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Unraveling the importance of the quantity and the quality of workers' motivation for well-being: A person-centered perspective

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ABSTRACT

The current study compares the quantitative and the qualitative viewpoints on work motivation by relying on Self-Determination Theory's differentiation between autonomous and controlled motivation. Specifically, we employed a person-centered approach to identify workers' naturally occurring motivational profiles and compared them in terms of positive and negative aspects of worker well-being. Across a representative population sample (Sample 1) as well as two divergent samples of different organizations (Samples 2 and 3), four profiles were found: (1) a HA-HC profile characterized by high autonomous and high controlled motivation, (2) a HA-LC profile characterized by high autonomous and low controlled motivation, (3) a LA-HC profile typified by low autonomous and high controlled motivation and (4) a LA-LC profile characterized by low autonomous and low controlled motivation. In general, workers in the former two profiles (both scoring high on autonomous motivation) reported most job satisfaction, work enthusiasm/engagement and the lowest levels of strain/burnout. The latter two profiles (both scoring low on autonomous motivation) displayed the least optimal outcomes. Results seem to point at the importance of autonomous motivation.

1. Unraveling the quantity and the quality of workers' motivation: a person-centered perspective

Motivation is important for workers' optimal functioning and organizations' productivity. It is therefore is a critical issue for organizational science and practice (Pinder, 2008). Workers vary considerably in their motivation to put effort in their job: Whereas some drag themselves to work, others are highly motivated. High levels of work motivation may furthermore stem from different sources, ranging from a passionate intrinsic interest in one's job to feeling extrinsically pressured by stringent deadlines or contingent rewards such as a bonuses.

Most motivational theories, such as Goal-setting Theory (Locke & Latham, 1990) and Expectancy-Value Theory (Vroom, 1964) favor a *quantitative* approach in studying work motivation, emphasizing the amount or intensity of motivation. Others, such as the Achievement Goal Theory (Elliot & McGregor, 2001) and Regulatory Focus Theory (Higgins, 2000) primarily adopt a *qualitative* point of view. They differentiate qualitatively different types of motivation (i.e., mastery versus performance goal orientation, promotion versus prevention orientation) because some types of motivation correlate positively with adaptive outcomes (e.g., well-being, positive affect, persistence, deep level learning) while other types associate positively with less adaptive or even maladaptive outcomes (e.g., stress, ill-being, negative affect, depressive symptoms) (e.g., de Lange, Van Yperen, Van der Heijden, & Bal, 2010).

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The literature provides support for both the qualitative and qualitative views (Pinder, 2008). To date, to the best of our knowledge, research comparing the conflicting assumptions of both perspectives is lacking. The current contribution aims to tap into this issue by relying on Self-Determination Theory (SDT; Deci & Ryan, 2000) which emphasizes that both the quantity and the quality of motivation matter. As such, this study aims to expand the current knowledge on work motivation in three ways. First, by comparing the qualitative and quantitative point of view, we add to the theoretical understanding of work motivation. Second, we shed light on how work motivation would best be approached methodologically. Within a quantitative perspective, all types of motivation are added because, they are all equivalent in value or importance. This assumption runs against the qualitative perspective, in which the differences between various types of motivation are critical. Rather than adding them, lower quality types of motivation are therefore subtracted from more optimal types of motivation to obtain a general score of the quality of motivation (e.g., Pennington & Roese, 2003) or jointly included in the analysis to examine their relative importance and interaction (e.g., Payne, Youngcourt, & Beaubien, 2007). In both cases, the shared variance is controlled for, which, according to the quantitative approach, may lead to a loss of substantive information.

To avoid such drawbacks, we rely on a person-centered approach (Magnusson, 1998), i.e., cluster analysis (Gore, 2000), to study the quality and quantity of motivation. A person-centered approach can be contrasted with commonly employed variable-centered approaches such as regression analysis or structural equation modeling. Variable-centered approaches typically break down the complex reality into separate variables. They aim at identifying relationships between independent and dependent variables and assessing the strengths of these relations at the group level. Person-centered approaches may complement this variable-centered approach as they focus upon the experience of individuals (Clatworthy, Buick, Hankins, Weinman, & Horne, 2005). Specifically, cluster analysis allows for the detection and the comparison of naturally occurring groups defined by particular *profiles*, in our case in terms of the quantity and quality of their work motivation. As such, cluster analysis allows for drawing conclusions on the level of groups of individuals and may assist in identifying which individuals are most at risk for experiencing ill-being such as burnout, or, conversely, are most likely to thrive at work. For practitioners it is easier to recognize and understand groups of people with different profiles as obtained from cluster analysis, than to understand the implications of interaction effects of the dimensions in regression analysis. The current study thus also adds to the practical understanding of work motivation. This is the third contribution of this study.

To ascertain the validity of our results, we employ a multi-study approach, testing the hypotheses in a heterogeneous representative sample (Sample 1) as well as two divergent homogeneous samples (Samples 2 and 3). While the representative sample allows identifying the typical worker of each emerging profile and the relative occurrence of the different profiles, the divergent samples also shed light on the universality of the clusters, both across particular organizations and countries, increasing the generalizability of the findings. Before detailing the hypotheses, we discuss the quantitative and qualitative view on motivation based on SDT, as well as the added value of a person centered approach.

