Self-Determination Theory in Work Organizations: The State of a Science

Edward L. Deci,[1,2,3] Anja H. Olafsen,[2] and Richard M. Ryan[1,3]

[1]Department of Clinical and Social Sciences in Psychology, University of Rochester, Rochester, New York 14627; email: deci@psych.rochester.edu, richard.m.ryan@icloud.com

[2]School of Business, University College of Southeast Norway, 3603 Kongsberg, Norway; email: Anja.Olafsen@hbv.no

[3]Institute for Positive Psychology & Education, Australian Catholic University, Strathfield, New South Wales 2135, Australia

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Abstract

Self-determination theory (SDT) is a macro theory of human motivation that evolved from research on intrinsic and extrinsic motivations and expanded to include research on work organizations and other domains of life. We discuss SDT research relevant to the workplace, focusing on (*a*) the distinction between autonomous motivation (i.e., intrinsic motivation and fully internalized extrinsic motivation) and controlled motivation (i.e., externally and internally controlled extrinsic motivation), as well as (*b*) the postulate that all employees have three basic psychological needs—for competence, autonomy, and relatedness—the satisfaction of which promotes autonomous motivation, high-quality performance, and wellness. Research in work organizations has tended to take the perspectives of either the employees (i.e., their well-being) or the owners (i.e., their profits). SDT provides the concepts that guide the creation of policies, practices, and environments that promote both wellness and high-quality performance. We examine the relations of SDT to transformational leadership, job characteristics, justice, and compensation approaches.

INTRODUCTION

A large percentage of adults in the world work in organizations, and their jobs vary substantially. Some have careers that are relatively interesting and valued by others. Their work conditions are supportive, and they perceive their pay to be equitable. Others, however, have jobs that are demanding and demeaning. Their work conditions are uncomfortable, and their pay is not adequate for supporting a family. They are likely to look forward to days away from work to feel alive and well (Ryan et al. 2010). Both of these types of jobs may exist in organizations that are profitable.

Being profitable is a minimum expectation for an organization. However, highly effective organizations are more than merely profitable for investors; they benefit all stakeholders, including employees, investors, and consumers. These highly effective organizations promote both high-quality performance (hence profitability) and employee thriving, in terms of motivation to work and wellness. In fact, rather than being antithetical aims, high-quality employee motivation and wellness can contribute to long-term organizational health, customer satisfaction and loyalty, and financial success, as many modern consultants suggest (e.g., Doshi & McGregor 2015, Mackey & Sisodia 2014, Pink 2009).

For decades self-determination theory (SDT) has addressed the links between motivation and the dual concerns of performance and wellness in organizations. It has focused on what facilitates high-quality, sustainable motivation and what brings out volitional engagement in employees and customers. SDT suggests that fostering workplace conditions where employees feel supported in their autonomy is not only an appropriate end in itself but will lead to more employee satisfaction and thriving, as well as collateral benefits for organizational effectiveness. Because SDT details the multiple factors, including managerial styles and pay contingencies, that support employees' autonomy and competence at work, it provides a framework for allowing them to be more engaged as they and their organizations develop and thrive.

SELF-DETERMINATION THEORY

SDT is a macro theory of human motivation that has been successfully applied across domains including parenting, education, healthcare, sports and physical activity, psychotherapy, and virtual worlds, as well as the fields of work motivation and management (Deci & Ryan 1985a, Ryan & Deci 2017). SDT specifically suggests that both employees' performance and their well-being are affected by the type of motivation they have for their job activities. SDT therefore differentiates types of motivation and maintains that different types of motivation have functionally different catalyzers, concomitants, and consequences.

Autonomous Motivation and Controlled Motivation

Autonomous motivation is characterized by people being engaged in an activity with a full sense of willingness, volition, and choice. Often, autonomously regulated activities are intrinsically motivated. Perhaps more important to the workplace, however, extrinsically motivated activities can, under the right circumstances, also be autonomously motivated—that is, engaged with authenticity and vitality. When individuals understand the worth and purpose of their jobs, feel ownership and autonomy in carrying them out, and receive clear feedback and supports, they are likely to become more autonomously motivated and reliably perform better, learn better, and be better adjusted. In contrast, when motivation is controlled, either through contingent rewards or power dynamics, the extrinsic focus that results can narrow the range of employees' efforts, produce short-term gains on targeted outcomes, and have negative spillover effects on subsequent performance and work engagement.

Intrinsic motivation. This is a specific type of autonomous motivation. It refers to activities for which the motivation lies in the behavior itself. When intrinsically motivated, it is the spontaneous experiences of interest and enjoyment entailed in the activity that supply the "rewards." Intrinsic motivation is a ubiquitous human phenomenon, but it is exemplified in the play of children, who enthusiastically engage in activities without external rewards or prompts. However, intrinsic motivation is also evident in the activities of adults, such as sports and avocations, and it is surprisingly important even in in the workplace. Employees can be intrinsically motivated for at least parts of their jobs, if not for all aspects of them, and when intrinsically motivated the individuals tend to display high-quality performance and wellness.

Cognitive evaluation theory (CET) (Deci & Ryan 1980), which is one of SDT's six mini-theories, became well-known within the organizational psychology literature (Ambrose & Kulik 1999). It explained that intrinsic and extrinsic incentives are not necessarily additive and introduced experimental research on the undermining effects of rewards (e.g., see Deci et al. 1999). These experiments were important in showing systematic effects of different reward contingencies on intrinsic motivation, but perhaps more important was that they suggested that rewards could shift people's perceived locus of causality or perceived competence, thus diminishing their sense of autonomy and/or their sense of competence. The implications of these early CET findings are thus broader than just intrinsic motivation, because perceptions of autonomy and competence impact the quality of extrinsic as well as intrinsic motivations. In fact, the primary distinction within SDT, accounting for substantial variance in the outcomes of studies in work organizations, as well as across domains, is the distinction between autonomous motivation and controlled motivation (e.g., Ryan & Deci 2000, 2017), into which these early experiments had only begun to tap.

Extrinsic motivation. Extrinsically motivated behavior involves doing an activity to attain a separable consequence, whether tangible or otherwise. That is, extrinsic motivation encompasses all instrumental behaviors. Rather than viewing all extrinsic motivation as "bad," which some authors (e.g., Gerhart & Fang 2015) have claimed we did, SDT has always maintained that extrinsic rewards can have different functional significances that lead to enhancements, diminishments, or no effects on intrinsic motivation (e.g., Deci 1972). Furthermore, and very importantly, SDT has long differentiated extrinsic motivation into various forms, each of which is recognizable in the workplace, and which range from being less to more autonomous (Deci & Ryan 1985a, Ryan & Connell 1989).

External regulation is at the least-autonomous end of the extrinsic-motivation continuum of autonomy. When externally regulated, individuals perceive their behavior as being directly controlled by others, often through contingent rewards and threats. As we shall see, external regulation can powerfully motivate specific behaviors, but it often comes with collateral damage in the form of long-term decrements in autonomous motivation and well-being, sometimes with organizational spillover effects. A somewhat more autonomous form of extrinsic motivation is introjected regulation, which involves people being focused on approval versus disapproval in their jobs and from their leaders. Introjected behavior is self-controlled by processes such as contingent self-esteem, ego-involvements, and guilt, as well as a concern with status and recognition. Still more autonomous is identified regulation, in which the individuals have personally identified with the importance or value of their work roles and behaviors. Because they have accepted as their own the rationale for acting, they are more autonomously self-regulated and are flexible in both selecting and sustaining their behavior and activities. Finally, when people assimilate and integrate their identifications, they can act through integrated regulation, which is the most mature and volitional form of extrinsic motivation. Integration is very important because there is potential for conflict among different identifications (e.g., an identification with one's job and an identification

with one's family), so people need to bring them into coherence. When identifications have been integrated, people are wholeheartedly engaged and purposive with respect to the target activities, and without inner barriers or conflicts.

According to SDT, these varied types of extrinsic motivation are salient to different degrees in workplaces, and each has predictable consequences. For example, some work environments foster more autonomous motivation and engagement in their employees, whereas others have them focused more on external contingencies or managers' approval.

Importantly, these motivations can be seen as lying along an autonomy continuum, with the order from least to most autonomous being external, introjected, identified, integrated, and intrinsic. Supporting this, when these motivations are measured in populations, their intercorrelations typically form a simplex-like pattern (Ryan & Connell 1989), in which the types of motivation most closely aligned along the continuum are most highly associated. The simplex pattern has been observed in hundreds of studies of motivation across domains such as health, sports, and education (Ryan & Deci 2017), as well as work (Gagné et al. 2015, Williams et al. 2014).

There has thus been interest and debate about how best to model the simplex and the unique variances of motivational subtypes. In some studies, motivation types have been algebraically combined to form a relative autonomy index (RAI), which allows the investigator to relate employees' overall autonomy versus control to other variables. The RAI has been predictive of organizational outcomes in a variety of contexts and settings (Ryan & Deci 2017). In other studies, investigators have contrasted autonomous (intrinsic, identified) with controlled (introjected, external) motivation.

SDT, with a multidimensional view, expects that specific qualities will be associated with each of the different motivation types and that they will be systematically ordered along the underlying continuum of autonomy, but Chemolli & Gagné (2014) questioned the continuum because it did not fit with a unidimensional Rasch model, which we would not have expected it to. Their data were derived from the multidimensional work motivation scale (MWMS) (Gagné et al. 2015), which assesses employees' intrinsic, identified, introjected, and external regulation, as well as their "amotivation." Results using the MWMS were largely consistent with the expected simplex pattern, but not with a Rasch model. A subsequent article by Howard et al. (2016) used bifactor analyses on an academic motivation scale, finding evidence for a continuum of autonomy as well as unique variances for distinct motives. Research from other labs using other analytic strategies have similarly shown support for SDT's idea that these motivational types differ in their relative autonomy, with important functional consequences [Roth et al. 2006; K.M. Sheldon, E.N. Osin, T.O. Gordeeva, D.D. Suchkov, O.A. Sychey (manuscript under review)]. However modeled, the general expectation from SDT is that more autonomous forms of motivation will predict greater persistence, performance quality, and well-being over time than will controlled forms, and that each of these forms of motivation will be systematically related to leadership styles, work conditions, and pay contingencies.

