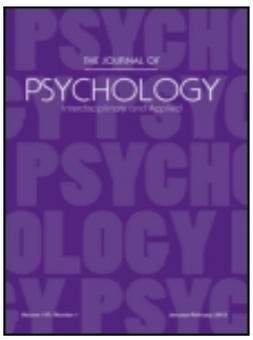

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Examining the Roles of Work Autonomous and Controlled Motivations on Satisfaction and Anxiety as a Function of Role Ambiguity

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ABSTRACT

Past research in the self-determination theory has shown that autonomous motivation is associated with positive outcomes (e.g., work satisfaction), whereas controlled motivation is related to negative outcomes (e.g., anxiety). The purpose of the present research was to examine the moderating function of role ambiguity on the relationships between work autonomous and controlled motivations on the one hand, and work satisfaction and anxiety on the other. Six hundred and ninety-eight workers (449 men and 249 women) participated in this study. Results revealed that autonomous motivation was most strongly related to satisfaction when ambiguity was low. In addition, controlled motivation was most strongly related to anxiety when ambiguity was high. In other words, the present findings suggest that the outcomes associated with each form of motivation may vary as a function of role ambiguity. The present study thus offers meaningful insights for organizations, managers, and employees.

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anxiety; satisfaction; self-determination theory; work motivation

The workplace is an important area of life and has great influence on a working person's general well-being and health (Muschalla, Linden, & Olbrich, 2010). One work attitude of particular importance is job satisfaction, which refers to "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (Locke, 1976, p. 1300). Job satisfaction and other job attitudes such as organizational commitment are constructs of significant theoretical and practical concern (e.g., Battistelli, Galletta, Portoghese, & Vandenberghe, 2013). For instance, job satisfaction is associated with health and subjective well-being (e.g., Nielsen, Smyth, & Liu, 2011). In addition, overall job attitude (job satisfaction and organizational commitment) predicts performance, lateness, absenteeism, and turnover (Harrison, Newman, & Roth, 2006).

Many people also develop severe anxiety because of their workplace situations. Job-related anxiety is defined as the perception that job-related situations are potentially threatening (Zalewska, 2011). "Burnout differs from anxiety in that it originates from an

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accumulation of work-related stressors" (Winstanley & Whittington, 2002, p. 303). In addition, anxiety can play a significant role in the development of stress (e.g., Mughal, Walsh, & Wilding, 1996) and burnout (e.g., Richardson, Burke, & Leiter, 1992; Ronen & Baldwin, 2010). An important feature of anxiety is that it can also result in avoidance behaviors toward the anxiety-provoking stimulus. Job anxiety can therefore lead to avoidance of the workplace by sick leave, work absenteeism, or early retirement (Haines, Williams, & Carson, 2002). In this vein, numerous studies demonstrated that employees with elevated anxiety are more likely to voluntarily resign from their organization (see Woo & Maertz Jr., 2012). Job anxiety is thus a psychological problem with high organizational costs and therefore deserving more attention and research.

Theories and research point to different antecedents of job satisfaction and anxiety, and the positive and negative factors impacting these outcomes have been investigated in a number of studies (e.g., Yang, 2012). Notably, it has been found that work motivation plays a critical role in both job satisfaction and anxiety (e.g., Gillet, Gagné, Sauvagère, & Fouquereau, 2013). Over the years much research has thus furthered our understanding of how workers' motivation influences their work satisfaction and anxiety (see Lim & Sng, 2006). While several theories have been proposed, one theory that has led to an impressive amount of research is self-determination theory (SDT; Deci & Ryan, 1985, 2008; Ryan & Deci, 2000). This is not surprising given that SDT delineates the nature and function of motives responsible for behavior regulation.

SDT posits that motivation varies in kind and quality. Moreover, it is proposed that the quality of motivational processes determines the quality of outcomes that will be experienced. Specifically, SDT distinguishes between autonomous (or self-determined) and controlled motivations. With autonomous motivation, the person behaves with a full sense of volition and choice. On the contrary, with controlled motivation, the person engages in an activity out of internal and/or external pressures (Deci & Ryan, 2008). Previous reviews and meta-analyses in different settings (e.g., Cerasoli, Nicklin, & Ford, 2014) have concluded that autonomous motivation consistently leads to positive outcomes (e.g., performance, positive affect), while controlled motivation is associated with negative outcomes (e.g., dropout, burnout, negative affect).

In a similar vein, ample empirical evidence showed that job demands are detrimental to employees' motivation and psychological health (e.g., Trépanier, Fernet, & Austin, 2013). Indeed, when coping with job demands (i.e., aspects of a job that require sustained physical and/or psychological effort; see Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), such as role ambiguity, employees are more likely to report higher levels of job anxiety and lower levels of job satisfaction (e.g., Diestel & Schmidt, 2010). Role ambiguity is defined as the degree to which clear and consistent information is lacking about the expectations associated with one's position (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). Higher ambiguity may arise due to lack of clarity regarding how to juggle different work activities that are necessary for the successful accomplishment of personally valued goals. Subsequently, this will lead to feelings of strain and may be conceptualized as a job demand. Research revealed that role ambiguity is indeed an important job demand for workers (e.g., Yürür & Sarikaya, 2012). Consequently, in line with the postulates of the Job Demands-Resources model (Demerouti et al., 2001), when employees perceive high role ambiguity, they will be dissatisfied and less likely to experience growth and well-being (Jackson & Schuler, 1985).