2. Quality and quantity of work motivation: a self-determination theory perspective

SDT taps into the quality of motivation by distinguishing two different types of motivation according to the degree to which workers experience the reasons for putting effort in their work as autonomous or controlled (Deci & Ryan, 2000). Workers particularly believe that the reasons for their behavior stem from themselves when they find their job inherently interesting, enjoyable and challenging, i.e., when they are intrinsically motivated. SDT considers this the most autonomous type of motivation. However, jobs might also include tasks which are not intrinsically motivating, but are executed out of extrinsic motivation, i.e., to obtain an outcome that is separable from the activity itself. Based on empirical findings, SDT distinguishes three different types of extrinsic motivation depending upon the degree to which employees endorse the reasons for engaging in the behavior, that is the degree in which the extrinsic reasons are internalized (Deci & Ryan, 2000). In case of intrinsic motivation the perceived locus of causality is internal; when the motivation is extrinsic, the locus of causality can be internal or external.

First, employees may experience the reasons for their behavior as totally external to themselves and act upon contingencies administered by others. They may for example only invest efforts in their job to obtain a bonus or to meet their supervisor's expectations. This is labeled as external regulation. Second, employees may buttress their behavior with self-worth contingencies, such as ego-involvement, pride, guilt, shame and anxiety. Then, the reasons for conducting the behavior are partially taken in, but not fully endorsed, resulting in an internal pressure to act or an introjected regulation. External and introjected regulation are typified by a perceived external locus of causality and feelings of external or internal control. Therefore they compose controlled motivation. Third, employees may identify with or integrate the extrinsic reasons to put effort in their job and consider their tasks valuable or personally important. Although extrinsically motivated, such the behavior is accompanied by a perceived internal locus of causality and feelings of psychological freedom and volition, as in the case of intrinsic motivation. Therefore, these types of motivation are grouped together with intrinsic motivation as autonomous motivation. Within SDT, the original distinction between intrinsic and extrinsic motivation has thus been replaced by the differentiation between autonomous and controlled motivation (Deci & Ryan, 2000).

Workers may display both types of motivation or behavioral regulation (Sheldon, Turban, Brown, Barrick, & Judge, 2003), but autonomous and controlled motivation are found to relate to qualitative different outcomes. According to SDT, autonomous motivation contributes to individuals' optimal functioning as it allows for the satisfaction of the basic human psychological needs for autonomy (i.e., experience choice and authorship in one's behavior), competence (i.e., feeling effective in carrying out activities) and relatedness (i.e., feeling a sense of connection and intimacy with others; Van den Broeck, Vansteenkiste, De Witte, Soenens, & Lens, 2010). Therefore autonomous motivation is considered to lead to beneficial outcomes, and is said to be of high quality. Controlled motivation, in contrast, does not contribute to or even detracts from the satisfaction of the three basic psychological needs. It therefore leads to lower levels of optimal functioning, and is said to be of lower quality (Deci & Ryan, 2000).

Accordingly, several scholars have subtracted controlled from autonomous motivation to obtain a general measure of the quality of motivation (e.g., Judge, Bono, Erez, & Locke, 2005). In support of the qualitative view, this index associates positively with various aspects of optimal functioning including job satisfaction, physiological health and beneficial work-attitudes such as organizational commitment (see Gagné & Deci, 2005 for an overview). An important assumption to create such a quality score is, however, that workers scoring high on both autonomous and controlled motivation have the same quality of motivation than those who obtain for example low - but also equal - scores on both types of motivation. Within the qualitative approach both groups are indeed assigned an equal rather low quality of motivation score. This is however at odds with the quantitative perspective. Starting from the assumption that autonomous and controlled motivation can be added, the aforementioned groups differ considerably in their amount of motivation and may therefore display different levels of optimal functioning. The current study aims to shed light on the importance of the quantity and quality of motivation using cluster analysis.

3. Workers' motivational profiles

Cluster analysis partitions workers into mutually exclusive groups that display high internal homogeneity and maximally differ from each other. This is rather similar to a median split procedure. However, while a median split procedure differentiates between a priori defined groups (e.g., based on median scores as cut-off values), clusters analysis identifies naturally occurring profiles. It thus furthers the understanding of how different types of motivation naturally combine into profiles which likely differ from one another quantitatively and/or qualitatively. Over the past few years, some studies in the realm of sports (Gillet, Vallerand, & Rosnet, 2009), physical education (Haerens, Kirk, Cardon, Bourdeauduij, & Vansteenkiste, 2010) and educational psychology (e.g., Ratelle, Guay, Vallerand, Larose, & Senécal, 2007; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009) identified different motivational profiles based on SDT-variables. However, across these studies, the number and the defining characteristics of the retained groups differed, leading to divergent conclusions regarding the importance of the quality and quantity of motivation (e.g., Boiché, Sarrazin, Pelletier, Grouzet, & Chanal, 2008; Vansteenkiste et al., 2009).