Basic Psychological Needs and Their Supports

Fundamental to SDT is the idea that the impact of varied environmental factors (e.g., job design, pay contingencies, managerial styles) on workers' motivations and experiences is largely mediated by a small set of basic psychological needs. They are the needs for competence or effectance (e.g., White 1959), relatedness or belongingness (e.g., Baumeister & Leary 1995), and autonomy or self-determination (e.g., de Charms 1968), which are essential for psychological health and well-being and facilitate effective functioning in social settings (Ryan 1995). Accordingly, SDT researchers have regularly hypothesized and consistently found that social settings such as

workplaces that support satisfaction of the basic psychological needs facilitate autonomous motivation, psychological and physical wellness, and enhanced performance, especially on heuristic activities (Deci & Ryan 2000). As such, the concept of basic need support emerged as a crucial concept to describe the conditions within social contexts such as workgroups that influence motivation, wellness, and performance. The more narrow concept of autonomy support is also often used to describe social contexts, and research suggests that basic need support and autonomy support are closely related and have very similar consequences (Fernet et al. 2012a,b).

SELF-DETERMINATION THEORY MOTIVATION MODEL FOR THE WORKPLACE

SDT's mini-theories have broad implications for organizations (Gagné & Deci 2005), and numerous research reports on SDT constructs within work organizations have appeared in the recent empirical literature. Here we review some of the more important ones. **Figure 1** shows these core elements of SDT as applied to the work domain, depicting the general SDT model of work motivation. This model begins with two primary sets of independent variables: social context variables and individual difference variables. The predominant social context variables are the organizational supports versus thwarts of employees' basic psychological needs for competence, relatedness, and autonomy, and they are viewed as being strongly influenced by managerial styles. Supports of the three needs are often used as a composite, although many studies have examined just autonomy support. In fact, when there is organizational and managerial support for autonomy, supports for and satisfaction of all three of the employees' basic psychological needs at the general level are often quite highly correlated, first because authorities who support autonomy generally are attuned to and supportive of the other needs, and second because when employees have a sense of autonomy they themselves find ways to get the other needs satisfied. Thus, when employees experience support for autonomy they typically also feel more connected to the organization, and feel more effective, for reasons we review in this article.

The most typical individual difference variables used in SDT studies have been the employees' general causality orientations (Deci & Ryan 1985b). Underlying the measure are three motivational orientations that employees can generally experience—an autonomy orientation that is

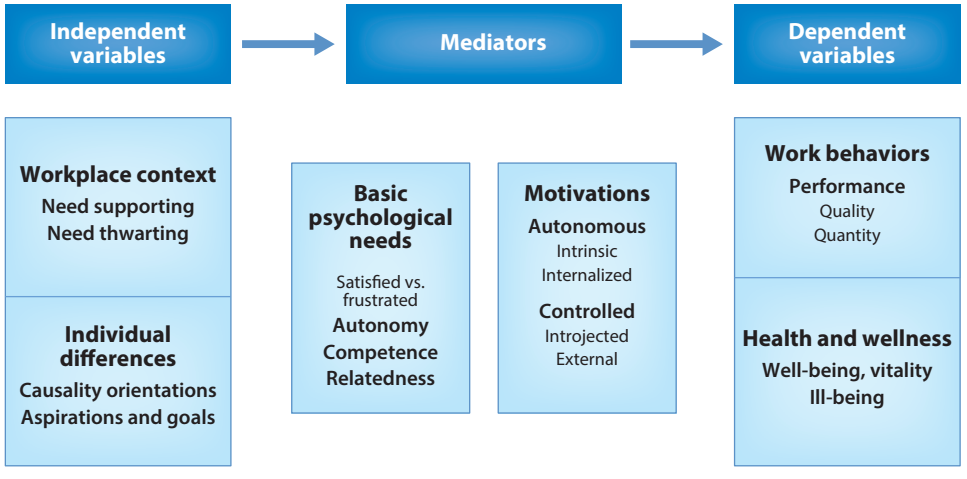

Figure 1

The basic self-determination theory model in the workplace.

proactive and interested, a controlled orientation that is focused on external contingencies to guide behaviors, and an impersonal orientation that lacks intentionality and is concerned with avoiding assessments and failures. Each of these can be differentially salient to employees, and in some research such orientations have been primed in individuals (e.g., Weinstein et al. 2010). Another measure of individual differences in SDT is extrinsic versus intrinsic aspirations or goals (e.g., Kasser & Ryan 1996), as is discussed below in the section on Employee Aspirations, have also been used in some studies of workplace motivation and satisfaction (e.g., Sheldon & Krieger 2014).

Research on this general model, shown schematically in **Figure 1**, has had two types of mediating variables: first, satisfaction of the three basic psychological needs, typically used as a composite (Baard et al. 2004), but sometimes analyzed with each need separately (e.g., Richer et al. 2002), and second, autonomous and/or controlled motivation (e.g., Fernet et al. 2012a, Williams et al. 2014), sometimes supplemented by perceived competence, especially in studies of health behavior change among adults (e.g., Williams et al. 2004). Some studies rather than assessing autonomous motivation have assessed only its intrinsic motivation component and examined its relation to other variables (e.g., Kuvaas 2009, Olafsen et al. 2015). Typically, researchers have used either the set of need satisfaction variables or the motivation variables, although a few studies have used both, in which case they have tended to predict the motivation variables from the need satisfaction variables, typically as mediating variables between independent variables and dependent variables (De Cooman et al. 2013). Finally, as noted in the introduction to the article, there have tended to be two types of dependent variables: performance variables (e.g., quantity or quality of performance or profitability) and well-being/ill-being variables (e.g., job satisfaction, vitality, or somatic symptoms). Many studies have selected a subset of variables, such that, for example, what are shown in the figure as mediators might be used as independent variables predicting outcomes. Other studies have examined the relations of some of the SDT variables to variables from other perspectives in the organizational literature. For example, studies have examined transformational leadership, which bears some relation to need-supportive management, as that leadership relates to basic need satisfaction, autonomous motivation, or both.

Research on the Self-Determination Theory Model in Work Organizations

In reviewing organizational research guided by SDT, we begin with studies of types of motivation (e.g., autonomous and/or controlled) and their consequences, followed by ones that examine need satisfaction/frustration variables, and their consequences. We then move on to more complex sets of variables that include situational variables such as need supports.

Consequences of autonomous motivation. Autonomous motivation is a central SDT variable for predicting workplace outcomes. It is comprised of employees' reports of both intrinsic motivation and well-internalized extrinsic motivation. The theory assumes that when people can identify with the value and importance of their work they will show enhanced qualities of work motivation. For example, in a study of more than 500 employees of a college, Fernet et al. (2010) found that autonomous work motivation led to less burnout. Richer et al.'s (2002) research on alumni from a business school showed that employees' autonomous motivation for their jobs was related to more work satisfaction and less emotional exhaustion; in turn, the work satisfaction was related to lower turnover intentions, and the emotional exhaustion was related to higher turnover intentions. Importantly, the level of turnover intentions predicted subsequent employee departures.

Foss et al. (2009) found that intrinsic (i.e., autonomous) motivation was positively predictive of knowledge sharing (i.e., performance), whereas external (i.e., controlled) regulation was negatively predictive of giving knowledge and unrelated to receiving it. Moreover, in other research,

Kuvaas (2009) found that intrinsic motivation for work among public sector employees positively predicted their self-reported work performance. Fernet et al. (2012a) examined both autonomous and controlled motivation of school principals and found that their autonomous motivation was negatively related to work exhaustion but positively related to work commitment, whereas controlled motivation was positively related to exhaustion.

Autonomous motivation has also been examined as a moderator of relations between other pairs of variables. For example, Trépanier et al. (2013a) found that employees high in autonomous motivation experienced less stress in the presence of high job demands than did those low in autonomous motivation. Two studies by Grant et al. (2011) revealed that personal initiative positively predicted objective indicators of performance only for those who were high in autonomous motivation and low in controlled motivation.

A study done in more than three thousand companies in the Netherlands found that indicators of job autonomy among employees predicted profitability of the company (Preenen et al. 2016), although that main effect was relatively weak. This is to be expected, of course, because numerous major factors influence a company's revenue, including changes in relevant national and international markets. Nonetheless, there was also an interesting moderation effect indicating that there was a much stronger relation between employees' autonomy indicators and profitability in younger companies compared with long-established companies. For the newer companies, vital inputs from employees appear to be particularly important for getting established and becoming profitable. In sum, these studies and many others have shown that autonomous motivation predicted less burnout, work exhaustion, and turnover, as well as greater work satisfaction, work commitment, and performance, whereas controlled motivation has tended to show opposite results.

Consequences of need satisfaction. The SDT variables, other than autonomous and controlled motivation, that are most often used as predictors of work outcomes are satisfaction and frustration of the basic psychological needs for competence, autonomy, and relatedness. Research with these variables found that satisfaction of the three needs led to less exhaustion (Van den Broeck et al. 2008) and less organizational deviance on the part of employees (Lian et al. 2012). In their research on workaholism, Andreassen et al. (2010) found that satisfaction of employees' basic psychological needs on the job led to greater enjoyment of their work and to their being less driven—that is, less compelled—by internal and external controls. One of the relatively few workplace studies that examined both basic need satisfaction and autonomous motivation indicated that, as predicted by SDT, employees who felt greater need satisfaction on the job also displayed greater autonomous motivation and effort expenditures (De Cooman et al. 2013). Finally, a meta-analysis of 119 distinct samples showed that each of the three basic need satisfactions predicted independent variance in intrinsic motivation and well-being, although it indicated that the need satisfactions were less effective in predicting negative outcomes than positive ones, leading the researchers to suggest using need frustration as well as need satisfaction as a predictor (Van den Broeck 2016).

Gillet et al. (2012) did study both satisfaction and frustration of the basic psychological needs of organizational employees, revealing that satisfaction of the three needs yielded greater hedonic and eudaimonic well-being, whereas frustration of the three needs led to lower levels of each type of well-being. A large study of Flemish employees showed further that frustration of the basic needs predicted poorer work-related well-being, as indexed by greater exhaustion (Vander Elst et al. 2012).