While SDT is a broad theory of human motivation that has been applied to a wide range of phenomena and a variety of life domains, few studies have included potential moderating variables on the relationships between motivation and outcomes. For instance, O'Connor and Vallerand (1994) showed that characteristics of the social environment moderate the relationship between motivation and outcomes. More specifically, it was demonstrated that nursing home residents with autonomous motivational styles were better adjusted when they lived in homes that provided opportunities for freedom and choice, whereas individuals with controlled motivational styles were better adjusted when they lived in high constraint environments. Thus, it seems that the relationships between autonomous and controlled motivations and outcomes could be moderated by environmental factors such as job demands. Moreover, past research (e.g., Li & Bagger, 2008) has revealed that role ambiguity is an important job demand. Accordingly, we investigated the links between autonomous and controlled motivations and outcomes (i.e., work satisfaction and anxiety) based on SDT (Deci & Ryan, 2008). We also examined the effects of role ambiguity on work satisfaction and anxiety based on the Job Demands-Resources model (Demerouti et al., 2001). Finally, we integrate both Conservation of Resources theory (Hobfoll, 1989) and SDT to examine the moderating function of role ambiguity on the relationships between autonomous and controlled work motivations on the one hand, and work satisfaction and anxiety on the other. The hypotheses and relevant supportive literature are presented in the following paragraphs.

In the work setting, autonomous motivation has been found to be associated with work engagement (e.g., van Beek, Taris, & Schaufeli, 2011), performance (e.g., Kuvaas & Dysvik, 2010), and organizational commitment (e.g., Gagné et al., 2010). It leads to positive outcomes because when autonomously motivated, individuals experience volition, or a self-endorsement of their actions. In this case, employees perceive their work as congruent with their own values and interests. This representation leads to autonomous forms of motivation, thereby allowing the individual to fully partake in the activity. As a result, autonomous motivation energizes workers and is a valuable personal resource because it serves as a means for attainment of desired outcomes (Hobfoll, 1989). In contrast, controlled motivation has been generally associated with maladaptive work outcomes such as intentions of turnover (e.g., Gillet et al., 2013), psychological distress (e.g., Gagné et al., 2010), and burnout (e.g., van Beek et al., 2011). Controlled motivation is associated with negative outcomes because individuals experience pressure to think, feel, or behave in particular ways making goal pursuit less aligned with one's values and interests.

In addition, with respect to the outcomes studied in the present research, Gagné and colleagues (2010) reported that autonomous motivation was positively related to work satisfaction in a sample of pilots from a commercial airline company. Other studies replicated this finding in other work settings (e.g., Millette & Gagné, 2008; Richer, Blanchard, & Vallerand, 2002). With respect to anxiety, prior studies have shown that controlled motivation was a significant and positive predictor of anxiety (e.g., A. E. Cox, Ullrich-French, Madonia, & Witty, 2011; Magnus, Kowalski, & McHugh, 2010). For instance, Thøgersen-Ntoumani and Ntoumanis (2007) have shown that controlled motivation was related to higher anxiety in a sample of aerobics instructors.

Fernet, Guay, and Senécal (2004) examined the dynamic interplay among job demands, job control, and work autonomous motivation in order to predict burnout dimensions. Overall, results revealed that job control diminishes the unhealthy effects of job demands in

predicting emotional exhaustion and depersonalization only for employees with high levels of work self-determination. Similarly, Parker, Jimmieson, and Amiot (2010) found that job control diminishes the detrimental effects of role overload on work engagement only for employees with high levels of work autonomous motivation. The opposite pattern of results was found with respect to work controlled motivation. More recently, Trépanier et al. (2013) revealed that highly autonomously motivated employees experience less psychological distress in the presence of job demands than their less autonomously motivated counterparts.

In these three studies, researchers considered that autonomous and/or controlled motivations moderated the relationship between organizational factors and outcomes based on the Karasek's (1979) Job Demands-Control model and Job Demands-Resources model (Demerouti et al., 2001). Although these investigations are particularly interesting and theoretically grounded, we adopted a slightly different approach in the present research. Indeed, we opted for a motivational perspective because we believe that the current work may have significant implications for the motivation literature, especially with respect to self-determination theory (Deci & Ryan, 2008). Consequently, the main purpose of the present research was to examine the links between autonomous and controlled motivations, and work satisfaction and job anxiety, as a function of role ambiguity. This orientation should make a significant contribution to the motivation literature by showing that organizational factors may moderate the relationships of autonomous and controlled motivations to positive and negative outcomes, a new theoretical finding. Furthermore, this perspective should be particularly relevant to understand and enrich motivational interventions.

In the early 1990s, scholars adapted Conservation of Resources theory (Hobfoll, 1989) to understand well- and ill-being in organizational settings (e.g., Wright & Cropanzano, 1998). Since then, numerous studies based on the Job Demands-Resources model (Demerouti et al., 2001) used this theory to explain why job demands such as role ambiguity led to ill-being in the workplace (e.g., Demerouti, Bakker, & Fried, 2012). According to the Conservation of Resources theory, individuals seek to acquire and maintain resources. Consequently, when there is a loss of resources, or a threat of loss, workers should experience lower satisfaction and higher anxiety. According to Hobfoll (2001) and the postulates of the Job Demands-Resources model (Bakker & Demerouti, 2007), demanding characteristics of work are associated with negative outcomes because they draw on employees' (energy) resources. Role ambiguity is one of the major demands that might bring about resource loss because it is an organizational aspect of the job that requires sustained psychological effort and is associated with certain psychological costs (Cooper, Dewe, & O'Driscoll, 2001).

In addition, the self-concept is differentiated into multiple facets (Hoelter, 1985), however a coherent and integrated self is considered central to optimal functioning (Lecky, 1945). In line with this premise, Donahue, Robins, Roberts, and John (1993) showed that high levels of self-concept differentiation, the tendency to see oneself as having different personality characteristics in different social roles, is related to maladaptive emotional adjustment (e.g., depression). Likewise, workers dealing with varying demands of different roles should be less adjusted. Role ambiguity is also as stressful demand that has the potential to thwart personal growth, learning, and goal attainment (LePine, Podsakoff, & LePine, 2005). Indeed, employees tend to perceive role ambiguity as a constraint or a barrier that unnecessarily hinder their progress toward goal attainment and rewards. Thus, as workers feel that they will be frustrated in their efforts to overcome role ambiguity and perceive they will be blocked

from attaining meaningful outcomes, they become less willing to invest energy to deal with these hindrances directly (Crawford, LePine, & Rich, 2010).