Methodologically, these differences might first be ascribed to the inclusion of other variables such as basic need satisfaction or goals, in addition to autonomous and controlled motivation (Mouratidis & Michou, 2011). Second, the differences might also be attributed to the use of different methods. For example, whereas some authors conducted exploratory and confirmatory cluster-analysis in two separate samples (Boiché et al., 2008), others performed both in the same sample (Vansteenkiste et al., 2009), thereby optimizing their cluster solution (Gore, 2000). From a theoretical point of view, the lack of consistency might also indicate that motivational profiles are domain or even context specific (Ratelle et al., 2007).

Against this backdrop, we study motivational profiles using only autonomous and controlled work motivation as clustering dimensions. Combining the assumptions of the quantitative and qualitative perspectives and based on the repeated finding that autonomous and controlled motivation are generally moderately positively correlated (e.g., Gagné et al., 2010) we expect that high and low autonomous motivation may combine with both high and low controlled motivation and vice versa. We hypothesize:

Hypothesis 1 (H1). Four motivational profiles emerge (1) a profile characterized by high autonomous motivation and high controlled motivation, i.e., HA-HC-profile, (2) a profile indicating high autonomous motivation and low controlled motivation, i.e., HA-LC-profile, (3) a profile typified by low autonomous motivation and high controlled motivation, i.e., LA-HC-profile, and (4) a profile scoring low on both types of motivation, i.e., LA-LC-profile.

Furthermore, the current study aims to compare the empirically found profiles in terms of work related well- and ill-being. Although both are important indicators of individuals' optimal functioning (Huta & Ryan, 2010), they remained rather understudied in previous research on motivational profiles. We selected job satisfaction, work enthusiasm and work engagement as measures of well-being, and strain and burnout as aspects of work related ill-being to validate our results. These aspects have different antecedents, supporting their divergent validity (Demerouti, Mostert, & Bakker, 2010; Warr & Inceoglu, 2012). They are however all important, not only for employees, but also for employers, as they affect employees' commitment, performance, and turnover (Demerouti et al., 2010; Nagy, 2002).

Building upon H1 and following the quantitative perspective, we hypothesize that HA-HC workers display enhanced levels of well-being: such workers display the highest levels of motivation, which, in turn, gives rise to feelings of contentment and enthusiasm (Locke & Latham, 1990). HA-LC and LA-HC workers are likely to experience equal but moderate levels of well-being, as their total motivation is likely to be moderate in strength. The lowest level of motivation and well-being is expected among LA-LC workers, as they lack both autonomous and controlled motivation. In short, from a quantitative perspective, we hypothesize:

Hypothesis 2a (H2a). The different profiles can be ordered from high to low levels of well-being as follows: (1) HA-HC profile, (2) the HA-LC and LA-HC profiles, which do not differ and (3) the LA-LC profile. The opposite order is expected for ill-being.

Following the qualitative perspective, in contrast, HA-LC workers are hypothesized to report the highest levels of well-being as they are most likely to have their basic psychological needs met (Deci & Ryan, 2000). Workers characterized by a HA-HC or a LA-LC profile are likely to experience less well-being. Among HA-HC motivated workers this is because, the experience of controlled motivation likely inhibits the positive effects of autonomous motivation. Among LA-LC workers no positive effects of autonomous motivation or negative effects of controlled motivation are expected, resulting in a rather undifferentiated motivational profile. The lowest levels of well-being are to be found among LA-HC workers, as they are most likely frustrated in their basic psychological needs

and feel highly stressed because of the experienced internal and/or external control. In short, in line with a qualitative perspective, we hypothesize:

Hypothesis 2b (H2b). The different profiles can be ordered from high to low levels of well-being as follows: (1) the HA-LC profile, (2) the HA-HC and LA-LC profile, which do not differ and (3) the LA-HC profile. The opposite order is expected for ill-being.

We test these hypotheses in a representative sample of the Belgian population (Sample 1) as well as in two divergent samples: a Belgian public service organization (Sample 2) and a Dutch private service organization (Sample 3), which employ workers with a strong (e.g., higher educated) and precarious (e.g., lower educated) position on the labour market, respectively. Using a representative sample holds a number of advantages. First, it allows identifying the motivational profiles irrespective of organizational contexts, limiting the probability that organization specific factors influence the number and the type of obtained clusters (Ratelle et al., 2007). From a descriptive point of view, a representative sample is interesting as it (a) provides insight in the relative distribution of workers in the retained motivational profiles and (b) allows identifying the "typical" worker of each profile in terms of relevant background characteristics (e.g., gender, age, educational and professional level). A representative sample also allows generalizing the results to the working population, both in terms of the number of clusters and their differences. Samples 2 and 3 furthermore allow insight in the extent to which the four-cluster solution might be retrieved in two diverse contexts, which answers the call for more contextualization in organizational research (Rousseau & Fried, 2001). It will also shed light on whether contexts may substantially alter workers' motivation such that different cluster solutions are found (Ratelle et al., 2007). In Sample 1 we examine the differences among the clusters with respect to job satisfaction, enthusiasm and strain. Samples 2 and 3 allow replicating the results regarding job satisfaction and extending our knowledge to the more elaborate well-being constructs of work engagement and burnout.