With the various studies confirming that either autonomous motivation or basic psychological need satisfaction was a reliable predictor of positive work-related outcomes, it became essential to explore the antecedents of these types of motivational experiences to understand how to promote wellness and high-quality performance in organizations.

Work contexts, motivations, needs, and outcomes. In many of the studies on situational factors in workplaces that might affect motivation variables, the focus has been on the atmosphere of work groups assessed by employees' perceptions of their managers being autonomy supportive or need supportive. These variables comprise such managerial behaviors as acknowledging the employees' perspectives, offering choices, providing meaningful feedback, encouraging initiation, making assignments optimally challenging, and giving a rationale when requesting that an employee do a particular task.

One study of the work experiences of police officers (Otis & Pelletier 2005) indicated that when the officers perceived their supervisors to be high in autonomy support, the officers were more autonomously motivated for work. They also reported stronger intentions not to leave their jobs, fewer hassles during their workdays, and fewer physical symptoms. Moreau & Mageau (2012) investigated health professionals and found that when the professionals received autonomy support from their supervisors, they reported more work satisfaction and better psychological health, but the researchers also found that autonomy support from their healthcare-professional colleagues added to the positive outcomes. Studies of teachers from China (Nie et al. 2015) and Gambia (Levesque et al. 2004) showed that when teachers perceived their supervisors to be more supportive of their basic needs, the teachers reported higher levels of autonomous motivation and were more satisfied with their jobs and their lives. In contrast, when teachers in Canada (Fernet et al. 2012b) felt coerced and controlled by their supervisors, they had lower levels of autonomous motivation and displayed more symptoms of burnout.

In conducting research on hotel employees, Hon (2012) found that when managers were empowering (i.e., supportive of autonomy) and coworkers were supportive of relatedness, the employees were more autonomously motivated and more creative in their work, but if the managers were pressuring and coercive, the employees were less motivated and creative. In Norway, research on employees showed that managers' support for the employees' basic psychological needs prompted more autonomous motivation among the employees as well as fewer psychosomatic symptoms and less emotional exhaustion, turnover intentions, and absenteeism (Williams et al. 2014).

During a period when a Canadian telecommunications company was undergoing a substantial change, investigators assessed the degree to which managers were autonomy supportive at two points in time (just as the change was beginning and 13 months later). Autonomy support was indicated by employees' perceiving that the managers acknowledge the employees' perspectives, offer choices, and provide rationales when asking the employees to do various behaviors. As well, these employees reported their attitudes toward the change at the same two points in time. Results of the research indicated that the more the managers were perceived to be autonomy supportive at Time 1, the more accepting their employees became of the changes over the 13-month period (Gagné et al. 2000).

Baard et al. (2004) explored motivational dynamics in employees of two banking companies in the New York area. They assessed the degree to which the employees experienced their supervisors to be autonomy supportive and found that those who viewed their managers as higher on autonomy support experienced greater satisfaction of their competence, autonomy, and relatedness needs. Furthermore, they also assessed the level of the employees' individual differences in the autonomous causality orientation and found that being high on the global level of autonomy contributed significant additional variance to the bankers' basic need satisfaction, although autonomy support from the managers explained considerably more variance in need satisfaction than did the employees' autonomous orientation. In turn, employees' basic need satisfaction predicted their performance as assessed with the standard performance evaluations in the companies, and

also predicted greater well-being of those employees. In short, psychological need satisfaction predicted both of the important categories of work outcomes—wellness and productivity—and managers' autonomy support was the major contributor to employees' need satisfaction.

Liu et al.'s (2011) research on an American manufacturing company found somewhat similar results to those of Baard et al. (2004) for bankers. Liu et al. found support for their hypotheses that autonomy support from both managers and peers, as well as employees' autonomous causality orientation, would lead to more work engagement and less voluntary withdrawing from the company. On the other side of the coin, in an investigation of nurses, Trépanier et al. (2013b) found that need-thwarting behaviors such as bullying on the job led to less work engagement and more work burnout as mediated by frustration of the basic psychological needs.

Together the primary findings of these studies indicate that autonomy support from managers in a variety of work settings enhanced both satisfaction of the basic psychological needs and autonomous motivation, and in turn yielded a range of positive work outcomes, including greater engagement; enhanced work performance; higher psychological well-being; and lesser amounts of exhaustion, ill-being, and turnover. Additionally, the individual difference of the autonomous causality orientation explained additional variance in work outcomes from that explained by managers' autonomy support. In addition, less autonomy support and more need thwarting from abusive manager behaviors related to a variety of negative consequences.

Employee aspirations. In addition to general causality orientations, which are the primary individual differences in SDT, life goals or aspirations are also used as general individual differences for predicting outcomes in various domains (Ryan et al. 1996). SDT most often considers seven aspirations that people may be pursuing as important over their lifetimes: financial wealth, recognition or fame, attractive image, personal development, meaningful relationships, community contributions, and physical fitness. Empirically, these aspirations load on two factors referred to as extrinsic aspirations (the first three goals) and intrinsic aspirations (the last four). Research has also shown that when people place relatively strong importance on the extrinsic aspirations, and also when they attain the extrinsic aspirations they desire, they tend to show signs of psychological ill-being, such as depression, anxiety, and low self-esteem, whereas when they pursue and attain intrinsic aspirations, they tend to show indications of psychological well-being, such as high self-actualization and self-esteem (Kasser & Ryan 1996). Subsequent research (Sheldon et al. 2004) found that the prediction of well-being from intrinsic versus extrinsic aspirations was independent of its prediction by autonomous versus controlled motivation, even though intrinsic aspiration and autonomous motivation tend to be correlated, and extrinsic aspiration and controlled motivation also tend to be correlated.

A few studies have examined the value workers place on these goals in their workplaces, examining the relations of the valued goals to various workplace outcomes. In multiple Belgian studies, researchers explored these goals, which they referred to as work values, to enhance our understanding of the role played by people's personal goals on their work outcomes. In two studies with many hundreds of employee participants, Vansteenkiste et al. (2007) found that the participants who held stronger extrinsic goals relative to intrinsic goals were less satisfied with their jobs and their lives. In a follow up study, the same researchers found the additional displeasing outcomes of emotional exhaustion, higher turnover intentions, and more work-family conflict among those employees who were relatively higher on extrinsic than intrinsic work values. Subsequently, Van den Broeck et al. (2010) found that those with more intrinsic work goals were more flexible in their work than those with extrinsic goals, and Van den Broeck et al. (2011) found that individuals with relatively high intrinsic work aspirations who engaged in learning opportunities were less

emotionally exhausted than those with relatively higher extrinsic aspirations. Additionally, in a New Zealand study, Roche & Haar (2013) found that employees higher in intrinsic goals engaged in more organizational citizenship behaviors, and Schreurs et al. (2014) found that when employees found their workplace to be supportive of more intrinsic work values the employees experienced more basic psychological need satisfaction and were more engaged in their work. In sum, it is clear from these various studies that when employees hold intrinsic work values and goals more strongly they will be more effective employees and when the workgroup supports the intrinsic values and goals, there will be further advantages.

Another study, which was focused specifically on the aspiration for money (Landry et al. 2016), found that the outcomes associated with aspiring to accumulate money depended on one's motive for doing so. More specifically, if people's motives for pursuing wealth were more integrated and thus were more need-satisfying and less need-frustrating, the aspiration was positively associated with well-being and negatively with ill-being. However, if the motives were less integrated and thus were less need-satisfying and more need-frustrating, the aspiration was positively associated with ill-being and negatively associated with well-being.

Sheldon & Krieger (2014) identified large samples of private-firm lawyers who had high-paying jobs within money-focused firms (e.g., doing securities-related work) and public-service lawyers who had jobs focused on serving the public (e.g., doing sustainability-related work for nonprofit organizations). As one would expect, those lawyers in the money-focused jobs had greater extrinsic aspirations relative to the public service group. They also had much larger annual incomes, suggesting they were getting what they valued. Nonetheless this money-focused group reported greater negative affect, lower well-being, and more alcohol consumption compared to a group of public service attorneys. Here, evidence shows that even a successful focus on the attainment of extrinsic goals does not reliably yield more happiness or well-being.

Needs across cultures. One of the criticisms of SDT has been that it is a Western theory because it emphasizes autonomy, which cultural relativists claim is pertinent to individualistic cultures but not to collectivistic cultures such as those in East Asia (e.g., Markus & Kitayama 1991). However, that criticism was based more on a definition of autonomy as independence, detachment, and individualism than on autonomy as volition, choice, and concurrence. Accordingly, Chirkov et al.'s (2003) research in South Korea, Russia, Turkey, and the United States indicated that in all of the cultures, when people were more autonomous (i.e., volitional) in enacting behaviors—both behaviors consistent with the values of their own cultures and behaviors consistent with the values of other cultures—the individuals were psychologically healthier, indicating that satisfaction of the autonomy need is necessary for greater personal well-being, even in cultures for which collectivism is a central value.

In the domain of work, research has also confirmed that autonomy is important for positive work outcomes in nonindividualistic cultures. Deci et al. (2001) examined the basic psychological needs of employees in both Bulgarian and American companies. At the time Bulgaria was moving only very slowly from a central-planning economy with the large companies still owned by the government toward a somewhat more capitalist economy; as such, the economic system and the culture were still very different from those in the United States. The investigators assessed employees' perceptions of the managers' autonomy supportiveness in several national companies, as well as the employees' experiences of need satisfaction, engagement, and well-being at work. Comparable data were obtained from the American employees. Results indicated that, in both cultures, managers' autonomy support predicted satisfaction of the employees' autonomy, competence, and relatedness needs, which in turn predicted their work engagement and well-being.

Clearly, employees' autonomy was important not only within America's capitalist economy but also in the more socialist economy of an emerging Bulgaria.

Studies of organizations in varied nations and economies from Europe to Asia (e.g., Nie et al. 2015, Van den Broeck et al. 2010) have fruitfully applied SDT to an understanding of employee engagement and well-being. These studies have made clear that, across cultures and industries, it is important to differentiate types of motivation into autonomous and controlled motivations, and sometimes into their subtypes, and also to attend to the degree to which the basic psychological needs for autonomy, competence, and relatedness are satisfied versus frustrated, to predict important workplace outcomes. Simply stated, managers' supports for the basic psychological needs as well as both the basic need satisfactions and autonomous motivation of employees appear to have universal importance for achieving the desired work outcomes related to effective performance and employees' wellness. We now turn to studies that have examined interventions done in work organizations focused on the same types of variables used in field studies thus far reviewed.