When losses occur, people invest resources available to them in order to adapt successfully (Hobfoll, 1989). Therefore, the higher the job demands, the higher the effort employees will invest in meeting them and the lower their well-being because of lower energy to deal with obstacles. Recent research has shown that job demands, like role ambiguity, can have a strong impact on psychological outcomes such as satisfaction and anxiety (e.g., Diestel & Schmidt, 2009). For instance, greater role ambiguity has been found to relate to greater supervision dissatisfaction and higher levels of anxiety (Olk & Friedlander, 1992). In addition, several other recent studies have shown that ambiguity reduced work satisfaction and increased anxiety (e.g., S. D. Cox, Pakenham, & Cole, 2010; Smith, Choi, Fuqua, & Newman, 2011).

The Present Research

To the best of our knowledge, no study has looked at the factors that might moderate the effects of autonomous and controlled motivations in the work context. Consequently, studies in the work context are clearly needed to examine the factors that might moderate the effects of work motivation on outcomes. It should be noted that McBride et al. (2010) in the context of therapy have shown that the influence of motivation may be more or less pronounced as a function of recurrent depression. Given that prior research based on the Job Demands-Resources model (Demerouti et al., 2001) showed that job demands such as role ambiguity related to employees' psychological health (see Bakker & Demerouti, 2007), we propose that role ambiguity moderates the associations between work motivation and satisfaction and anxiety. Our main argument is that, although autonomous motivation and controlled motivation lead to adaptive and maladaptive outcomes, respectively (e.g., A. E. Cox et al., 2011; Gagné et al., 2010; Thøgersen-Ntoumani & Ntoumanis, 2007), these effects may be more or less pronounced as a function of role ambiguity. From a practical point of view, it appears useful to determine whether role ambiguity moderates the effects of work motivation. Indeed, the present research should clarify whether motivational interventions can possibly have differential effects depending on employees' perceived role ambiguity. Such findings would thus have important applied applications.

In order for autonomous motivation to operate at its full potential, employees may need low levels of ambiguity in their work activities. Indeed, when role ambiguity is high, workers should be prevented from fully committing to their job thus decreasing the beneficial effect of autonomous motivation on outcomes. However, when role ambiguity is low, workers should be able to completely devote to their work thus increasing the beneficial effect of autonomous motivation on outcomes. When employees perceive high levels of ambiguity, controlled motivation should lead even more strongly to negative outcomes. Indeed, having high levels of controlled motivation is detrimental for the energy reserves of employees and role ambiguity represents an additional mental and physical toll (Demerouti et al., 2001) for workers. High levels of role ambiguity should thus exacerbate the negative effects of controlled motivation on outcomes, as individuals should have fewer resources in order to cope with the negative effects of controlled motivation (e.g., Gnilka, Chang, & Dew, 2012; Ullrich, Lambert, & McCarthy, 2012). In addition, being controlled motivated should be taxing, as individuals engage in work activities in ways and for reasons not completely self-endorsed.

Therefore, controlled motivated individuals require additional regulatory resources to accomplish their tasks (Vansteenkiste, Simons, Soenens, & Lens, 2004). As a consequence, employees who perceive high role ambiguity, and thus have their resources already depleted, should experience increasingly the negative consequences of controlled motivation. However, when role ambiguity is low, workers should hold more regulatory resources thus permitting cope with the negative effects of controlled motivation. Consequently, the detrimental effect of controlled motivation on outcomes should be reduced when role ambiguity is low.

We thus proposed the following hypotheses:

Hypothesis 1: Role ambiguity should moderate the relationship between autonomous motivation and satisfaction: the positive relationship between autonomous motivation and satisfaction will be particularly strong when role ambiguity is low.

Hypothesis 2: Role ambiguity should moderate the relationship between controlled motivation and anxiety: the positive relationship between controlled motivation and anxiety will be particularly strong when role ambiguity is high.

Method

Participants

The age of the 698 participants (449 men and 249 women) ranged from 18 to 64 years, with a mean age of 37.18 years ($SD = 11.06$). Average tenure in the current company was 9.74 years ($SD = 9.72$). Five hundred and ninety-seven participants were permanent workers (85.5%) and 101 were temporary workers (14.5%). Five hundred and fifty-five employees were full-time workers (79.5%) and 143 were part-time workers (20.5%). Three hundred and ninety-six participants worked in a company that comprised less than 250 employees (56.7%) and 302 were in a company that had over 250 employees (43.3%).

Procedure

Undergraduate research assistants were recruited for collecting the data related to this project. They distributed a paper-based questionnaire to participants from specific targeted companies (e.g., a hospital unit, a school administrative unit) and also administrated questionnaires to employees working in various French private companies in the area of Tours, France. Respondents came from a variety of industries including financial, telecommunications, manufacturing, healthcare, energy, and technology. In each organization, participants received a questionnaire packet, a cover letter explaining the study, and a consent form stressing the confidential and voluntary nature of the study. Completed questionnaires were given back to the research assistants. No incentive was offered to take part in the study.

Measures

Motivation

The French version of the Multidimensional Work Motivation Scale (Gagné et al., 2015) was used to measure intrinsic motivation (3 items; e.g., "*Because what I do in my work is*

exciting"; $\alpha = .90$), identified regulation (3 items; e.g., "*Because I personally consider it is important to put efforts in this job*"; $\alpha = .68$), introjected regulation (4 items; e.g., "Because otherwise I will feel ashamed of myself"; $\alpha = .68$), and external regulation (6 items; e.g., "Because others will reward me financially only if I put enough effort in my job"; $\alpha = .73$). Participants were asked to indicate, on a 7-point Likert scale (1 = "does not correspond at all" and 7 = "corresponds exactly"), the extent to which each item represents a reason why they are doing their job. Past research revealed that the Multidimensional Work Motivation Scale has acceptable validity and reliability (see Gagné et al., 2015). Gagné et al. (2015) tested a model in which a higher-order autonomous motivation factor subsumes two first-order factors (i.e., intrinsic motivation and identified regulation) and a higher-order controlled motivation factor subsumes the two other first-order factors (i.e., introjected regulation and external regulation). Results revealed an adequate fit of this model to the data. In line with past research (e.g., Gillet, Vallerand, Lafrenière, & Bureau, 2013), we computed an autonomous motivation index by adding and averaging the intrinsic motivation and identified regulation items ($\alpha = .87$) and a controlled motivation index by summing and averaging the introjected and external regulations items ($\alpha = .81$).