4. Method

4.1. Procedure and participants

Sample 1 was recruited by a consulting company as part of a nationwide study in Belgium on working conditions and well-being ($N = 1797$). Via a street interview, participants were invited to participate in an anonymous paper-and-pencil survey. To arrive at a representative sample, during data collection, it was regularly inspected which categories of workers were underrepresented in the sample, which then guided the further data collection. Because of this procedure, the exact response rate cannot be calculated. Sample 2 was selected in a Belgian community organization ($N = 287$). Sample 3 included call center agents in the Netherlands ($N = 270$). In both organizations data-collection was part of a survey on occupational health and motivation, which was supported by the human resources departments. All participants received a questionnaire via their work email address. The confidentiality and the anonymity of the responses were guaranteed. Response rates were 54% and 62% respectively.

Sample 1 was representative for the Belgian work force in terms of gender, level of education, type of occupation, and age (detailed information is available from the first author upon request). Samples 2 and 3 included 53% and 46% of men respectively and thus had a fairly similar gender distribution. They were quite different regarding the other demographic characteristics. Participants in Sample 2 were older ($M = 43.39$ years; $SD = 9.10$) than in Sample 3 ($M = 28.24$ years; $SD = 9.01$) and higher educated. In Sample 2, 50% of the participants acquired at least a bachelor's degree, while in Sample 3, only 5% of the participants attended higher education. In Sample 2, most participants (90%) were permanently employed, whereas Sample 3 included predominantly temporary workers (72%). Most participants worked full-time (90% in Sample 2 and 72% in Sample 3).

4.2. Measurements

4.2.1. Motivation

Based on Gagné et al. (2010), in the three samples *autonomous motivation* was measured with four items referring to considering one's work valuable (e.g., 'I put effort in my job because my job is personally meaningful') or enjoyable (e.g., 'I enjoy this work very

Table 1
Means, standard deviations, Chronbach alphas and correlations of the variables in sample 1 (first line) and sample 2/sample 3 (second line of each cell).

	Mean	*SD*	1.	2.	3.	4.	5.
1. Autonomous motivation	4.45	.91	(.78)				
	5.22/4.02	.99/1.22	(.90/.98)				
2. Controlled motivation	3.01	.98	.00	(.64)			
	3.83/3.15	1.09/1.16	.37***/.35***	(.83/.82)			
3. Job satisfaction	4.48	1.12	.58***	−.09*			
	4.13/3.59	67/1.02	.54***/.56***	.03/.20***			
4. Enthusiasm/engagement	4.55	1.15	.62***	−.10***	.63***		
	4.47/3.72	1.01/1.29	.70***/.72***	.18*/.19***	.55***/.64***	(.95/.94)	
5. Strain/burnout	3.06	1.45	−.27***	.19***	−.30***	−.29***	
	1.26/1.66	.98/1.13	−.45***/−.49***	.01/−.03	−.55***/−.51***	−.52***/−.60***	(.92/.89)

Note: Answering scales differed in Sample 1 compared to Samples 2 and 3. The alpha of controlled motivation is Sample 1 is rather low, but could not be increased by deleting items. * $p<.05$, ** $p<.01$, *** $p<.001$.

much'). *Controlled motivation* was assessed with four items referring to external (e.g., 'I feel obliged by others') or internal control (e.g., 'otherwise I would feel bad about myself'). Responses were given on a scale from 1 (*totally disagree*) to 6 (*totally agree*) in Sample 1 and from 1 (*totally disagree*) to 7 (*totally agree*) in Samples 2 and 3.

4.2.2. Well-being

Job satisfaction was assessed with one face valid item, which compare favorably with multi-item measurements of job satisfaction (Nagy, 2002). In Sample 1 the item 'In general I am satisfied with my job' was used. It was coded on a 6-point Likert scale ranging from 1 (*totally disagree*) to 6 (*totally agree*). In Samples 2 and 3 a similar item was used reading 'How satisfied are you, all in all, with your job?'. This item was coded on a scale from 1 (*totally unsatisfied*) to 5 (*totally satisfied*).

Work enthusiasm was measured with the item 'I am enthusiast about my job' (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002) in Sample 1. It was answered on a 6-point Likert scale ranging from 1 (*totally disagree*) to 6 (*totally agree*). In Samples 2 and 3 this measure was extended, and work enthusiasm/engagement was measured via the scales of vigor (e.g., 'At my work, I feel bursting with energy') and dedication (e.g., 'I am proud of the work I do') of Schaufeli et al. (2002). Responses were given on a 7 point Likert scale ranging from 0 (*never*) to 6 (*always*).

Strain was assessed with the item 'In general, I feel stressed at work' in Sample 1. It was rated on a 6-point Likert scale ranging from 1 (*totally disagree*) to 6 (*totally agree*). This item can conceptually be linked to burnout, which was measured with the items for emotional exhaustion (e.g., 'I feel totally exhausted in my job') and cynicism (e.g., 'I doubt the usefulness of my job') in Samples 2 and 3 (Schaufeli & Van Dierendonck, 2000). These items were rated on a 7-point Likert scale ranging from 0 (*never*) to 6 (*always*). The means, standard deviations and intercorrelations of the scales can be found in Table 1.