Intervention Studies

In the first of the SDT intervention studies in work organizations, Deci et al. (1989) performed an intervention in a Fortune 500 Company that was going through a difficult competitive period causing a significant decrease in profitability. The company was interested in improving its organization's interpersonal context throughout, and the researchers worked in one national division with branches around the country. Each branch had a manager, with approximately 8 to 10 middle managers who supervised teams of 15 to 18 employees. The core of the intervention was to train managers in the branches to be more autonomy supportive. The primary concepts that guided the intervention were ones that had been shown to promote autonomous motivation, basic need satisfaction, and positive work outcomes. The first was taking the employees' perspective, which involves really listening to and understanding their ideas, asking for their viewpoints, thinking about how you might understand the situation if you were in their position, and allowing them to express their emotions in difficult situations. The second concept was to facilitate the employees' taking more initiative by allowing more group participation in decision making, and encouraging individuals to make choices about how to do aspects of their own jobs. The third concept was providing informational feedback rather than controlling and demeaning feedback. It was clear from the change agent's interviews and observations that there was more negative feedback than positive feedback being given in the organization, and that the negative feedback was quite amotivating. So, managers learned to give more positive feedback that was specific to the behaviors their peers and employees had done well and that was not formulated in terms of the recipients' worth as individuals. They also learned to formulate "negative feedback" in terms of a problem to be solved and one that the employees could be actively engaged in solving. The intervention included a total of three days offsite with the managerial team in each branch, and one team meeting that each manager held with his or her team that the change agent observed and discussed with the manager afterward. At all times, the change agent was modeling autonomy support.

Managerial autonomy support, as well as employees' attitudes and satisfactions, were assessed before and after the intervention in the experimental group and at the same times in the control group. Analyses revealed that the managers became more autonomy supportive as a result of the intervention and that this positive effect radiated to their employees who reported greater job satisfaction and expressed greater trust in the top corporate management. It is very interesting to find that when an employees' immediate manager became more autonomy supportive, the employees developed more positive and trusting attitudes toward the top management who would

have been many levels above these employees in the organizational hierarchy and with whom these employees would not have had any contact.

Forest et al. (2014) reexamined this Deci et al. (1989) intervention to do an economic utility analysis. They calculated its cost to the organization in current dollars and then the mental health savings likely to accrue to the organization. Through this analysis, Forest et al. concluded that the return on investment for the organization from such an intervention, which yielded a meaningful impact on autonomy support and autonomous motivation, would be more than 3 to 1.

In another intervention study within a Fortune 500 company, Hardré & Reeve (2009) randomly assigned managers to either a training-intervention group or a nonintervention group. Those in the experimental group were trained in the principles of SDT and in how to put them into practice in a corporate organization, whereas those in the control group received no training. Before the intervention, and then again five weeks after, the autonomy support of managers from both groups was assessed by having them write a story about a problem they had recently encountered with employees and about how they handled the situation. Trained research-team members then rated the stories for the degree of autonomy support displayed by the managers. As in the Deci et al. (1989) study, the trained managers evidenced more autonomy support at the post-training assessment than did the nontrained managers. Importantly, at the five-week follow-up, the employees of the trained managers were more autonomously motivated and more engaged in their work than the employees of the managers who did not receive the training. Together, these two intervention studies indicate that it is possible to train managers to be more autonomy supportive and that when successfully done, one can expect the training not only to affect the managers' behaviors but also to have a positive impact on the motivation, behavior, and affective experiences of their employees.

Lynch et al. (2005) researched an intervention with employees of a residential psychiatric hospital for youth. Employees in such settings often feel unsafe because the youth do not regulate their emotions effectively, leading the workers to have low job satisfaction, motivation, and well-being and to aggressively restrain the youth, which can do physical harm to both staff and patients. The investigators in this study worked with the top management of the facility, who developed an intervention focused on making this workplace more supportive of the needs for competence, autonomy, and relatedness for the employees as well as the patients. They began by involving the staff in very active discussions with regard to this major change, which was intended in part to leave the staff feeling greater need satisfaction and commitment to treatments that are more positively oriented and more effective. One of the aims was to use less physical restraints as part of the treatment and more generally to make treatment more need satisfying for the youth as well as making work more need satisfying for the staff. By beginning with staff need support through involvement with the planning, the change agents were attempting to facilitate internalization of the value and regulation of a more need-supportive and less restrictive treatment approach, thus feeling more ownership over the new methods being employed.

Results of an evaluation study indeed showed that, as staff experienced more satisfaction for their basic needs, they more fully internalized the regulation of changes and thus were more autonomous in carrying out this new treatment approach. The staff also reported more job satisfaction and greater well-being at work. Perhaps the most gratifying finding was that, as the staff became less restrictive, the patients experienced more satisfaction of their basic psychological needs, which manifest as more autonomous motivation for their own treatment. This study thus adds an important supplement to the studies done in Fortune 500 companies because it testifies to the generalizability of these effective approaches to intervening in work organizations to promote more need satisfaction of employees and, perhaps, their clientele.

Characteristics of Jobs

Although SDT has not devoted a great deal of attention to specific characteristics of jobs or tasks, the concept of managerial need support includes several concepts that are often addressed in the job design or job characteristics literature as aspects of employees' jobs. Early work by Hackman & Oldham (1980) emphasized autonomy and task identity as important aspects of jobs that promote high performance, whereas we view them as supports for the autonomy need provided by managers' orientations and behaviors. Similarly, we view feedback as a support for the competence need and task significance as a support for both the autonomy and relatedness needs. In line with this view, several studies have shown that facilitative job characteristics promoted basic need satisfaction, autonomous motivation, and positive work outcomes, including job satisfaction and performance (e.g., Gagné et al. 1997, Millette & Gagné 2008).

More recent work by Morgeson and colleagues (e.g., Morgeson & Campion 2003, Morgeson & Humphrey 2006) has expanded the list of job characteristics and introduced social aspects of jobs as well as the specific task characteristics. They have also found that various job characteristics relate to satisfaction of one or more of SDT's basic psychological needs for autonomy, competence, and relatedness (Humphrey et al. 2007). Work by Grant (2007) and Parker (2014) has further focused on the importance of relatedness in the workplace, with Grant emphasizing the importance of having jobs in which the employees understand how their work benefits others and Parker focusing more on the employee outcomes of learning and development, health and well-being, and flexibility, all of which have been found to result when employees are more autonomously motivated and experience greater satisfaction of the needs for competence, autonomy, and relatedness (e.g., Baard et al. 2004).

Leadership in the Workplace

During the past quarter of the twentieth century leadership scholars introduced and advocated a type of leadership that focused on charismatic individuals leading through inspiring, encouraging, stimulating, and empowering (Avolio & Bass 1995, Bass 1985, Bass & Avolio 1995, Burns 1978). Referred to as transformational leadership, such leaders would set an example of being engaged with work and of solving problems with enthusiasm and open mindedness. A transformational leader would have transformative ideas that rise above what others are thinking, along with the enthusiasm to communicate the ideas and to support employees in ways that will vitalize them and instill a sense of meaning associated with the transformative ideas. This is done through individualized consideration, which from an SDT perspective is likely to support the basic psychological needs for competence, autonomy, and relatedness. For the leader to support these needs, through acknowledging the employees' perspectives in their discussions, offering choice about how to enact the ideas, and refraining from pressuring behaviors and language, the leaders will be more successful in facilitating the employees' autonomous motivation.

In contrast to transformational leadership is transactional leadership, which is a more conventional approach that includes using contingent rewards, emphasizing norms, and monitoring employees' behaviors. Recent research has shown that perceived transformational leadership does promote employees' basic need satisfaction (e.g., Hetland et al. 2011) and autonomous work motivation (Conchie 2013, Graves et al. 2013, Wang & Gagné 2013). Furthermore, research has shown that the relations of transformational leadership to work engagement, commitment, and job satisfaction is mediated by satisfaction of basic needs (Gözükara & Simsek 2015, Kovjanic et al. 2012). Moreover, Bono & Judge (2003) found that when leaders were more transformational their employees were more committed to the organization, tended to adopt more autonomous

work goals, and displayed higher job satisfaction. Transactional leadership, however, had negative relations to basic need satisfaction (e.g., Hetland et al. 2011) thus prompting less effective motivational processes and outcomes. Other research has shown that the transformational leaders themselves require basic need satisfaction, such that those leaders who are getting their own needs satisfied are more likely to be transformational in their approach (Trépanier et al. 2012).

The Role of Pay in the Workplace

There is little doubt that most people would not continue to do their jobs if their pay were to stop. That is, relatively few people find their jobs interesting and important enough that they would continue on if they were unpaid. Accordingly, it is essential that rewards or incentives be considered when thinking about motivation in the workplace.

Perhaps the most controversial sets of findings within the umbrella of SDT is directly related to pay—namely, the findings concerning reward effects on intrinsic motivation and related concepts. A few psychologists have argued that the laboratory research examining reward effects on intrinsic motivation is not valid (Eisenberger & Cameron 1996), an argument that has been shown to be incorrect by the definitive meta-analysis by Deci et al. (1999) of 128 reward-effects experiments. A few other psychologists have argued that the rewards research is not relevant to the workplace (Gerhart & Fang 2015), which is a conclusion that misinterprets aspects of SDT and misses some of the main points of the reward research itself. So we now turn to a discussion of that reward-effects research before moving on to a consideration of pay studies in work organizations.