Ambiguity

Role ambiguity was assessed with four items (e.g., "Do you know exactly what other people expect of you in your work?"; $\alpha = .79$) taken from the *Questionnaire sur les Ressources et Contraintes Professionnelles* (QRCP; Lequeurre, Gillet, Ragot, & Fouquereau, 2013). Responses were anchored on a 7-point Likert ranging from 1 ("never") to 7 ("always"). Results from Lequeurre and colleagues (2013) indicated that the QRCP had a good factor structure and supported the nomological validity of the tool.

Satisfaction

As in previous research (i.e., Gillet, Fouquereau, Forest, Brunault, & Colombat, 2012), work satisfaction was assessed with five items ($\alpha = .89$) derived from the French version of the Satisfaction with Life Scale (Blais, Vallerand, Pelletier, & Brière, 1989; Diener, Emmons, Larsen, & Griffin, 1985). The words "life satisfaction" were replaced by "work satisfaction." Sample items include "I am satisfied with my work" and "My work conditions are excellent." Responses are made on a scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"). Past research indicated adequate psychometric properties for the French version of the scale (e.g., Blais et al., 1989). Specifically, results showed acceptable reliability indices and the unidimensional structure of the scale was confirmed through exploratory and confirmatory factor analyses.

Anxiety

The two-item global job-anxiety subscale ($r = .84$, $p < .05$) from the Job-Anxiety-Scale (Linden, Muschalla, & Olbrich, 2008) was employed (i.e., "I feel severely uncomfortable and tense when I am at my workplace" and "I feel severely uncomfortable and tense when I think of my workplace"). Participants responded to items on a 7-point Likert-scale anchored by 1 ("totally disagree") and 5 ("totally agree"). Acceptable internal consistency and construct validity have been previously reported (e.g., Linden et al., 2008; Muschalla et al., 2010).

Data Analysis

We began our analyses by calculating means, standard deviations, and correlations for all the variables. We then examined the dimensionality of our variables using confirmatory factor analyses (i.e., a single factor model, a measurement model, a measurement model with error covariance paths between adjacent items, and a measurement model with position effect and an additional orthogonal latent common method factor). A covariance matrix was used as input and models were estimated with Mplus 6.1 (Muthén & Muthén, 2008–2011) using the maximum likelihood method. Because the χ^2 test is sensitive to sample size, we also evaluated model fit using the χ^2/df ratio and the following indices: the Tucker Lewis Index (TLI), Comparative Fit Index (CFI), Standardized Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA) (Hu & Bentler, 1998). TLI and CFI values greater than .90, and SRMR and RMSEA values below .08 indicate a good fit (MacCallum, Browne, & Sugawara, 1996; Steiger, 2007). The 90% confidence interval should not exceed .10 for acceptable model fit (Kline, 2005). Although there is no clear guideline as to the value of the ratio between the chi square and its degrees of freedom, a value less than 5 is preferred (see Kline, 2005).

In addition, we tested a structural model in which autonomous and controlled motivations, role ambiguity, gender, age, tenure, employment contract, length of working time, and size of the organization predicted work satisfaction and anxiety. Finally, the two-way interactions between motivation and role ambiguity in predicting satisfaction and anxiety, the latent interactions between autonomous and controlled motivations and role ambiguity were included in the model.

Results

Descriptive Statistics and Intercorrelations

Means, standard deviations, and correlations appear in Table 1. Results from correlations revealed that autonomous motivation was associated with higher work satisfaction and lower anxiety, whereas controlled motivation was positively related to anxiety. In addition, role ambiguity was negatively and positively correlated with satisfaction and anxiety, respectively. Because past studies have shown that role ambiguity is associated with sociodemographic factors such as gender, age, and number of years of experience (e.g., Bosselut, McLaren, Eys, & Heuzé, 2012; Sakires, Doherty, & Misener, 2009), we also conducted correlation analyses to examine the relationships between control variables (i.e., gender, age, tenure, employment contract, length of working time, and size of the organization) and role ambiguity. Men ($M = 2.61$, $SD = .87$) displayed significantly higher levels of role ambiguity than females

Table 1. Means, standard deviations, and correlations involving all variables.

	M	*SD*	2	3	4	5
Autonomous motivation (1)	4.54	1.31	.18*	−.18*	.61*	−.15*
Controlled motivation (2)	2.56	0.97		.08*	−.04*	.32*
Role ambiguity (3)	2.55	0.88			−.42*	.30*
Work satisfaction (4)	4.23	1.26				−.39*
Anxiety (5)	1.86	1.11				

Note: *$p < .05$; $n = 698$.

($M = 2.45$, $SD = .88$), and age was negatively correlated to role ambiguity ($r = -.11$, $p < .01$). The other correlations involving tenure, employment contract, length of working time, and size of the organization were not significant.

Measurement Model

We initially examined a single factor model for the present data (i.e. Harman's single factor test). This test revealed a poor fit to the data ($\chi^2 = 6478.03$ (495), $p < .001$, $\chi^2/df = 13.09$, TLI = .37 CFI = .41, SRMR = .14 RMSEA = .132 [.129–.134]. A measurement model was next examined to assess the relationships between the observed indicators (i.e., six items for autonomous motivation, ten items for controlled motivation, four items for role ambiguity, five items for satisfaction, two items for anxiety as well as gender, age, tenure, employment contract, length of working time, and size of the organization) and their respective latent constructs. This second model was composed of five latent variables and yielded better fit to the data than the single factor model but was nevertheless unacceptable, $\chi^2 = 2461.10$ (446), $p < .001$, $\chi^2/df = 5.52$, TLI = .76, CFI = .80, SRMR = .09, RMSEA = .080 [.077–.084]. All factor loadings were significant ($p < .001$) and greater than .40.

