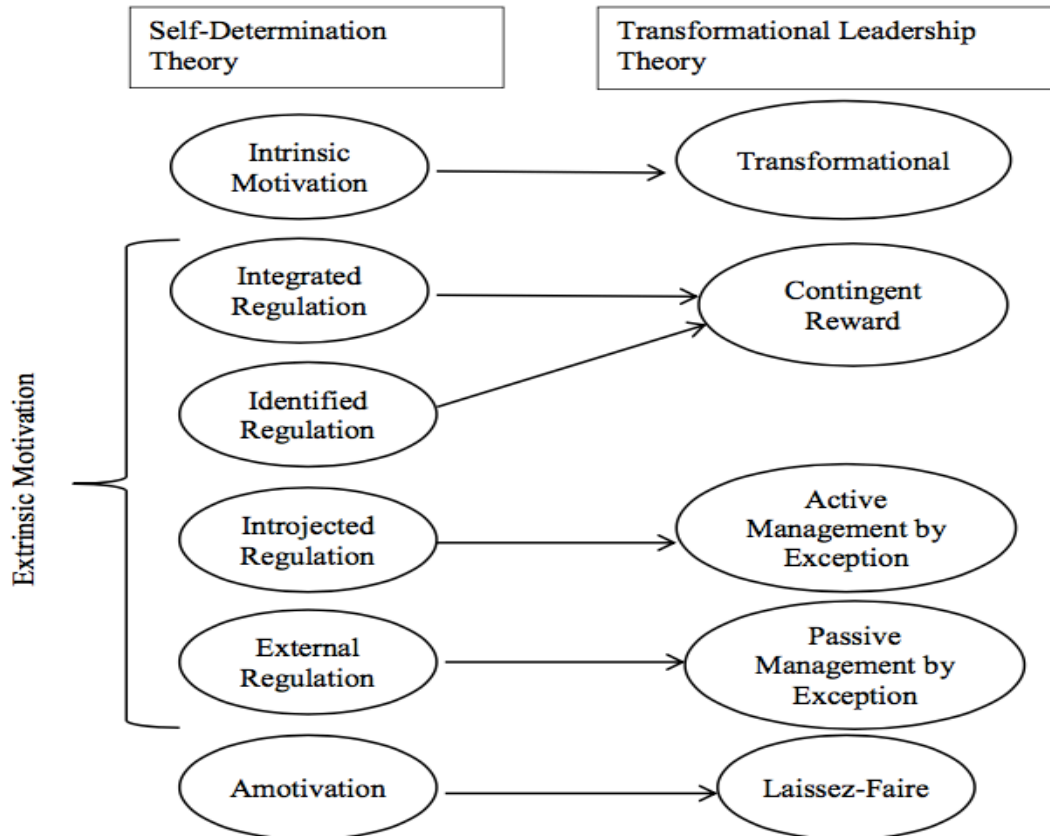


Figure 3. Motivation for Transformational Leadership Model (adapted from Gilbert & Kelloway, 2014).