The first studies of reward effects on intrinsic motivation for an activity revealed that tangible rewards undermined intrinsic motivation for the activity, whereas positive feedback (referred to by some as verbal rewards) enhanced intrinsic motivation (Deci 1971). Furthermore, if the tangible rewards were not contingent on actually doing the task they were not undermining of intrinsic motivation (Deci 1972). We interpreted this set of findings in terms of whether the functional significance of the rewards was informational or controlling (Deci & Ryan 1980). When the interpretation of rewards is informational they convey positive competence information thus satisfying the recipient's basic psychological need for competence and enhancing intrinsic motivation. Positive feedback on average has this functional significance. In contrast, when the interpretation of rewards is controlling, people feel pressured to think, feel, or behave in particular ways, so the rewards frustrate people's basic need for autonomy, thus undermining intrinsic motivation. Often tangible rewards have this functional significance (Deci et al. 1999), although when they are not contingent on doing the task they are neither informational nor controlling so they tend not to affect intrinsic motivation.

Contingent rewards have been differentiated into three types: engagement-contingent, which means receiving rewards simply for working on the task; completion-contingent, which means receiving rewards for each task trial completed; and performance-contingent, which means receiving rewards for meeting some standard of excellence on the task. All three types of tangible rewards have been shown on average to significantly decrease intrinsic motivation, although the performance-contingent rewards have had a somewhat smaller negative effect than the other two contingencies. The performance-contingent rewards were somewhat controlling because participants had to do very well to get the rewards, and they were somewhat informational because getting the rewards confirmed the recipients' competence. The meta-analysis showed that, on average, the controlling aspect was stronger, so that, although the informational functional significance offset some of the controlling functional significance of the rewards, the controlling aspect was still strong enough to significantly decrease intrinsic motivation. An additional study made clear that rewards are most likely to undermine intrinsic motivation when the rewards were

not only contingent—whether engagement-, completion-, or performance-contingent—but were also salient (Ross 1975).

As we have said, even though in general people "like" getting rewards, on average the rewards yield these negative effects on intrinsic motivation because, when rewards are made contingent, it becomes salient that the experimenter is controlling the rewardees' behavior. In a company setting, it is typically the supervisor who is experienced by subordinates as doing the controlling. Using controlling rewards in a workplace may not only diminish employees' autonomy; it can also lead them to focus on aspects of their jobs to which the rewards are most clearly linked and to give less attention to aspects of the jobs that are not incentivized (e.g., knowledge sharing, team contributions, organizational citizenship behaviors) but that are nonetheless valuable to the organizations. In contexts where some behaviors are experienced as being contingently rewarded, others are thereby implicitly experienced as not being important because there is no reward focused on them, thus leading to employees disengaging from the aspects of work they see as devalued.

That such collateral damage occurs was documented by Gubler et al. (2016) in a recent study of an intervention that used monetary awards to improve attendance in industrial laundry plants. The researchers found that, although the awards had a positive effect on the attendance of employees who had had a poor record, it also prompted strategic gaming of the system. Furthermore, the award-changed behaviors that were observed in eligible employees were not maintained over time. Also and notably, the awards undermined the internal motivation of employees who, prior to the awards program, had had excellent attendance, leading them to exhibit poorer attendance than they had previously shown. Finally, the award effect spilled over to other tasks in the plants, with employees reporting decreased motivation for tasks that had not been awarded. Seen here is evidence that incentives can affect employees' autonomy and responsibility, sometimes in unintended negative ways.

Reward contingencies and types of pay. Pay-for-performance (PFP), which is often advocated for work organizations, would be closely related to both the completion-contingent rewards (e.g., sales commissions and piece-rate payments) and performance-contingent rewards (e.g., higher pay and larger bonuses for meeting performance standards), whereas hourly pay would most closely compare to engagement-contingent rewards, and salaries would relate to noncontingent rewards, although higher-level executives are likely to have some PFP as well as their salaries. The vigorous controversy surrounding rewards in the workplace is focused primarily on PFP, which, many researchers have argued, will motivate employees to perform better (e.g., Komaki et al. 1978). We now examine the relations of intrinsic motivation and extrinsic incentives to performance.

Considering the relations of motivations to performance. From an SDT perspective, there are several important factors that must be considered to make a meaningful evaluation of approaches to compensation (e.g., PFP). First, it is important to differentiate types of performance that one might use as the dependent variables in evaluating the effects on performance of incentives, pay, and intrinsic and extrinsic motivation. Nearly 40 years ago, McGraw (1978) noted the difference between algorithmic and heuristic tasks and reviewed evidence showing that rewards tended to enhance performance on algorithmic tasks and diminish performance on heuristic tasks (see, also, Deci & Ryan 1985a). More recently, a meta-analytic study by Cerasoli et al. (2014) emphasized the importance of distinguishing between quantity and quality of performance, whereas Weibel et al. (2010) distinguished between performance on simple tasks and complex tasks. Algorithmic tasks are relatively simple whereas heuristic ones are more complex, and the focus of algorithmic tasks tends to be on quantity whereas the focus of heuristic tasks is often on quality.

Thus, these three distinctions are reasonably well aligned. In short, performance is a broad concept, and it is important to understand that there are different types of tasks and, accordingly, different types of performance. We use the quantity-quality distinction to encompass the three distinctions just presented.

Second, just as it is imperative to consider reward or incentive contingencies when examining reward effects on intrinsic motivation, it is similarly so when considering reward effects on performance. As with Cerasoli et al. (2014), we use the distinction of directly and indirectly performance-salient incentives because completion-contingent and performance-contingent rewards are both directly performance salient.

Third, as we argued in the Introduction, considering the effects of pay or rewards on psychological health and well-being, in addition to their effects on performance, is essential for any meaningful evaluation of compensation approaches.

Having specified these three considerations, we now discuss the effects of both intrinsic motivation and extrinsic incentives on the quantity and quality of performance. Earlier in this article we made clear that PFP (i.e., completion-contingent and performance-contingent rewards) does, on average, reliably undermine intrinsic motivation (see, also, Deci et al. 1999). The most pertinent questions then concern the relations of both intrinsic motivation and extrinsic incentives to high-quality performance and wellness.

A performance meta-analysis. Cerasoli et al. (2014) performed a meta-analysis with a total of 183 effects that examined relations from both intrinsic motivation and extrinsic incentives to performance and examined the important moderators of types of performance (i.e., quantity and quality) and types of incentive contingencies (i.e., directly and indirectly performance salient). Some of the studies were in the workplace, some in physical activity settings, some in schools, and some in psychology laboratories.

The first important finding in the meta-analysis by Cerasoli et al. (2014) showed that intrinsic motivation had a moderate to strong relation to performance across all studies and all types of performance, whether or not incentives were also being used. Accordingly, this indicates that intrinsic motivation is extremely important for the workplace. Furthermore, in line with the undermining effect of rewards on intrinsic motivation, Cerasoli et al. found that intrinsic motivation had a weaker effect on performance when incentives were directly salient, and a stronger relation to performance when the incentives were not directly salient.

In more nuanced analyses, Cerasoli et al. (2014) found that intrinsic motivation was a stronger predictor of performance quality, whereas extrinsic incentives were a stronger predictor of performance quantity. In a similar vein, Weibel et al. (2010) in their meta-analysis found that extrinsic incentives led to better performance on simple tasks but to poorer performance on more complex tasks. In short, PFP appears to be effective for motivating performance as quantity of simple, algorithmic tasks, but not performance as quality of complex heuristic tasks. Furthermore, PFP seems to interfere with the relation of intrinsic motivation to high-quality performance.

Finally, Cerasoli et al. (2014) did not report research relating intrinsic motivation and extrinsic incentives to well-being or ill-being, and there has been relatively little research relating PFP to indicators of well-being or ill-being. In contrast, substantial research has shown consistently across life's domains that autonomous motivation, consisting of intrinsic motivation and fully internalized extrinsic motivation, is related strongly positively to human wellness (see, e.g., Ryan & Deci 2017 for a review in multiple domains). There has been somewhat less research on controlled motivation and wellness, but still clear relations have been found between controlled motivation and ill-being. In so far as controlled motivation is prompted by PFP, which is implied by the undermining effect and was shown to be true by Kuvaas et al. (2016) in a work organization, this

would suggest that PFP might be related to less wellness, although further research is needed to draw conclusions on this. Still, without meaningful evidence on the relation of PFP to well-being, or at least to basic psychological need satisfaction, which is invariantly related to well-being, it would be inappropriate to argue for PFP as an effective compensation system, even though it has been found to relate positively to quantity of performance.

Research on pay in work organizations. Because the relations between rewards and intrinsic motivation had been examined primarily in laboratory experiments, Olafsen et al. (2015) conducted a study of Norwegian bankers to examine the relation of amount of pay to intrinsic motivation in an ongoing work organization. Also, because SDT research has consistently found the concepts of basic psychological need satisfaction and contextual (i.e., managerial) need supports to be important for positive work outcomes including performance and well-being, Olafsen et al. included those two concepts in their research. In addition, because equity or justice has long been shown to be an important consideration concerning pay (e.g., Adams 1963, Greenberg 1987) the researchers included Colquitt's (2001) measure of distributive and procedural justice. The primary outcome variable in the study was intrinsic motivation, and satisfaction of the basic psychological needs was considered a potential mediator.

Analyses of the data revealed that amount of pay was positively related to distributive justice, indicating that the more pay employees received, the more just they believed the payments to be. That is, greater pay does lead to employees feeling more fairly treated and valued. More important, however, is that the amount of pay employees received did not predict psychological need satisfaction and intrinsic motivation, nor did distributive justice. In contrast, managerial need support predicted procedural justice, need satisfaction, and intrinsic motivation, with need satisfaction being a mediator.

In research mentioned previously, Kuvaas et al. (2016) explored whether there would be differences between the outcomes associated with pay that was stable—that is, base salary—and pay that was variable because it was directly performance contingent. Insurance companies provided data about employees' performance under PFP plans, which involved employees receiving sales-performance bonuses either at the end of each quarter or at the end of the year. The performance under these two PFP approaches was compared to performance associated with the base salaries. Results of the study showed that base salaries, which, as noted, are not directly performance-contingent, related positively to autonomous motivation and were unrelated to controlled motivation, whereas for those who received the bonus incentives in accord with their sales, their PFP was negatively related to autonomous motivation and positively related to controlled motivation. Thus, as we saw in the laboratory experiments, performance-contingent rewards (aka PFP) were experienced as controlling and decreased autonomous motivation. Base salaries, which are more related to noncontingent rewards, were shown in the Deci et al. (1999) meta-analysis and the Olafsen et al. (2015) field study to not affect autonomous motivation, although they were found in the Kuvaas et al. (2016) study to correlate with autonomous motivation, suggesting that further research is needed in workplaces to clarify the relation of salaries (i.e., noncontingent pay) or hourly compensation (i.e., engagement-contingent pay) to autonomous motivation. In general, however, it is likely that higher base salaries (i.e., noncontingent pay) have a positive influence, as they may well convey valuing by the organization.