Position Effect Biases

Modification indices were examined to determine improvement possibilities. Results revealed a position effect. The position effect describes the dependency of the responses to the items on the responses to items that have been processed immediately before (Schweizer & Xuezhu, 2013). Furthermore, position effect is considered as a source of method variance (Spector, 2006). Consequently, error covariance paths were estimated between adjacent items in the questionnaire. This third model yielded better fit to the data than the second model but could be improved, $\chi^2 = 1726.40$ (411), $p < .001$, $\chi^2/df = 4.20$, TLI = .83 CFI = .87, SRMR = .09, RMSEA = .068 [.064–.071].

Common Method Biases

The issue of common method variance was investigated as a possible avenue to improve model fit to the data using Podsakoff, MacKenzie, Lee, and Podsakoff's (2003) recommendations. Consequently, an additional orthogonal latent common method factor to the third model (i.e., measurement model with position effect) was estimated to assess the potential increase in model fit that would be gained from accounting for this unmeasured method factor. The fit of that model was acceptable: $\chi^2 = 1301.07$ (404), $p < .001$, $\chi^2/df = 3.22$, TLI = .90, CFI = .91, SRMR = .06, RMSEA = .056 [.053–.060]. The method factor accounted for 10% of the total variance. Overall, these results suggest that the measurement model adequately fitted the data when taking into account position effect and common method bias.

Structural Model

A model was estimated were autonomous and controlled motivations, role ambiguity as well as gender, age, tenure, employment contract, length of working time, and size of the

organization were predictors of satisfaction and anxiety. It should be noted that the model was composed of latent variables and encompassed previously explained position effect and method variance improvements. The fit of that model was identical to the previously tested measurement model with position effect and method variance biases. Age was a significant positive predictor of satisfaction, such that older employees reported themselves as being more satisfied at work (B = .01, *S.E.* = .00, $p < .01$). Other control variables were unrelated to outcomes. Autonomous motivation was a significant positive predictor (B = .60, *S.E.* = .02, $p < .001$) and controlled motivation was negatively associated (B = –.12, *S.E.* = .04, $p < .001$) with work satisfaction. In addition, controlled motivation positively predicted (B = .63, *S.E.* = .07, $p < .001$) whereas autonomous motivation was negatively associated (B = –.18, *S.E.* = .03, $p < .001$) with anxiety. Finally, role ambiguity negatively (B = –.23, *S.E.* = .03, $p < .001$) and positively (B = .33, *S.E.* = .05, $p < .001$) predicted satisfaction and anxiety, respectively.

Latent Interactions

To test our hypotheses about the two-way interactions between motivation and ambiguity in predicting satisfaction and anxiety, the latent interactions between autonomous and controlled motivations and role ambiguity were included in the model. We followed the procedures recommended by Aiken and West (1991; see also Cohen, Cohen, West, & Aiken, 2003; Frazier, Tix, & Barron, 2004). Furthermore, we followed Algina and Moulder's (2001) recommendations by standardizing the indicators of latent variables. In addition, Mplus modeling framework for latent interactions was employed (see Muthén & Asparouhov, 2003). In a nutshell, the products of indicators were employed to define the indicators of latent interaction terms. It should be noted that with this procedure fit indices cannot be estimated, however the significance of the interaction can be tested by a log-likelihood difference test in comparison to the initial model (Klein & Moosbrugger, 2000). Results revealed that inclusion of latent interactions improved the model fit to the data, Δ log-likelihood (4) = 19.69, $p < .001$. As expected, the interaction between autonomous motivation and role ambiguity on satisfaction (B = −.07, *S.E.* = .04, $p < .05$) as well as the interaction between controlled motivation and role ambiguity on anxiety (B = .64, *S.E.* = .12, $p < .001$) were significant. Table 2 depicts the results of the latent interactions model (see also Figure 1).

To facilitate the interpretation of the interaction, as Aiken and West (1991) recommended, we plotted the simple slopes for the relationships between autonomous motivation and satisfaction and between controlled motivation and anxiety. We used the conventional values of one standard deviation above and below the mean to plot the slopes (Aiken & West, 1991; Frazier et al., 2004). The results in line with our two hypotheses are plotted in Figures 2 and 3. It should be noted that given that latent interaction factors do not have variance, the significance of specific simple slopes could not be estimated.

As was expected, autonomous motivation was most strongly related to satisfaction when ambiguity was low (e.g., when they exactly know what other people expect of them in their work) in comparison to when ambiguity was high (e.g., when they do not know what they are responsible for). Thus, our findings corroborate the idea that role ambiguity moderates the positive effects of autonomous motivation on satisfaction. In addition, controlled motivation was most strongly related to anxiety when ambiguity was high in comparison to

Table 2. Results of the latent interactions model.

	Satisfaction (B)		Anxiety (B)	
	Estimate	*S.E.*	Estimate	*S.E.*
Gender	−.08	.05	.01	.07
Age	.01*	.00	.00	.00
Tenure	−.00	.00	−.00	.01
Employment contract	−.05	.07	−.07	.10
Working time	.00	.06	.11	.08
Size of the organization	.08	.05	−.03	.07
Autonomous motivation	.59*	.04	−.17*	.04
Controlled motivation	−.12*	.05	.61*	.08
Role ambiguity	−.25*	.04	.35*	.06
Autonomous motivation x ambiguity	−.07*	.04	.01	.05
Controlled motivation x ambiguity	−.11	.07	.64*	.12

Note: $n = 698$; Unstandardized coefficients are reported.
*$p < .05$.

when ambiguity was low. Hence, our findings support the idea that role ambiguity moderates the adverse effects of controlled motivation on anxiety. These results provided support for our two hypotheses.