4.3. Plan of analysis

Before conducting a two-step cluster analysis, we standardized autonomous and controlled motivation (Gore, 2000). We then performed hierarchical cluster analysis based on squared Euclidian distances and Ward's method to select the optimal number of clusters. In the second step, we optimized the preliminary cluster solution via an iterative or *k*-means clustering procedure. A double-split cross-validation procedure was used to assess the stability of the cluster solution (Tinsley & Brown, 2000). In Sample 1, we furthermore identified the "typical worker" within each cluster in terms of occupational level, contract type, age and gender, based on Chi^2-difference tests and multivariate and univariate analysis of variance (MANOVA and ANOVA).

Then, we created two indices to directly compare the quantitative and qualitative view on motivation. In line with the quantitative perspective, autonomous and controlled motivation were added to reflect workers' total amount or strength of motivation (e.g., Vansteenkiste et al., 2009). Consistent with previous research (e.g., Judge et al., 2005), controlled motivation was subtracted from autonomous motivation to index the quality of motivation. Comparing the clusters on these indices of the quantity and quality of motivation allowed to validate the four clusters and to gain better insight in which motivational aspects they differ. Finally, we performed MANOVA, ANOVA and pairwise comparisons (using Tukey's honestly significant difference test) to compare the levels of job satisfaction, work enthusiasm/engagement as well as strain/burnout across the clusters.

5. Results

5.1. Identification of groups

In each of the samples, hierarchical cluster analysis indicated the same four-cluster solution as the most clear, parsimonious and powerful solution. This four-cluster solution explained 67% and 64% of the variance in autonomous and controlled motivation in Sample 1, 69% and 53% in Sample 2, and 62% and 67% in Sample 3, respectively. The four-cluster solution was preferred above the three- or five-cluster solutions, which explained less than 50% of the variance in autonomous and controlled motivation, and was less parsimonious and more difficult to interpret, respectively. The four-cluster solution was highly stable as evidenced by the split-half average kappa of .93, .68 and .94 in Samples 1, 2 and 3, respectively and the average kappa of .85 for replicating the results over Samples 2 and 3.

Fig. 1 represents the results in Sample 1, which are similar to the results in the other Samples. In line with H1, across samples, the four clusters could be labeled as follows: (1) a HA-HC cluster characterized by high autonomous and high controlled motivation; (2) HA-LC cluster typified by high autonomous and low controlled motivation; (3) LA-HC cluster representing workers with low scores on autonomous and high scores on controlled motivation; and (4) LA-LC cluster characterized by low scores on both types of motivation. The clusters represented between 37% and 13% of the samples (see Table 3).

An omnibus MANOVA (Wilks' $\lambda = .12$; $F(6, 3576) = 1129.33$, $p < .001$, $\eta^2 = .66$ in Sample 1; Wilks' $\lambda = .12$; $F(6, 564) = 175.89$, $p < .001$, $\eta^2 = .65$ in Sample 2; Wilks' $\lambda = .10$; $F(6, 510) = 184.21$, $p < .001$, $\eta^2 = .68$ in Sample 3, follow up ANOVA's and pairwise comparisons revealed the expected cluster differences in the quality and the quantity scores (Table 3): In all three samples, the highest *quantity* of motivation was reported in the HA-HC cluster, followed by both the HA-LC and the LA-HC clusters, which did not differ, and, finally, the LA-LC cluster. The highest *quality* of motivation was found among the workers of the HA-LC cluster, followed by both the workers in the HA-HC and the LA-LC clusters. Workers of the LA-HC cluster displayed the lowest quality of motivation.

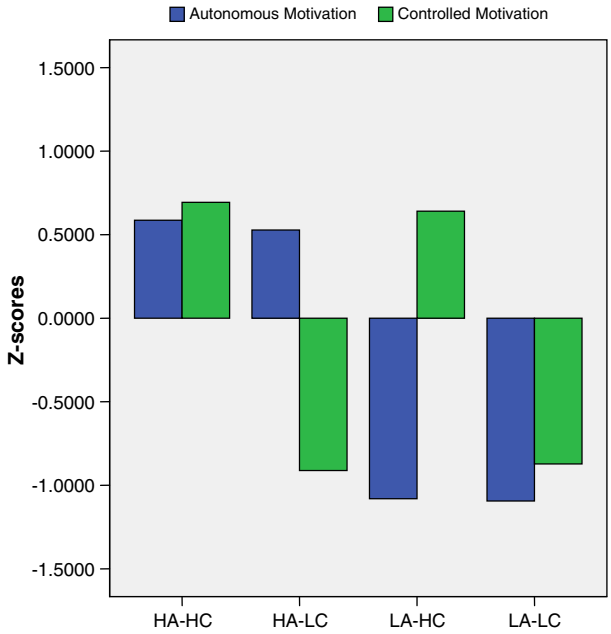

Fig. 1. Z-scores of autonomous and controlled motivation of the four cluster solution (Sample 1).