The Kuvaas et al. (2016) field study further showed that autonomous motivation was a strong predictor of the effort salespeople devoted to their jobs, whereas controlled motivation was a weak predictor. Additionally, autonomous motivation was a strong negative predictor of employees' turnover intentions, whereas controlled motivation was a positive predictor of those intentions. To summarize, PFP tends to result in controlled, rather than autonomous, motivation, leading employees to exert less work effort and have greater desire to leave their jobs.

Another study, also in the realm of sales, showed even more negative outcomes resulting from a PFP program (Harrison et al. 1996). Done in the telecommunications industry, employees worked entirely on commissions after a two-month orientation to their jobs, so their pay was wholly, and in a very direct way, dependent on their performance. Results of the study showed that three-quarters of the salespeople had left the company within a year, which obviously would have been very costly for the company.

The three studies just reviewed, when combined with the results of laboratory experiments, other field studies, and meta-analyses, indicate that PFP approaches to compensation, in spite of being strongly endorsed by writers such as Gerhart & Fang (2015), promote quantity of performance largely for simple, algorithmic tasks, but do not enhance high-quality performance. Furthermore, although these studies did not examine well-being outcomes, they did examine intrinsic and autonomous motivation and basic psychological need satisfaction, which are strongly related to well-being, and one of the studies examined turnover, which is strongly related to ill-being. In sum, for high-quality performance and well-being, providing equitable pay that is not directly contingent on performance along with an autonomy-supportive context, appears to be an optimal route.

Critiques of SDT. There have been various critiques of SDT in the organization literature through the years, largely with respect to issues surrounding rewards or pay. Recently, Gerhart & Fang (2015) provided an extensive review and critique of CET. Throughout, they argued strongly for a PFP approach to compensation in the workplace, yet Cerasoli et al. (2014) and Jenkins et al. (1998) showed that PFP promoted only quantity of performance, not quality. Our view is that, although quantity of performance is important in some situations, high-quality outcomes are, in general, the more important. Furthermore, Gerhart & Fang argued that free-choice intrinsic motivation was not relevant to the workplace, but Cerasoli et al. also provided strong evidence that intrinsic motivation positively predicted both overall performance and quality of performance. Moreover, Gerhart & Fang missed the major point of the intrinsic-motivation experiments, which is that pay contingencies influence perceived autonomy and perceived competence, which are important elements in all workplace motivation, not just intrinsic motivation.

In terms of rewards and pay, SDT research has consistently shown that whether rewards have a positive effect, no effect, or a negative effect on intrinsic motivation and internalization depends on their functional significance, which is influenced by the type of rewards (positive feedback versus tangible rewards), the type of reward contingency, which we have discussed in detail, and the interpersonal context within which they are administered (autonomy-supportive versus controlling).

Concerning the importance of autonomy-supportive contexts, Ryan et al. (1983) showed that when performance-contingent monetary rewards were given in an autonomy-supportive context, participants showed more intrinsic motivation than those in a control group in which the rewards were engagement contingent without positive feedback, thus suggesting that the autonomy-supportive context highlighted the informational aspect of performance-contingent rewards. Other research using many paradigms has consistently related autonomy-supportive contexts to better performance and greater well-being (e.g., Baard et al. 2004), and research by Olafsen et al. (2015) showed that pay did not relate to employees' basic psychological need satisfaction or intrinsic motivation, but managerial autonomy support was a positive predictor of both, thus suggesting that the work context being autonomy supportive is more important than the amount of pay for motivating performance and wellness.

As we said in the Introduction, evaluating payment approaches and other factors in the workplace requires examining their relations to both performance and well-being outcomes. However, Gerhart & Fang (2015) did not address the relation of PFP to well-being. In contrast, a plethora of research has shown that autonomous motivation and satisfaction of the basic psychological needs

did predict both of these work outcomes. This indicates that creating autonomy-supportive contexts within the workplace and providing pay that is relatively nondirectly contingent within those settings are the more effective means for attaining optimal work outcomes, rather than falling back on PFP, which does not have strong empirical support as a predictor of high-quality performance and well-being.

One form of PFP that is particularly problematic is outcome-contingent rewards. Outcome-contingent rewards are those in which contingent pay is given for attaining specific outcomes. Examples include bonuses to top managers when stock prices increase; salary increases for teachers based on improved student test scores; or rewards for outproducing others within the company on some sales or service metric. We have argued that outcome-focused rewards are the most likely among all reward types to yield collateral damage—that is, to lead to gaming the system (Ryan & Deci 2017). As Ryan & Brown (2005) discussed, unlike traditional operant techniques that reinforce specific behaviors, outcome-focused rewards can reinforce any behaviors that lead to the outcome, whether or not it is best practice. Such PFP structures can thus lead to short-term routes to outcome attainment at the cost of more strategic ones. For example, high-stakes tests in schools foster "teaching to the tests," and in organizations quarterly bonuses lead to short-term "profit taking," often irrespective of longer-term goals. Finally, outcome-focused PFP often requires persistent monitoring and evaluating, which can be demoralizing.

Future Research

As an empirically based approach to human motivation, SDT has, from the start, evolved with a keen interest and desire to test, expand, and refine its propositions and integrate important new contributions into the framework. In this spirit, many questions remain. However, as we have moved forward, that refinement has been increasingly in the hands of an extensive international community of scholars doing cutting-edge research on SDT, always challenging its formulations and refining its implementations. Next, we discuss some important future research topics to be explored on SDT concepts in the workplace. We provide a list below:

- Assess both workplace thwarts of basic needs and the frustration of employees' needs for predicting negative work outcomes.
- Examine how tangible rewards and pay affect internalization of regulations for work behaviors.
- Improve psychometric properties of measures of autonomous and controlled motivations and satisfactions and frustrations of the basic psychological needs.
- Relate the functional significance of various pay contingencies to motivations and work outcomes.
- Examine concrete workplace tasks, characteristics, and managerial behaviors in relation to motivation and work outcomes.
- Study the impacts of advanced technologies, in interaction with work climates.
- Use more longitudinal designs and more objective measures.

Nonetheless, advances in the empirical basis of SDT have often been unexpected by us, such as the recent use of SDT to organize research on human space travel (Goemaere et al. 2016). Thus, the topics raised in the above list and following discussion are undoubtedly merely a taste of what will come.

Clearly one area of particular importance is that of compensation. More research is needed that focuses on the functional significance of various aspects of compensation, including the effects of absolute and relative pay levels, perceived distribution and fairness, and PFP contingencies. In

particular, the manner in which distributive justice within organizations, and more generally the perceived corporate support for all stakeholders (e.g., employees, customers, upper management, and stockholders), appears likely to affect psychological need satisfactions and to moderate the relations of compensation to performance and well-being. Finally, there has been relatively little research on how payment systems affect the internalization of work values and behaviors.

Relatedly, given the strong evidence that satisfaction versus frustration of the basic psychological needs predict well-being and performance, it would be important to examine how factors in the workplace influence basic need frustration. Included in this would be examining the various conceptions of job characteristics as they represent thwarts to and thus frustration of the basic psychological needs. Many factors such as job characteristics can potentially affect whether work contexts are need supportive or need thwarting, and research clarifying this would help specify optimal conditions for workplace engagement.

In much of the SDT research to date the focus has been on the degree to which a social context (e.g., the interpersonal atmosphere of a workplace) is high versus low in autonomy support. As we pointed out in the section on Work Contexts, Motivations, Needs, and Outcomes, recent work has emphasized that the active thwarting of autonomy (or basic needs more generally) appears to be much more effective in predicting negative outcomes such as ill-being, so future research should examine both need supports and need thwarts, and do it longitudinally with objective measures.

IMPLICATIONS FOR PRACTICE

The concept of basic psychological needs for competence, autonomy, and relatedness provides the framework for understanding the implications of SDT for the workplace. Every policy and practice implemented within a work organization is likely to either support or thwart the basic psychological needs. Anyone interested in improving the work context within an organization and thus the performance and wellness of its employees could evaluate any policy or practice being considered in terms of whether it is likely to (*a*) allow the employees to gain competencies and/or feel confident, (*b*) experience the freedom to experiment and initiate their own behaviors and not feel pressured and coerced to behave as directed, and (*c*) feel respect and belonging in relation to both supervisors and peers. Policies or practices that are likely to support the employees in each of these three ways are likely to facilitate autonomous motivation, well-being, and high-quality performance. Those that thwart any of these employee experiences are likely to promote controlled motivation or amotivation, along with ill-being and, at best, quantity but not quality of performance.

For example, work settings, in which supervisors acknowledge employees' perspectives, encourage self-initiation, offer choices for individuals and groups, provide meaningful feedback, assign tasks that are optimally challenging, and give a rationale when requesting a behavior are likely to lead to both high-quality performance and wellness, as mediated by basic psychological need satisfaction and autonomous motivation. At the level of immediate supervisors, the evidence is abundant that when the supervisors are more autonomy supportive there are a range of positive consequences for the employees, including trust of managers higher in the organization.

CONCLUSION

SDT as a theory of work motivation has been unique in that, through differentiating motivation into autonomous and controlled types, it has been able to show that autonomous motivation but not controlled motivation of employees promotes both high-quality performance and employee wellness. Thus, the theory has been able to attain the traditional goal of organizational

psychologists—namely, facilitate profitability—and at the same time support the well-being of the employees. SDT has long been concerned with specifying empirically the social-contextual conditions that promote autonomous motivation. The key to that evolves from the proposition that all human beings have three fundamental psychological needs—for competence, autonomy, and relatedness—which when satisfied promote autonomous motivation, wellness, and effective performance. Thus, SDT has been centrally concerned with promoting the need-supportive conditions across domains that facilitate people motivating themselves autonomously and in turn working well and feeling good. Because work contexts that support the basic psychological needs have superior outcomes, research on the job characteristics, types of justice, managerial styles, and types of leadership has burgeoned. We have also found that compensation systems that reward people equitably without pressuring them with PFP contingencies can add to the basic need supports. Understanding the functional significance of managerial tools such as compensation, deadlines, monitoring, goal setting, and work design is essential within today's effective organizations.