Discussion

The main purpose of the present research was to examine the moderating function of role ambiguity on the relationships of autonomous and controlled work motivations to satisfaction and anxiety. Our findings offer several important implications for theory and practice on motivation, role ambiguity, satisfaction, and anxiety at work.

Research Implications

First, the present results revealed that autonomous motivation was positively associated with work satisfaction and was negatively related to anxiety, while controlled motivation was positively related to anxiety and negatively associated with work satisfaction. These results are in accordance with prior research in the work domain (e.g., Gagné et al., 2010; Thøgersen-Ntoumani and Ntoumanis, 2007) that has shown that autonomous motivation and controlled motivation lead to higher levels of satisfaction and anxiety, respectively. For instance, in the study of Gillet et al. (2013), work autonomous motivation and controlled motivation were positively and negatively associated with work satisfaction, respectively. More generally, the present results confirm that autonomous motivation is associated with more positive consequences than controlled motivation (Deci & Ryan, 2008).

Second, our findings revealed that role ambiguity was associated with lower levels of satisfaction and higher levels of anxiety. These results are consistent with those of past studies that have shown that ambiguity reduced work satisfaction and increased anxiety (e.g., S. D. Cox et al., 2010; Smith et al., 2011). More generally, in line with the postulates of the Job Demands-Resources model (Bakker & Demerouti, 2007; Demerouti et al., 2001), the present results confirm that role ambiguity is positively related to negative outcomes and negatively associated with positive outcomes (e.g., Ghorpade, Lackritz, & Singh, 2011; Yun, Takeuchi, & Liu, 2007).

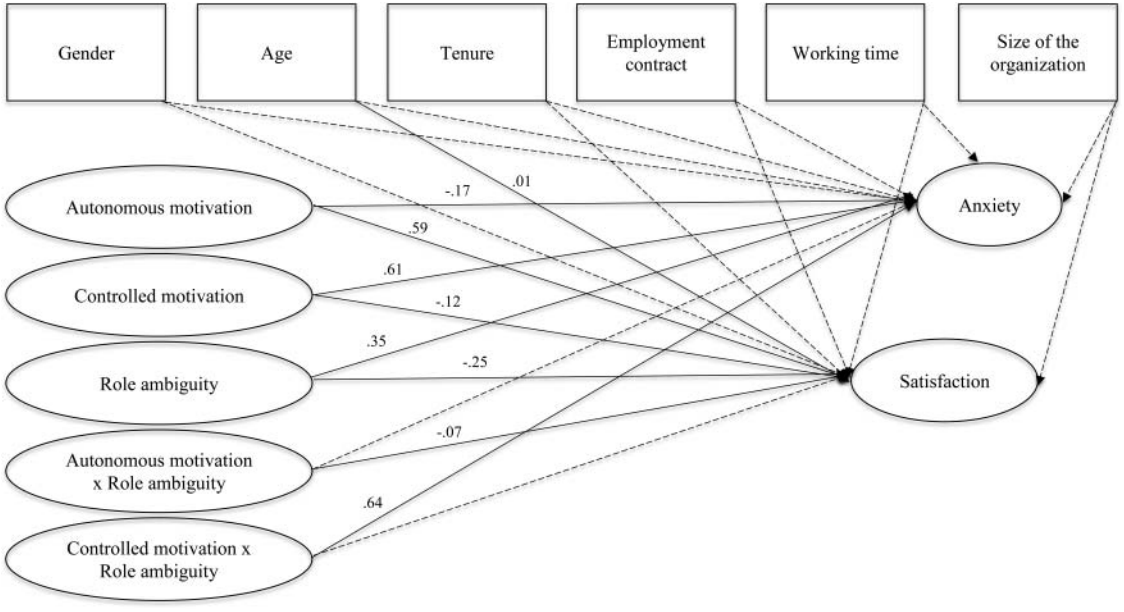

Figure 1. Latent Interactions Model. Note: $n = 698$. Dashed lines represent relations that were not statistically significant. Indicators of latent variables and unstandardized coefficients for the nonsignificant links are not shown for the sake of clarity.

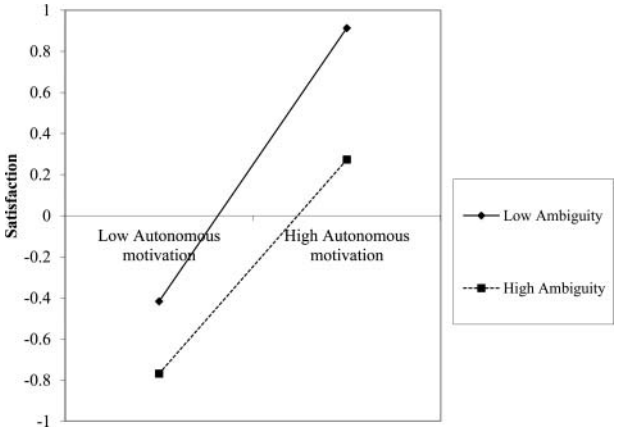

Figure 2. The moderating role of role ambiguity on the relationship between autonomous motivation and satisfaction. *Note*. $n = 698$; High = One standard-deviation higher than the mean; Low = One standard-deviation lower than the mean.