5.2. Characterization of groups

We then compared the four clusters with respect to participants' background variables in Sample 1, which was representative for the Belgian workforce. As outlined in Table 2, Chi^2-tests indicated that the four clusters differed in terms of gender, education, professional level and type of employment. First, the HA-HC group included somewhat more male participants and temporary workers, compared to the other groups. Second, the HA-LC group represented relatively more females and workers with a strong labour market position, that is, permanently employed workers in white-collar or managerial positions holding a bachelor's or a master's degree. Third, in contrast to the HA-LC cluster, the LA-HC cluster included relatively more precarious workers, that is, temporary, lower educated, more blue-collar and less white-collar workers. Finally, workers of the LA-LC group were relatively more male and less female, moderately educated, more likely to be employed via an agency and less likely to hold a managerial position. No significant differences were found for age and being part-time or full time employed.

5.3. Well-being as a function of cluster membership

In Table 1, it was shown that autonomous motivation related positively with job satisfaction and enthusiasm/engagement and negatively with strain/burnout across all samples. For controlled motivation the pattern of correlations was more ambivalent: it correlated negatively with job satisfaction in Sample 1 but positively in Sample 3. It correlates also negatively with enthusiasm/engagement in Sample 1 but positively in Samples 2 and 3. It correlates positively with strain/burnout but only so in Sample 1, while it was unrelated in Samples 2 and 3.

To further explore this issue and test H2, we examined mean-level differences between the four motivational groups in terms of well- and ill-being across samples. In Sample 1 (Wilks' $\lambda = .67$; $F(9, 4349.24) = 86.36$, $p < .001$, $\eta^2 = .13$), as well as Sample 2 (Wilks' $\lambda = .66$; $F(9, 669.43) = 13.92$, $p < .001$, $\eta^2 = .13$) and Sample 3 (Wilks' $\lambda = .62$; $F(9; 618.32) = 14.98$, $p < .001$, $\eta^2 = .15$) the omnibus MANOVA analysis revealed significant group differences. As displayed in Table 3, follow up one-way Anova's and Tukey-tests indicated significant differences for each of the three outcomes.

First, as respects job satisfaction, across samples, workers in the HA-HC and HA-LC clusters reported significantly more job satisfaction than the LA-HC and LA-LC workers. No further differentiations could be made, which runs against the expectations on both the quantitative (H2a) and qualitative (H2b) perspective on motivation. Second, in terms of work enthusiasm and engagement, across samples, again the HA-HC and HA-LC workers again did not significantly differ from each other and scored significantly higher than the LA-HC and LA-LC clusters. In addition, in Sample 1 workers characterized by LA-HC motivation displayed significantly less enthusiasm than workers of the LA-LC cluster, which aligns with the qualitative perspective (H2b). However, in Sample 2, results revealed the opposite pattern: LA-LC workers displayed less engagement than LA-HC workers, which can be predicted from the quantitative perspective (H2a). The results regarding strain showed significant differences between the four clusters in Sample 1. Workers of the HA-LC cluster reported the lowest levels of strain, followed by the HA-HC cluster. The latter group of workers reported less strain than workers of the LA-LC cluster. The highest level of strain was found in the LA-HC cluster. This rank order lents support to

Table 2
Differences in cluster membership: background characteristics (column percentages).

	Total sample	HA-HC cluster	HA-LC cluster	LA-HC cluster	LA-LC cluster	*df*	χ^2-values	η^2
N	1797	670	561	277	289			
Gender								
Male	52%	56%	46%	53%	56%	3	15.87***	.09
Female	48%	44%	54%	47%	44%			
Age								
−34 years	35%	33%	37%	40%	33%	6	5.14	.04
35–45 years	29%	30%	30%	25%	30%			
+ 45 years	36%	37%	33%	35%	37%			
Education								
Primary education	5%	6%	4%	7%	7%	9	30.13***	.12
Secondary education	55%	54%	49%	63%	58%			
Bachelors' degree	21%	20%	24%	17%	21%			
Masters' degree	19%	20%	23%	13%	14%			
Professional level								
Blue collar worker	35%	32%	29%	48%	38%	6	63.50***	.18
White collar worker	55%	54%	58%	47%	57%			
Managers	10%	12%	13%	5%	5%			
Type contract								
Full-time	78%	78%	78%	76%	73%	3	5.11	.04
Part-time	22%	22%	22%	24%	26%			
Types employment								
Permanent	88%	85%	89%	86%	85%	6	23.95**	.09
Temporary	9%	12%	8%	9%	9%			
Agency	3%	3%	3%	5%	6%			

the qualitative hypothesis (H2b). It could however not be replicated in Samples 2 and 3. In these samples, only workers of the HA-HC and HA-LC clusters could be differentiated from the workers of the LA-HC and LA-LC clusters.

6. General discussion

6.1. Number of clusters

Results indicate that high and low autonomous work motivation may naturally combine with both high and low controlled motivation, resulting in the four expected profiles (H1). This solution was highly stable and replicable, both within and across the samples, highlighting the universality of the results across the labour force at large, as well as among quite diverse sets of employees working in particular organizations in different countries. This contrasts with previous research suggesting that cluster solutions may be largely context dependent (Ratelle et al., 2007). As such, the results point at the usefulness of cluster analysis to identify workers' motivational profiles. In general, this four-cluster solution replicated some previous results in the educational context (Vansteenkiste et al., 2009). However, these authors found that most students were typified by a LA-LC profile. In contrast, the current results reveal that 54–68% of the workers are characterized by a HA-HC or HA-LC profile. This finding counters previous skepticism towards SDT in the context of work, suggesting that jobs contain various mind-numbing tasks prohibiting autonomous motivation (Sheldon et al., 2003).