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LITERATURE CITED

Adams JS. 1963. Towards an understanding of inequity. *J. Abnorm. Soc. Psychol.* 67(5):422–36

Ambrose ML, Kulik CT. 1999. Old friends, new faces: motivation in the 1990s. *J. Manag.* 23(3):231–93

Andreassen CS, Hetland J, Pallesen S. 2010. The relationship between "workaholism", basic needs satisfaction at work and personality. *Eur. J. Pers.* 24(1):3–17

Avolio BJ, Bass BM. 1995. Individual consideration viewed at multiple levels of analysis: a multi-level framework for examining the diffusion of transformational leadership. *Leadersh. Q.* 6(2):199–218

Baard PP, Deci EL, Ryan RM. 2004. Intrinsic need satisfaction: a motivational basis of performance and well-being in two work settings. *J. Appl. Soc. Psychol.* 34(10):2045–68

Bass BM. 1985. *Leadership and Performance Beyond Expectations*. New York: Free Press

Bass BM, Avolio BJ. 1995. *Transformational Leadership Development: Manual for the Multifactor Leadership Questionnaire*. Palo Alto, CA: Consult. Psychol. Press

Baumeister RF, Leary MR. 1995. The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychol. Bull.* 117(3):497–529

Bono JE, Judge TA. 2003. Self-concordance at work: toward understanding the motivational effects of transformational leaders. *Acad. Manag. J.* 46(5):554–71

Burns JM. 1978. *Leadership*. New York: Harper & Row

Cerasoli CP, Nicklin JM, Ford MT. 2014. Intrinsic motivation and extrinsic incentives jointly predict performance: a 40-year meta-analysis. *Psychol. Bull.* 140(4):980–1008

Chemolli E, Gagné M. 2014. Evidence against the continuum structure underlying motivation measures derived from self-determination theory. *Psychol. Assess.* 26(2):575–85

Chirkov V, Ryan RM, Kim Y, Kaplan U. 2003. Differentiating autonomy from individualism and independence: a self-determination theory perspective on internalization of cultural orientations and well-being. *J. Pers. Soc. Psychol.* 84(1):97–110

Colquitt JA. 2001. On the dimensionality of organizational justice: a construct validation of a measure. *J. Appl. Psychol.* 86(3):386–400

Conchie SM. 2013. Transformational leadership, intrinsic motivation, and trust: a moderated-mediated model of workplace safety. *J. Occup. Health Psychol.* 18(2):198–210

de Charms R. 1968. *Personal Causation*. New York: Academic

Deci EL. 1971. Effects of externally mediated rewards on intrinsic motivation. *J. Pers. Soc. Psychol.* 18(1):105–15

Deci EL. 1972. The effects of contingent and noncontingent rewards and controls on intrinsic motivation. *Organ. Behav. Hum. Perform.* 8(2):217–29
Deci EL, Connell JP, Ryan RM. 1989. Self-determination in a work organization. *J. Appl. Psychol.* 74(4):580–90
Deci EL, Koestner R, Ryan RM. 1999. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychol. Bull.* 125(6):627–68
Deci EL, Ryan RM. 1980. *The Empirical Exploration of Intrinsic Motivational Processes*. New York: Academic
Deci EL, Ryan RM. 1985a. *Intrinsic Motivation and Self-Determination in Human Behavior*. New York: Plenum Press
Deci EL, Ryan RM. 1985b. The general causality orientations scale: self-determination in personality. *J. Res. Pers.* 19(2):109–34
Deci EL, Ryan RM. 2000. The "what" and "why" of goal pursuits: human needs and the self-determination of behavior. *Psychol. Inq.* 11(4):227–68
Deci EL, Ryan RM, Gagné M, Leone DR, Usunov J, Kornazheva BP. 2001. Need satisfaction, motivation, and well-being in the work organizations of a former eastern bloc country: a cross-cultural study of self-determination. *Pers. Soc. Psychol. B.* 27(8):930–42
De Cooman R, Stynen D, Van Den Broeck A, Sels L, De Witte H. 2013. How job characteristics relate to need satisfaction and autonomous motivation: implications for work effort. *J. Appl. Soc. Psychol.* 43(6):1342–52
Doshi N, McGregor L. 2015. *Primed to Perform: How to Build the Highest Performing Cultures Through the Science of Total Motivation*. New York: Harper Collins
Eisenberger R, Cameron J. 1996. Detrimental effects of reward: Reality or myth? *Am. Psychol.* 51(11):1153–166
Fernet C, Austin S, Vallerand RJ. 2012a. The effects of work motivation on employee exhaustion and commitment: an extension of the JD-R model. *Work Stress.* 26(3):213–29
Fernet C, Gagné M, Austin S. 2010. When does quality of relationships with coworkers predict burnout over time? The moderating role of work motivation. *J. Organ. Behav.* 31(8):1163–80
Fernet C, Guay F, Senécal C, Austin S. 2012b. Predicting intraindividual changes in teacher burnout: the role of perceived school environment and motivational factors. *Teach. Teach. Educ.* 28(4):514–25
Forest J, Gilbert M-H, Beaulieu G, Le Brock P, Gagné M. 2014. Translating research results in economic terms: an application of economic utility analysis using SDT-based interventions. In *The Oxford Handbook of Work Engagement, Motivation, and Self-Determination Theory*, ed. M Gagné, pp. 335–46. New York: Oxford Univ. Press
Foss NJ, Minbaeva DB, Pedersen T, Reinholt M. 2009. Encouraging knowledge sharing among employees: how job design matters. *Hum. Resour. Manag.* 48(6):871–93
Gagné M, Deci EL. 2005. Self-determination theory and work motivation. *J. Organ. Behav.* 26(4):331–62
Gagné M, Forest J, Vansteenkiste M, Crevier-Braud L, Van Den Broeck A, et al. 2015. The multidimensional work motivation scale: validation evidence in seven languages and nine countries. *Eur. J. Work Org. Psychol.* 24(2):178–96
Gagné M, Koestner R, Zuckerman M. 2000. Facilitating acceptance of organizational change: the importance of self-determination. *J. Appl. Soc. Psychol.* 30(9):1843–52
Gagné M, Senècal CB, Koestner R. 1997. Proximal job characteristics, feelings of empowerment, and intrinsic motivation: a multidimentional model. *J. Appl. Soc. Psychol.* 27(14):1222–40
Gerhart B, Fang M. 2015. Pay, intrinsic motivation, extrinsic motivation, performance, and creativity in the workplace: revisiting long-held beliefs. *Annu. Rev. Organ. Psychol. Organ. Behav.* 2(1):489–521
Gillet N, Fouquereau E, Forest J, Brunault P, Colombat P. 2012. The impact of organizational factors on psychological needs and their relations with well-being. *J. Bus. Psychol.* 27(4):437–50
Goemaere S, Vansteenkiste M, Van Petegem S. 2016. Gaining deeper insight into the psychological challenges of human spaceflight: the role of motivational dynamics. *Acta Astronaut.* 121:130–43
Grant AM. 2007. Relational job design and the motivation to make a prosocial difference. *Acad. Manag. Rev.* 32 (2):393–417
Grant AM, Nurmohamed S, Ashford SJ, Dekas K. 2011. The performance implications of ambivalent initiative: the interplay of autonomous and controlled motivations. *Organ. Behav. Hum. Decis. Process.* 116(2):241–51
Graves LM, Sarkis J, Zhu Q. 2013. How transformational leadership and employee motivation combine to predict employee proenvironmental behaviors in China. *J. Environ. Psychol.* 35:81–91