Third and foremost, our central contribution lies in introducing role ambiguity as a moderating variable on the relationships between motivation and work outcomes. Specifically, results of moderated regression analyses showed that role ambiguity moderated the positive relationship between autonomous motivation and satisfaction. As hypothesized, results from simple slopes revealed that autonomous motivation was positively related to satisfaction when role ambiguity was low but less so when role ambiguity was high. In accordance with the predictions of Hobfoll (2001), these results confirm that employees need low levels of ambiguity in their work activities in order for autonomous motivation to more strongly relate with work satisfaction. Indeed, when workers experience high levels of role ambiguity, they cannot behave with a full sense of volition and choice and do not perceive their work as congruent with their own values and interests. In other words, they do not fully partake in the activity, are less committed to their job, have lower energy, and are less able to attain the

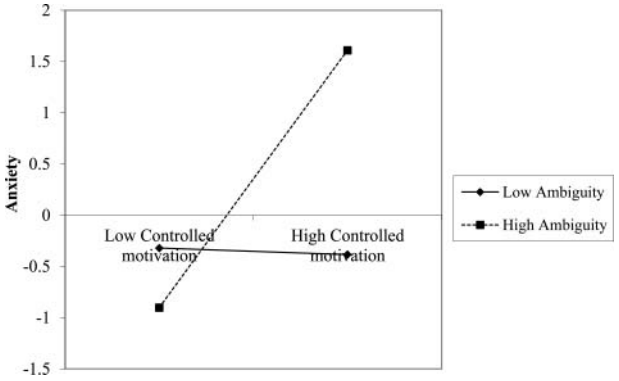

Figure 3. The moderating role of role ambiguity on the relationship between controlled motivation and anxiety. *Note*. $n = 698$; High = One standard-deviation higher than the mean; Low = One standard-deviation lower than the mean.

desired outcomes (Hobfoll, 1989). In this case, autonomous motivation does not thus operate as its full potential and is associated with lower work satisfaction than when role ambiguity is low.

In addition, the present results revealed that role ambiguity moderated the positive relationship between controlled motivation and anxiety. As expected, results from simple slopes revealed that controlled motivation positively related to anxiety when ambiguity was high but the relationship was negative when role ambiguity was low. Indeed, when workers perceive high levels of role ambiguity, they experience pressure and their goal pursuit is not aligned with their values and interests. In addition, as mentioned above, they have lower energy and fewer resources to cope with the negative effects of controlled motivation (Hobfoll, 2001). Hence, controlled motivation is associated with high levels of anxiety. In contrast, when role ambiguity is low, employees have more regulatory resources and can cope with the negative influence of controlled motivation. Consequently, controlled motivation does not have positive effects on anxiety when role ambiguity is low.

More generally, the present findings suggest that the relationships of autonomous and controlled motivations to work outcomes are moderated by job demands. They are particularly important as they demonstrated that the outcomes associated with each form of motivation may vary as a function of organizational factors. According to SDT, controlled motivation is said to be of lower quality than autonomous motivation because it is associated with the thwarting of the three psychological needs and leads to lower levels of optimal functioning (Ryan & Deci, 2000). However, in the present research, we demonstrated that controlled motivation was positively associated with a negative outcome (i.e., job anxiety) only when role ambiguity was high. The present findings thus challenge the SDT perspective on quality of motivation (see Deci & Ryan, 2008).

Contrary to the postulates of SDT, the negative influence of controlled motivation was also hardly supported in recent research using a person-centered approach. For instance, Van den Broeck, Lens, De Witte, and Van Coillie (2013) found that workers characterized by high levels of both autonomous and controlled motivations, reported the same scores on job satisfaction and work engagement as those characterized by high levels of autonomous motivation and low levels of controlled motivation. Moran, Diefendorff, Kim, and Liu (2012) also showed that employees with the highest levels of autonomous and controlled motivations were the best performers. Such results are particularly interesting given that they are not fully in line with SDT and suggest that controlled motivation can combine synergistically with autonomous motivation to predict positive outcomes in the work domain. Finally, recent research did not always confirm SDT's assumption by showing that controlled motivation related to positive outcomes (e.g., Cox et al., 2011; Parker et al., 2010). In line with the results of the present study, future research using the SDT framework would do well to examine possible moderating variables on the relationships between motivation and work outcomes. These investigations might help explain why controlled motivation is not always associated with negative consequences (e.g., Chantal, Guay, Dobreva-Martinova, & Vallerand, 1996; Pelletier, Fortier, Vallerand, & Brière, 2001).

The findings in regard to the nonsignificant interactions also deserve attention. Although prior research (e.g., A. E. Cox et al., 2011; Gillet et al., 2013) showed that autonomous motivation negatively related to negative outcomes (e.g., anxiety, burnout, turnover intentions), the results revealed that that the interaction between autonomous motivation and role ambiguity was not significantly related to anxiety. Furthermore, although controlled motivation

was negatively associated with positive outcomes such as organizational commitment (e.g., Fernet, Austin, & Vallerand, 2012) and work satisfaction (e.g., Gillet et al., 2013), the present results also revealed that the interaction between controlled motivation and role ambiguity on work satisfaction was not significant. In other words, despite autonomous motivation being negatively related to anxiety, role ambiguity did not moderate this relationship. In a similar way, controlled motivation was negatively related to work satisfaction; however this association was not moderated by role ambiguity. These results are still somehow congruent with past research suggesting that autonomous motivation is a more reliable predictor of work satisfaction than controlled motivation (e.g., Gillet et al., 2013). In addition, research also suggests that controlled motivation is more consistently associated with anxiety than autonomous motivation (e.g., Magnus et al., 2010).

According to Ryan and Deci (2000), satisfaction of the basic psychological needs for autonomy, competence, and relatedness contributes to proactivity and integration, and strengthens inner resources contributing to subsequent resilience, whereas need thwarting leaves one prone to passivity and fragmentation, and increases vulnerabilities for defensiveness and psychopathology. In other words, psychological need satisfaction and thwarting can substantially account for both the "dark" and "bright" side of people's functioning (Ryan & Deci, 2000). Moreover, when needs are thwarted, workers develop a number of coping strategies to accommodate the experience of need thwarting (Vansteenkiste & Ryan, 2013), including the development of need substitutes and engagement in compensatory behaviors (Ryan & Deci, 2000). For instance, need thwarting engenders feelings of insecurity, which makes individuals search for external indicators of worth, such as the pursuit of extrinsic goals (e.g., Thøgersen-Ntoumani, Ntoumanis, & Nikitaras, 2010). Yet, as workers turn to extrinsic goals to compensate for need thwarting, it yields personal, social, and societal costs (Vansteenkiste, Soenens, & Duriez, 2008). More generally, it means that the relationships between autonomous motivation and positive outcomes and between controlled motivation and negative outcomes should be stronger than those between controlled motivation and positive outcomes and between autonomous motivation and negative outcomes (see Deci & Ryan, 2008). Nevertheless, future research on this subject is warranted.