The current results also seem to indicate that particularly workers with a strong labour market position hold a HA-LC profile, suggesting that especially these workers achieve autonomously motivating jobs. Future research may reveal why this is the case. Perhaps such employees occupy better designed jobs, satisfying the basic psychological needs (Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008). But also personality may play a role (Baard, Deci, & Ryan, 2004). Future research might uncover (the relative importance of) personal and environmental factors contributing to workers' motivational profiles.

6.2. Well-being differences among the clusters

The clusters could be rank ordered along the continua outlined by the quantitative and qualitative perspectives on work motivation, allowing their comparison, in terms of well-being (i.e., job satisfaction, work enthusiasm and work engagement) and ill-being (i.e., strain and burnout) representing distinct aspects of employees' optimal functioning influencing organizational outcomes. Results failed to provide full support for either the quantitative (H2a) or the qualitative (H2b) perspective. Most importantly, across samples and aspects of well-being, in general, a dichotomy was found differentiating the HA-HC and the HA-LC profile from the LA-HC and LA-LC profile.

In line with the quantitative approach (H2a), workers holding high amounts of motivation thus experienced more job satisfaction and enthusiasm and less strain compared to workers holding small amounts of motivation. In line with the qualitative approach (H2b) workers holding predominantly high autonomous motivation (i.e., HA-LC profile) reported higher levels of well-being than workers characterized by high controlled motivation (i.e., LA-HC profile). However, no differences were found between the HA-HC

Table 3
Differences in defining cluster dimensions and well-being as a function of cluster membership.

		Work motivation clusters					
	Sample	HA-HC	HA-LC	LA-HC	LA-LC	*F*-values	η^2
Hypothesis							
Quantitative hypothesis (2a)		A	B	B	C		
Qualitative hypothesis (2b)		B	A	C	B		
Percentage	Sample 1	37%	31%	19%	13%		
	Sample 2	31%	25%	23%	21%		
	Sample 3	26%	28%	27%	19%		
Validation measures							
Quantity index	Sample 1	1.28a	−.38b	−.44b	−1.97c	$F(3, 1789) = 1131.34^{***}$	.65
	Sample 2	1.83a	−.19b	−.14b	−2.19c	$F(3,283) = 335.20^{***}$	.78
	Sample 3	2.10a	−.05b	−.24b	−2.26c	$F(3,256) = 321.06^{***}$	.79
Quality index	Sample 1	−.11b	1.44a	−1.72c	−.22b	$F(3, 1789) = 1118.85^{***}$	.66
	Sample 2	−.11b	1.14a	−.94c	−.18b	$F(3,283) = 76.44^{***}$	.45
	Sample 3	−.07b	1.12a	−1.10c	.03b	$F(3,256) = 94.36^{***}$	.52
Outcomes							
Job satisfaction	Sample 1	4.88a	5.02a	3.72b	3.86b	$F(3, 1789) = 178.21^{***}$	.24
	Sample 2	4.36a	4.35a	3.92b	3.78b	$F(3,283) = 15.73^{***}$	.15
	Sample 3	4.09a	3.89a	3.31b	2.92b	$F(3,256) = 19.97^{***}$	.19
Work enthusiasm/engagement	Sample 1	4.89a	5.02a	3.58c	3.82b	$F(3, 1789) = 211.47^{***}$	.27
	Sample 2	4.95a	4.94a	4.05b	3.62c	$F(3,283) = 41.64^{***}$	.31
	Sample 3	4.53a	4.32a	3.14b	2.65c	$F(3,256) = 46.19^{***}$	.35
Strain/burnout	Sample 1	3.00c	2.61d	3.76a	3.29b	$F(3, 1789) = 97.14^{***}$	.08
	Sample 2	1.01b	.84b	1.69a	1.81a	$F(3,283) = 19.65^{***}$	.18
	Sample 3	1.24b	1.16b	2.20a	2.18a	$F(3,256) = 20.40^{***}$	.19

Note: Within rows means with different letters are significantly different from each other; * $p<.05$, ** $p<.01$, *** $p<.001$.

and the HA-LC motivation clusters, except for strain in Study 1. These results seem to hint at a relatively powerful impact of autonomous motivation, which is consistent with the qualitative view on motivation (H2b). In contrast to this perspective, however, the surplus in controlled motivation did not seem to decrease well-being. It did not result in enhanced well-being either, which would be expected from the quantitative approach (H2a). In all, a prudent conclusion could be that controlled motivation does not add to well-being in addition to high autonomous motivation.