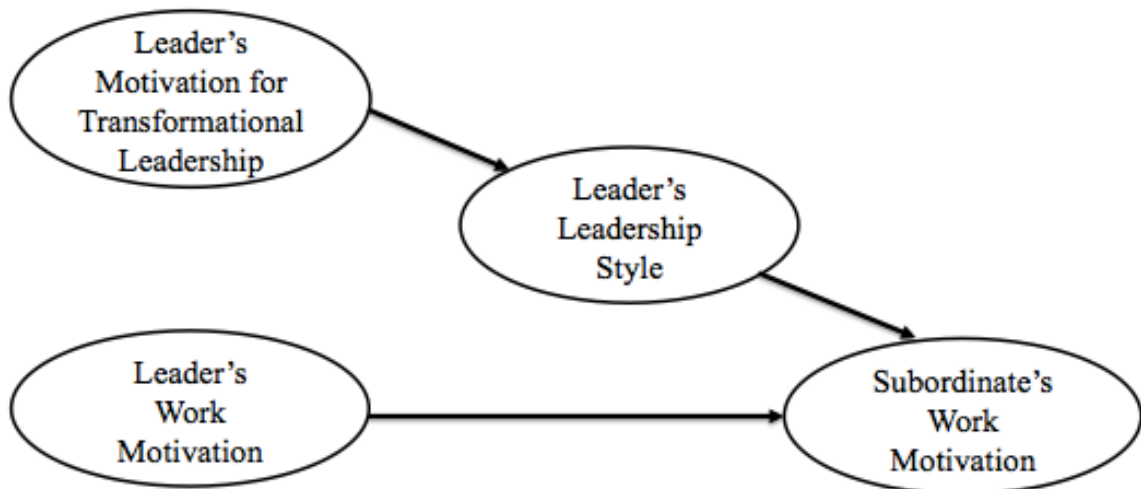


Figure 4. Theoretical Model of Motivation between Leaders and Subordinates

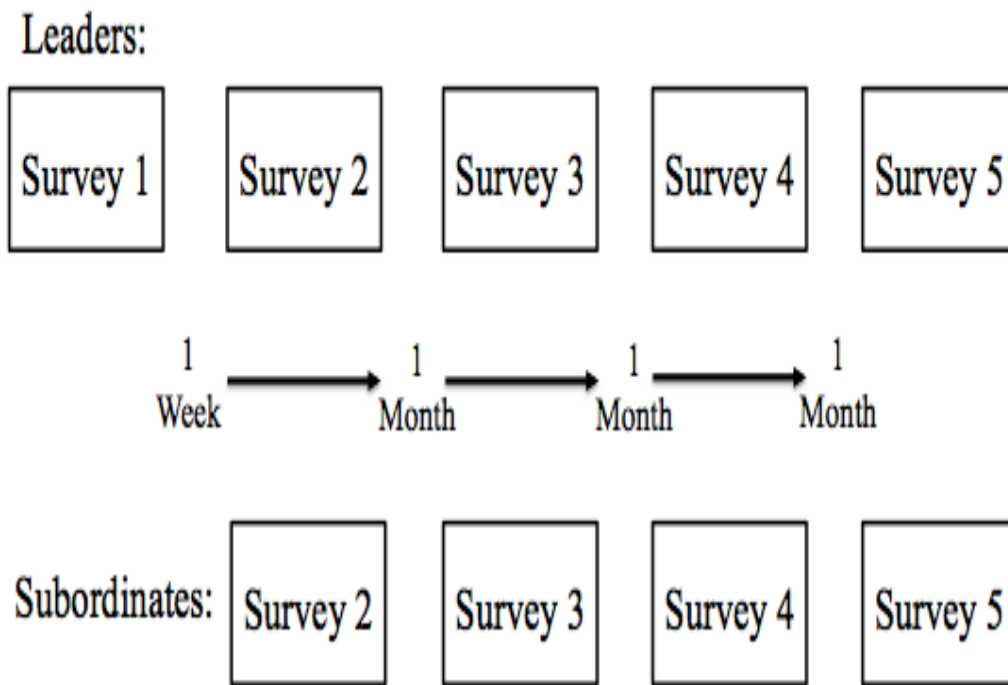
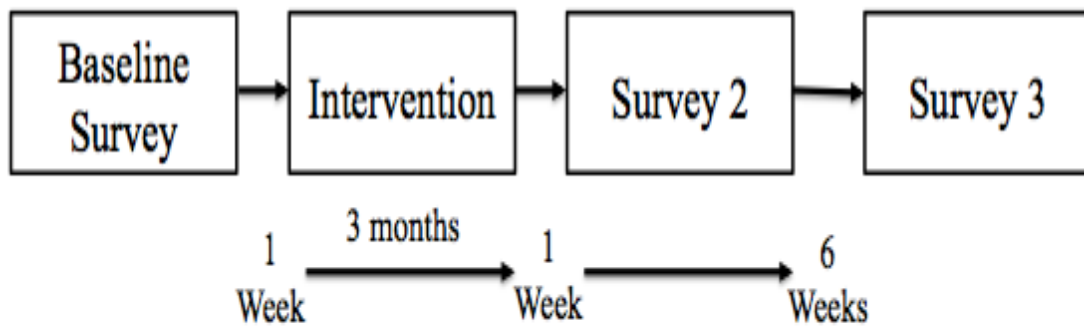


Figure 5. Study 1 Research Design

Intervention Group:



Control Group:

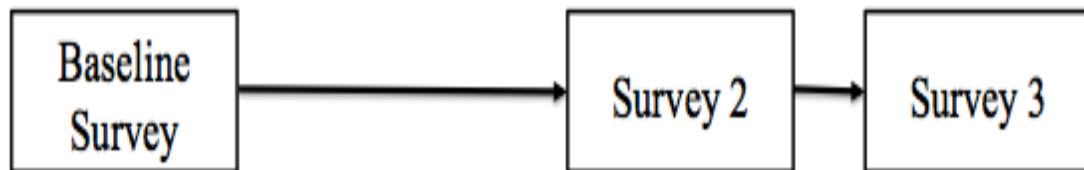


Figure 6. Study 2 Research Design

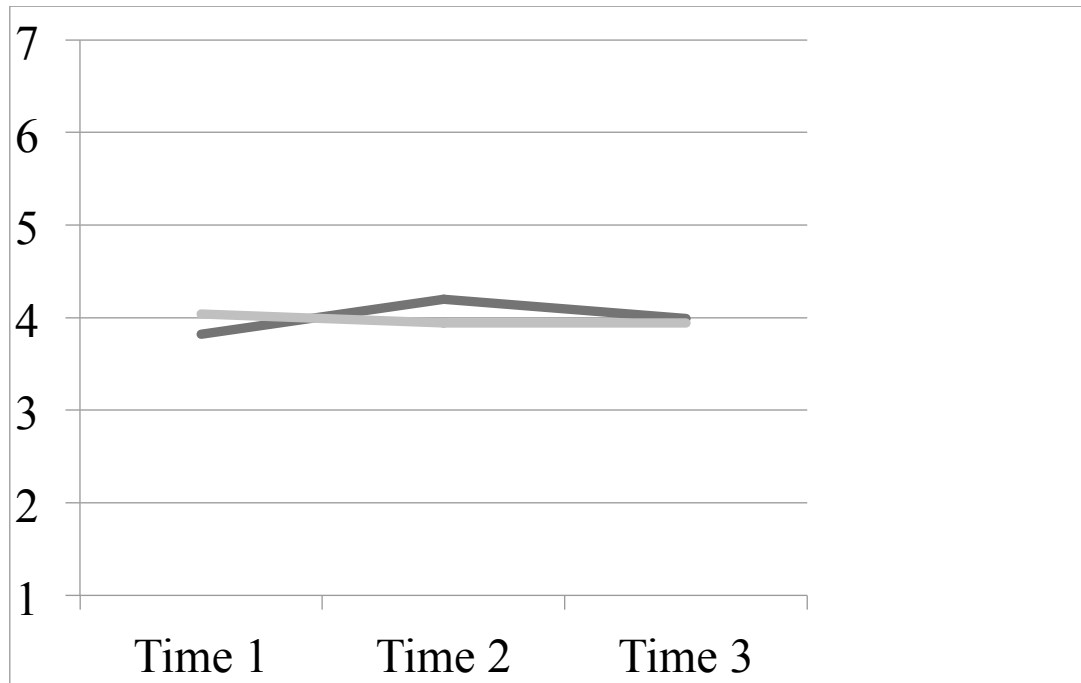


Figure 7. Effects of the intervention on transformational leadership (manipulation check).

Appendix A
Demographics

1. Age: _____

2. Gender: Male Female Other

3. What is your ethnic background?

African-American _____	Latin American _____
Arab _____	South Asian _____
Chinese _____	Southeast Asian _____
Filipino _____	West Asian _____
Japanese _____	White (Caucasian) _____
Other _____	