Greenberg J. 1987. A taxonomy of organizational justice theories. *Acad. Manag. Rev.* 12(1):9–22
Gubler T, Larkin I, Pierce L. 2016. Motivational spillovers from awards: crowding out in a multitasking environment. *Organ. Sci.* 27(2):286–303
Gözükara İ, Simsek OF. 2015. Linking transformational leadership to work engagement and the mediator effect of job autonomy: a study in a Turkish private non-profit university. *Procedia Soc. Behav. Sci.* 195(3):963–71
Hackman JR, Oldham GR. 1980. *Work Redesign*. Reading, MA: Addison-Wesley
Hardré PL, Reeve J. 2009. Training corporate managers to adopt a more autonomy-supportive motivating style toward employees: an intervention study. *Int. J. Train. Dev.* 13(3):165–84
Harrison DA, Virick M, Williams S. 1996. Working without a net: time, performance, and turnover under maximally contingent rewards. *J. Appl. Psychol.* 81(4):331–45
Hetland H, Hetland J, Andreassen CS, Pallesen S, Notelaers G. 2011. Leadership and fulfillment of the three basic psychological needs at work. *Career. Dev. Int.* 16(5):507–23
Hon AHY. 2012. Shaping environments conductive to creativity: the role of intrinsic motivation. *Cornell Hosp. Q.* 53(1):53–64
Howard JL, Gagné M, Morin AJS, Wang ZN, Forest J. 2016. Using bifactor-exploratory structural equation modeling to test for a continuum structure of motivation. *J. Manag.* **https://doi.org/10.1177/0149206316645653**
Humphrey SE, Nahrgang JD, Morgeson FP. 2007. Integrating motivational, social, and contextual work design features: a meta-analytic summary and theoretical extension of the work design literature. *J. Appl. Psychol.* 92(5):1332–56
Jenkins GD, Mitra A, Gupta N, Shaw JD. 1998. Are financial incentives related to performance? A meta-analytic review of empirical research. *J. Appl. Psychol.* 83(5):777–87
Kasser T, Ryan RM. 1996. Further examining the American dream: differential correlates of intrinsic and extrinsic goals. *Pers. Soc. Psychol. B.* 22(3):280–87
Komaki J, Barwick KD, Scott LR. 1978. A behavioral approach to occupational safety: pinpointing and reinforcing safe performance in a food manufacturing plant. *J. Appl. Psychol.* 63(4):434
Kovjanic S, Schuh SC, Jonas K, Quaquebeke NV, Van Dick R. 2012. How do transformational leaders foster positive employee outcomes? A self-determination-based analysis of employees' needs as mediating links. *J. Organ. Behav.* 33(8):1031–52
Kuvaas B. 2009. A test of hypotheses derived from self-determination theory among public sector employees. *Empl. Relat.* 31(1):39–56
Kuvaas B, Buch R, Gagné M, Dysvik A, Forest J. 2016. Do you get what you pay for? Sales incentives, motivation, and employee outcomes. *Motiv. Emotion.* 40:667–80
Landry AT, Kindlein J, Trépanier SG, Forest J, Zigarmi D, et al. 2016. Why individuals want money is what matters: using self-determination theory to explain the differential relationship between motives for making money and employee psychological health. *Motiv. Emotion.* 40(2):226–42
Levesque M, Blais MR, Hess U. 2004. Motivation, discretionary organisational attitudes and well-being in an African environment: When does duty call? *Can. J. Behav. Sci.* 36(4):321–32
Lian H, Lance Ferris D, Brown DJ. 2012. Does taking the good with the bad make things worse? How abusive supervision and leader–member exchange interact to impact need satisfaction and organizational deviance. *Organ. Behav. Hum. Decis. Process.* 117(1):41–52
Liu D, Zhang S, Wang L, Lee TW. 2011. The effects of autonomy and empowerment on employee turnover: test of a multilevel model in teams. *J. Appl. Psychol.* 96(6):1305–316
Lynch MF, Plant RW, Ryan RM. 2005. Psychological needs and threat to safety: implications for staff and patients in a psychiatric hospital for youth. *Prof. Psychol. Res. Pr.* 36(4):415–25
Mackey J, Sisodia R. 2014. *Conscious Capitalism*. Brighton, MA: Harvard Bus. Rev. Press
Markus HR, Kitayama S. 1991. Culture and the self: implications for cognition, emotion, and motivation. *Psychol. Rev.* 98(2):224–53
McGraw KO. 1978. The detrimental effects of reward on performance: a literature review and a prediction model. In *The Hidden Costs of Reward: A New Perspective on Human Motivation*, ed. MR Lepper, D Green, pp. 33–60. Hillsdale, NJ: Erlbaum
Millette V, Gagné M. 2008. Designing volunteers' tasks to maximize motivation, satisfaction and performance: the impact of job characteristics on volunteer engagement. *Motiv. Emotion.* 32(1):11–22

Moreau E, Mageau G. 2012. The importance of perceived autonomy support for the psychological health and work satisfaction of health professionals: Not only supervisors count, colleagues too! *Motiv. Emotion.* 36(3):268–86

Morgeson FP, Campion MA. 2003. Work design. In *Handbook of Psychology: Industrial and Organizational Psychology*, Vol. 12, ed. WC Borman, DR Ilgen, RJ Klimoski, pp. 423–52. Hoboken, NJ: Wiley

Morgeson FP, Humphrey SE. 2006. The Work Design Questionnaire (WDQ): developing and validating a comprehensive measure for assessing job design and the nature of work. *J. Appl. Psychol.* 91(6):1321–39

Nie Y, Chua BL, Yeung AS, Ryan RM, Chan WY. 2015. The importance of autonomy support and the mediating role of work motivation for well-being: testing self-determination theory in a Chinese work organisation. *Int. J. Psychol.* 50(4):245–55

Olafsen AH, Halvari H, Forest J, Deci EL. 2015. Show them the money? The role of pay, managerial need support, and justice in a self-determination theory model of intrinsic work motivation. *Scand. J. Psychol.* 56(4):447–57

Otis N, Pelletier LG. 2005. A motivational model of daily hassles, physical symptoms, and future work intentions among police officers. *J. Appl. Soc. Psychol.* 35(10):2193–214

Parker SK. 2014. Beyond motivation: job and work design for development, health, ambidexterity, and more. *Annu. Rev. Psychol.* 65(1):661–91

Pink D. 2009. *Drive*. New York: Riverhead Books

Preenen PTY, Oeij PRA, Dhondt S, Kraan KO, Jansen E. 2016. Why job autonomy matters for young companies' performance: company maturity as a moderator between job autonomy and company performance. *World Rev. Enterp. Manag. Sustain. Dev.* 12(1):74–100

Richer SF, Blanchard C, Vallerand RJ. 2002. A motivational model of work turnover. *J. Appl. Soc. Psychol.* 32(10):2089–113

Roche M, Haar JM. 2013. A metamodel approach towards self-determination theory: a study of New Zealand managers' organisational citizenship behaviours. *Int. J. Hum. Resour. Manag.* 24(18):3397–417

Ross M. 1975. Salience of reward and intrinsic motivation. *J. Pers. Soc. Psychol.* 32(2):245–54

Roth G, Assor A, Kanat-Maymon Y, Kaplan H. 2006. Assessing the experience of autonomy in new cultures and contexts. *Motiv. Emotion.* 30(4):365–76

Ryan RM. 1995. Psychological needs and the facilitation of integrative processes. *J. Pers.* 63(3):397–427

Ryan RM, Bernstein JH, Brown KW. 2010. Weekends, work, and well-being: psychological need satisfactions and day of the week effects on mood, vitality, and physical symptoms. *J. Soc. Clin. Psychol.* 29(1):95–122

Ryan RM, Brown KW. 2005. Legislating competence: the motivational impact of high stakes testing as an educational reform. In *Handbook of Competence*, ed. AJ Elliot, CS Dweck, pp. 354–74. New York: Guilford Press

Ryan RM, Connell JP. 1989. Perceived locus of causality and internalization—examining reasons for acting in two domains. *J. Pers. Soc. Psychol.* 57(5):749–61

Ryan RM, Deci EL. 2000. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am. Psychol.* 55(1):68–78

Ryan RM, Deci EL. 2017. *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*. New York: Guilford

Ryan RM, Mims V, Koestner R. 1983. Relation of reward contingency and interpersonal context to intrinsic motivation: a review and test using cognitive evaluation theory. *J. Pers. Soc. Psychol.* 45(4):736–50

Ryan RM, Sheldon KM, Kasser T, Deci EL. 1996. All goals are not created equal: an organismic perspective on the nature of goals and their regulation. In *The Psychology of Action: Linking Cognition and Motivation to Behavior*, ed. PM Gollwitzer, JA Bargh, pp. 7–26. New York: Guilford Press

Schreurs B, Van Emmerik IJH, Van Den Broeck A, Guenter H. 2014. Work values and work engagement within teams: the mediating role of need satisfaction. *Group Dyn.* 18(4):267–81

Sheldon KM, Krieger LS. 2014. Service job lawyers are happier than money job lawyers, despite their lower income. *J. Posit. Psychol.* 90(3):219–26

Sheldon KM, Ryan RM, Deci EL, Kasser T. 2004. The independent effects of goal contents and motives on well-being: It's both what you pursue and why you pursue it. *Pers. Soc. Psychol. B.* 30(4):475–86

Trépanier SG, Fernet C, Austin S. 2012. Social and motivational antecedents of perceptions of transformational leadership: a self-determination theory perspective. *Can. J. Behav. Sci.* 44(4):272–77

Trépanier SG, Fernet C, Austin S. 2013a. The moderating role of autonomous motivation in the job demands-strain relation: a two sample study. *Motiv. Emotion.* 37(1):93–105

Trépanier SG, Fernet C, Austin S. 2013b. Workplace bullying and psychological health at work: the mediating role of satisfaction of needs for autonomy, competence and relatedness. *Work Stress*. 27(2):123–40

Van Den Broeck A, Ferris DL, Chang C-H, Rosen CC. 2016. A review of self-determination theory's basic psychological needs at work. *J. Manag.* 42:1195–229

Van Den Broeck A, Van Ruysseveldt J, Smulders P, De Witte H. 2011. Does an intrinsic work value orientation strengthen the impact of job resources? A perspective from the job demands–resources model. *Eur. J. Work Org. Psychol.* 20(5):581–609

Van Den Broeck A, Vansteenkiste M, De Witte H, Lens W. 2008. Explaining the relationships between job characteristics, burnout, and engagement: The role of basic psychological need satisfaction. *Work Stress*. 22(3):277–94

Van Den Broeck A, Vansteenkiste M, Lens W, De Witte H. 2010. Unemployed individuals' work values and job flexibility: an explanation from expectancy-value theory and self-determination theory. *Appl. Psychol. Crim. Justice* 59(2):296–317

Vander Elst T, Van Den Broeck A, De Witte H, De Cuyper N. 2012. The mediating role of frustration of psychological needs in the relationship between job insecurity and work-related well-being. *Work Stress*. 26(3):252–71

Vansteenkiste M, Neyrinck B, Niemiec CP, Soenens B, De Witte H, Van Den Broeck A. 2007. On the relations among work value orientations, psychological need satisfaction and job outcomes: a self-determination theory approach. *J. Occup. Organ. Psychol.* 80(2):251–77

Wang Z, Gagné M. 2013. A Chinese–Canadian cross-cultural investigation of transformational leadership, autonomous motivation, and collectivistic value. *J. Leadersh. Organ. Stud.* 20:134–42

Weibel A, Rost K, Osterloh M. 2010. Pay for performance in the public sector—benefits and (hidden) costs. *J. Public Admin. Res. Theory* 20(2):387–412

Weinstein N, Hodgins HS, Ryan RM. 2010. Autonomy and control in dyads: effects on interaction quality and joint creative performance. *Pers. Soc. Psychol. B.* 36(12):1603–17

White RW. 1959. Motivation reconsidered: the concept of competence. *Psychol. Rev.* 66(5):297–333

Williams GC, Halvari H, Niemiec CP, Sørebø Ø, Olafsen AH, Westbye C. 2014. Managerial support for basic psychological needs, somatic symptom burden and work-related correlates: A self-determination theory perspective. *Work Stress*. 28(4):404–19

Williams GC, McGregor HA, Zeldman A, Freedman ZR, Deci EL. 2004. Testing a self-determination theory process model for promoting glycemic control through diabetes self-management. *Health Psychol.* 23(1):58–66

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Errata

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