Finally, workers with an LA-HC or the LA-LC profile experienced equally low levels job satisfaction across samples. Results regarding enthusiasm, work engagement, strain and burnout were less straightforward: LA-LC workers reported sometimes more (Sample 1), but also less or equal levels (Samples 2 and 3) of optimal functioning compared to LA-HC workers. Methodologically, these diverging results could, for example, be explained by the rather low reliability of controlled motivation in Study 1 or the different measures used to examine eudaimonic, energetic well-being (i.e., work enthusiasm/engagement) and ill-being (i.e., strain/burnout) across both studies. Theoretically, it may be plausible that holding controlled compared to having no motivation yields differential effects on different aspects of workers functioning. LA-HC motivated workers may be somewhat more agitated in their jobs than LA-LC motivation workers, resulting in stronger differences between these workers in terms of energetic well-being concepts. As such, holding only controlled as opposed to no motivation may, for example, not necessarily influence job satisfaction as an aspect of low energetic, hedonic well-being involving the search for pleasure and carefreeness. In contrast, it may influence aspects of well-being and ill-being tapping into workers' energy (Huta & Ryan, 2010). Perhaps strain, as measured in Sample 1, may be considered as a more energetic aspect of work-related ill-being (Warr, 1987), while burnout, as measured in Samples 2 and 3, also taps into a distant and passive attitude towards work (Schaufeli & Van Dierendonck, 2000). Finally, although LA-HC motivated workers might be less enthusiast than LA-LC workers, they might feel externally or internally pushed to display somewhat more energy and show some more involvement towards their job and therefore report more work engagement. In line with this reasoning, Parker, Jimmieson, and Amiot (2010) confirmed that controlled motivation may show a moderate positive relation with vigor, but other studies did not replicate this results (Van den Broeck et al., 2011).

In all, in contrast to the qualitative view, the detrimental impact of controlled motivation was hardly supported, but contrary to the quantitative view, its added value was not corroborated neither. As such, clarifying the role of controlled motivation in the context of work might be an interesting avenue for future research. Such research might for example uncover for which outcomes and in which contexts controlled motivation might yield either beneficial or detrimental outcomes, particularly in comparison to holding no motivation at all.

6.3. Limitations and suggestions for future research

To our knowledge, this study is the first to employ motivational profiles based on autonomous and controlled work motivation to examine the relative importance of the quantity and quality of motivation. From these results, several interesting routes for future research emerge. First, future studies may tap into the dynamics of being a member of the different motivational profiles.

Such studies could assess long term consequences, but also scrutinize potential intra-individual changes in motivational profiles. Based on early developments in SDT, it may be suggested that holding controlled motivation may decrease autonomous work motivation (Deci, Koestner, & Ryan, 2001). This would cause HA-HC motivated workers to adopt a LA-HC profile over time. Such evolutions seem to be in contrast with the high percentages of workers with a HA-HC profile in the current study, but more empirical work is needed to examine this issue.

Second, to avoid potential problems of common method variance, future studies may rely on objective data, for instance, to measure well-being and ill-being. The study of physical well-being would be of particular interest, for employees and employers alike. Previous studies indicated that the basic needs as defined in SDT relate to selfreported somatization (Baard et al., 2004), but these results remain to be validated in terms of autonomous and controlled motivation and objective data. Future research may expand the current results beyond well-being and health. They may, for example, compare the motivational clusters on performance and turnover, as was done in other life domains (Boiché et al., 2008).

Future work may also detail the antecedents of workers' motivational profiles. Besides the potential personal and environmental antecedents of the motivational profiles as suggested above, it may be particularly interesting to study the effects of salary and fringe benefits. These are inherently associated with paid employment, but said to elicit controlled motivation (Gagné & Forest, 2008). As such, these studies might provide further insight in the importance and/or potential detrimental consequences of controlled motivation in the context of work.

6.4. Implications for theory and practice

Despite these limitations and the necessity for future research, the current results yield several theoretical and practical implications. First, from a research perspective, these finding question the use of a quality score in which different types of motivation are subtracted. Such an approach is often used in theories focusing on the quality of work motivation such as regulatory focus theory and SDT (e.g., Judge et al., 2005; Pennington & Roese, 2003). As respects SDT, the current results indicate that subtracting controlled from autonomous work motivation might conceal important differences between HA-HC and LA-LC workers and their functioning. Rather than using a composite score, future research is therefore encouraged to study different types of motivation separately and in interaction with each other (e.g., Barron & Harackiewicz, 2001), for example by relying on cluster analysis.

From a practical point of view, the results point at the value of a person centered approach for diagnosing workers' motivation. Such a diagnosis may in turn assist employers to tailor interventions to the needs of their individual workers. To enhance workers' functioning, results advocate the promotion of autonomous motivation, for example through autonomy supporting supervision (e.g., offering choices, providing meaningful rationales and acknowledging workers' perspective) or by supporting employees basic psychological needs for autonomy, competence and relatedness (e.g., Van den Broeck et al., 2008). Investments in increase of decreasing controlled motivation could best be avoided, until the effects of controlled motivation are better understood.

7. Conclusions

This study contributes to the debate on the importance of the quality and the quantity of workers' motivation. In general, results support a nuanced qualitative view on motivation: Workers thrive more when they value their job and experience interest and enjoyment, that is, when they are autonomously motivated. Such optimal functioning becomes evident, regardless whether such workers feel also controlled by others or themselves to put effort in their job, which seems to nuance previous assumptions within SDT. Workers lacking autonomous motivation are less likely to experience well-being, but future studies are encouraged to further detail the impact of holding controlled motivation compared to no work motivation for various aspects of workers' functioning.

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