The choice of moderator is arbitrary from an algebraic point of view, and is purely a choice based on ease of substantive interpretation. In the present research, we opted for a motivational perspective in which organizational factors moderate the relationship between motivation and outcomes. Nevertheless, it should be kept in mind that the present results can be interpreted with autonomous and controlled motivations as moderators and role ambiguity as an independent variable as well. As mentioned above, prior research adopted such a perspective and considered autonomous motivation as a moderator and job design characteristics as an independent variable (Fernet et al., 2004; Parker et al., 2010; Trépanier et al., 2013). For instance, Dysvik and Kuvaas (2011) examined whether autonomous motivation moderates the relationship between perceived job autonomy and work performance. Two cross-sectional surveys among Norwegian employees showed that the relationship between perceived job autonomy and work performance was moderated by autonomous motivation. More specifically, perceived job autonomy was more strongly related to work performance for employees high in autonomous motivation than for employees low in autonomous motivation. From this perspective, the present results also suggest that the negative relationship between role ambiguity and satisfaction was reduced with high levels of

autonomous motivation. In addition, the negative relationship between role ambiguity and satisfaction was enhanced with high levels of controlled motivation. Thus, our findings corroborate with past research (e.g., Fernet et al., 2004; Parker et al., 2010; Trépanier etal., 2013) suggesting that motivation moderates the relationship between job characteristics and outcomes.

Limitations and Future Directions

The present study had some limitations. First, our design was correlational in nature and it is thus inappropriate to make causal inferences. Future research with experimental designs is needed in order to provide more clarity regarding the direction of causality. Second, the present sample only comprised workers from one country (i.e., France). In order to strengthen confidence in the structural model, it is necessary to replicate the results in other samples of workers from France but also from different cultures. Third, the present study included a heterogeneous convenience sample. As Visser, Krosnick, and Lavrakas (2000) have stated, convenience sampling can be a concern especially because the people who volunteer may be more interested in the survey topic than those who do not. Thus, future research in different sectors may further add to the generalizability of the findings. Fourth, although we control for several variables (e.g., gender, age, organizational tenure), it is nevertheless possible that other organizational and managerial factors could account for the differences in outcomes as a function of motivation and role ambiguity. Future research controlling for variables such as occupation, type of industry, salary, or physical health problems would appear in order. In addition, it would be interesting to conduct additional studies on the moderating role of job demands in the motivation-outcome relation while controlling for autonomy and competence support from managers and co-workers (see Moreau & Mageau, 2012). More generally, in the present study, we focused solely on role ambiguity as a moderating variable on the relationships between motivation and work outcomes. Consequently, future research should look at the role of other job demands (e.g., uncertainty about the future, role conflict, role overload) and resources (e.g., variety in work tasks, relationships with colleagues) in the relationships between autonomous and controlled motivations and outcomes. For instance, Trépanier and colleagues (2013) have shown that role overload and role conflict were negatively associated with autonomous motivation and positively correlated with psychological distress. It is thus possible that autonomous motivation would lead to higher levels of well-being particularly so when role overload and conflict are low. Finally, we relied on self-report measures. Such measures can be impacted by social desirability, and we thus encourage researchers to conduct additional research using other tools to assess work satisfaction and job anxiety, as well as objective assessment of absenteeism and performance to extend the present findings.

Practical Implications and Conclusion

Job satisfaction and anxiety are constructs of significant theoretical and practical concern because they are associated with work performance, turnover, and life satisfaction (e.g., De Gieter, Hofmans, & Pepermans, 2011; Haines et al., 2002). The present study examined the links between work motivation, role ambiguity, and these outcomes and offers at least two meaningful insights for organizations, managers, and employees.

First, our findings suggest that work organizations would do well to facilitate workers' autonomous work motivation and limit the development of controlled motivation. Contrary to autonomy-supportive behaviors (i.e., provide a meaningful rationale for doing the tasks, emphasize on choice rather than control, and acknowledge one's feelings and perspectives), supervisors' controlling interpersonal behaviors (i.e., a coercive and authoritarian way to pressure employees to behave in a specific and, typically, manager-directed way) have been found to negatively predict autonomous motivation (e.g., Blanchard, Amiot, Perreault, Vallerand, & Provencher, 2009). Similarly, recent studies have shown that controlling behaviors were positively associated with controlled motivation (see Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2009). Managers should thus exhibit autonomy-supportive behaviors and avoid controlling behaviors to promote employees' autonomous motivation over controlled motivation as it is associated with more positive outcomes (e.g., performance, well-being).

Second, the results of the present study suggest that managers and industrial-organizational psychologists should ensure that role clarity is present in work teams to maximize the effects of work motivation. Role ambiguity might be operated at the organization level, and managers can attempt to reduce the level of role ambiguity to engender the best outcomes from employees. For instance, potential remedies for the ambiguity issue are role clarification, role negotiation, and participative decision-making strategies (e.g., Miles & LaSalle, 2008). Finally, our moderating results suggest that interventions to reduce role ambiguity may prove valuable in preventing against anxiety especially for employees who display high levels of controlled motivation. For these employees, managers may be able to buffer against anxiety by providing clear and consistent information about the expectations associated with one's position. By the same token, the present findings suggest that employees with high levels of autonomous motivation may also benefit from an increase of role clarity.

In conclusion, the present study provides evidence for role ambiguity as a moderating variable in the motivation-outcomes relationships. Future research should attempt to further these findings as well as identify other variables that may moderate these relationships.

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