4. State the city and province you are currently residing in: _____

5. State your work location: _____

6. Are you paid for your position? Yes No

7. Please indicate your email address: _____

Appendix B

Summary of Hypotheses and Findings

	Study 1 Hypotheses	Study 1 Findings
1.	Leaders' amotivation for work will predict the amotivation of subordinates	1a. Person-level = Yes 1b. Interaction = Yes
2.	Leaders' controlled motivation for work will predict the controlled motivation of subordinates	2a. Person-level = No 2b. Interaction = No
3.	Leaders' autonomous motivation will predict the autonomous motivation of subordinates	3a. Person-level = Yes 3b. Interaction = No
4.	Leaders' amotivation for transformational leadership will predict passive-avoidant style of leadership	4a. Person-level = No 4b. Interaction = No
5.	Leaders' controlled motivation for transformational leadership will predict active management-by-exception style of leadership	5a. Person-level = No 5b. Interaction = No
6.	Leaders' autonomous motivation for transformational leadership will predict active-constructive style of leadership	6a. Person-level = Yes 6b. Interaction = No
7.	Passive-avoidant leadership will predict subordinate amotivation	7a. Person-level = Yes 7b. Interaction = No
8.	Active management-by-exception will predict subordinate controlled motivation	8a. Person-level = No 8b. Interaction = No
9.	Active-constructive leadership will predict subordinate autonomous motivation.	9a. Person-level = No 9b. Interaction = No
10.	Leadership style will mediate the relationship between leaders' motivation for transformational leadership and subordinates' motivation	10a. No 10b. No 10c. No
	Study 2 Hypotheses	Study 2 Findings
1a.	Compared to leaders in the control group, leaders who	Time 1 to 2 = Yes

	received the intervention will have increased identified regulation for work at Time 2 and Time 3.	Time 1 to 3 = Yes Time 2 to 3 = No
1b.	Compared to subordinates whose leaders were in the control group, subordinates whose leaders received the intervention will have increased identified regulation for work at Time 2 and Time 3.	Time 1 to 2 = Yes Time 1 to 3 = Yes Time 2 to 3 = No
1c.	Compared to leaders in the control group, leaders who received the intervention will have increased intrinsic regulation for work at Time 2 and Time 3.	Time 1 to 2 = Yes Time 1 to 3 = No Time 2 to 3 = No
1d.	Compared to subordinates whose leaders were in the control group, subordinates whose leaders received the intervention will have increased intrinsic regulation for work at Time 2 and Time 3.	Time 1 to 2 = Yes Time 1 to 3 = No Time 2 to 3 = No
2a.	Compared to leaders in the control group, leaders who received the intervention will have increased perceptions of meaningful work at Time 2 and Time 3.	Time 1 to 2 = Yes Time 1 to 3 = No Time 2 to 3 = No
2b.	Compared to subordinates whose leaders were in the control group, subordinates whose leaders received the intervention will have increased perceptions of meaningful work at Time 2 and Time 3.	Time 1 to 2 = Yes Time 1 to 3 = Yes Time 2 to 3 = No
3a.	Compared to leaders in the control group, leaders who received the intervention will have increased autonomy needs satisfaction at Time 2 and Time 3.	Time 1 to 2 = No Time 1 to 3 = No Time 2 to 3 = No
3b.	Compared to subordinates whose leaders were in the control group, subordinates whose leaders received the intervention will have increased autonomy need satisfaction at Time 2 and Time 3.	Time 1 to 2 = No Time 1 to 3 = No Time 2 to 3 = No
3c.	Compared to leaders in the control group, leaders who received the intervention will have increased competence	Time 1 to 2 = No Time 1 to 3 = No

	need satisfaction at Time 2 and Time 3.	Time 2 to 3 = No
3d.	Compared to subordinates whose leaders were in the control group, subordinates whose leaders received the intervention will have increased competence need satisfaction at Time 2 and Time 3.	Time 1 to 2 = No Time 1 to 3 = No Time 2 to 3 = No
3e.	Compared to leaders in the control group, leaders who received the intervention will have increased relatedness need satisfaction at Time 2 and Time 3.	Time 1 to 2 = No Time 1 to 3 = No Time 2 to 3 = No
3f.	Compared to subordinates whose leaders were in the control group, subordinates whose leaders received the intervention will have increased relatedness need satisfaction at Time 2 and Time 3.	Time 1 to 2 = No Time 1 to 3 = No Time 2 to 3 = No
4.	The relationship between the intervention and leader and subordinate autonomous motivation will be mediated by the basic need satisfaction of leaders and subordinates.	No
5.	Compared to leaders in the control group, leaders who received the intervention will demonstrate increased autonomy-supportive leadership at Time 2 and Time 3.	Time 1 to 2 = No Time 1 to 3 = Yes Time 2 to 3 = No