



# Individual variable pay for performance, controlling effects, and intrinsic motivation

Bård Kuvaas<sup>1</sup> · Robert Buch<sup>2,3</sup> · Anders Dysvik<sup>1</sup>

Published online: 19 March 2020  
© The Author(s) 2020

## Abstract

A core question in research on compensation and motivation is whether individual variable pay for performance (IVPFP) can undermine intrinsic motivation in the workplace. We investigated the mediating role of a controlling effect on the relationship between the amount of IVPFP received and intrinsic motivation. In a three-wave study of 304 employees from eight European countries, we found that a controlling effect mediated the negative association between IVPFP and intrinsic motivation. These findings support the proposition from self-determination theory that financial rewards can have a controlling effect that decreases intrinsic motivation. Theoretical and practical implications for compensation and motivation in the workplace are discussed.

**Keywords** Individual variable pay for performance · Controlling effects · Intrinsic motivation · Self-determination theory

## Introduction

What happens when the prospect of receiving a bonus changes or explains how employees behave at work? According to so-called instrumentality theories such as reinforcement theory (Skinner 1957) and expectancy theory (Vroom 1964), perceived instrumentality, a stronger “line of sight” between behaviors and rewards (Gerhart et al. 2009), or incentive effects, are necessary for incentives to produce intended outcomes, such as increased or redirected effort. Therefore, rewards that are highly contingent on individual performance or results, typically referred to as rewards with performance contingency, are considered to be more

effective than rewards with low performance contingency. Examples of rewards with low performance contingency are base pay (Kuvaas et al. 2016) and collective pay plans such as profit-sharing (Gerhart et al. 2009), that are far less contingent on individual performance or results. According to self-determination theory (SDT) (Deci et al. 2017), however, rewards with high performance contingency and a strong potential to change or explain behavior can be perceived as controlling because employees might feel forced to behave in ways that not correspond to their preferred behavior at work, which will frustrate employees’ basic need for autonomy. This, in turn, is predicted to undermine employees’ intrinsic motivation, that is, doing something out of interest, enjoyment, values, and meaning (Deci and Ryan 2000).

In the current study, we define a controlling effect as the extent to which employees perceive that individual variable pay for performance (IVPFP) affects their work-related behavior and test whether this controlling effect mediates the negative association between the amount of IVPFP received and intrinsic motivation (see Fig. 1). By investigating the association between the amount of IVPFP, a controlling effect, and intrinsic motivation, we aim to make four particular contributions to research on compensation and motivation.

First, the controlling effect is highly central component of SDT and its predecessor cognitive evaluation theory (CET), but we are not aware of field studies that have

---

✉ Bård Kuvaas  
bard.kuvaas@bi.no

Robert Buch  
robbuc@oslomet.no

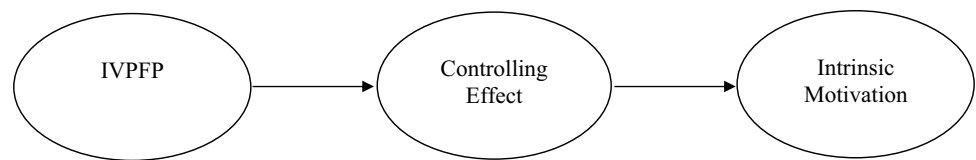
Anders Dysvik  
anders.dysvik@bi.no

<sup>1</sup> BI Norwegian Business School, Nydalsveien 37, 0484 Oslo, Norway

<sup>2</sup> Oslo Business School, OsloMet – Oslo Metropolitan University, Pilestredet 35, 0166 Oslo, Norway

<sup>3</sup> School of Communication, Leadership and Marketing, Kristiania University College, Kirkegata 24-26, 0153 Oslo, Norway

Fig. 1 Conceptual model



investigated it. Even experimental studies have not investigated a controlling effect directly, but simply assumed such an effect based on experimental findings, for instance that incentives reduce free choice behavior (Deci et al. 1999).

Second, field studies that have investigated how employees think about pay have typically not investigated actual pay data. Instead, such studies have investigated perceived instrumentality of pay as a perception or expectation that there is a link between performance and rewards. Both Eisenberg and Aselage (2009) and Fang and Gerhart (2012) found positive associations between perceived instrumentality and intrinsic task interest, which is conceptually similar to intrinsic motivation, but perceived instrumentality may actually reflect favorable self-attributions such that the higher the pay level, the more the pay will be attributed to performance. Conversely, the lower the pay level, the more the pay will be attributed to external factors, such as the time of hiring or though market conditions. In addition, a positive relation between perceived instrumentality and intrinsic task interest may actually be in agreement with SDT since the perception or expectation that there is a link between performance and rewards may inform the recipients about their level of competence and be interpreted as a token of appreciation for good performance, which is predicted to increase intrinsic motivation (Deci et al. 2017; Deci et al. 1980; Gagné and Forest 2008; Landry et al. 2017). Thus, by investigating actual pay data and a measure of the controlling effect that taps the intention of IVPFP, namely behavioral changes, we can deepen our knowledge of the complex interplay between rewards, behavioral effects, and intrinsic motivation.

Third, by measuring the controlling effect and intrinsic motivation at separate points of time, we can also investigate these relationships with a low risk of common-method bias.

Fourth and finally, by investigating the relationship between the amount of IVPFP received and a controlling effect, we can test whether the extent to which IVPFP based on subjective performance evaluations or ratings actually have the capacity to change behavior. According to Gerhart (2017), most compensation research has been conducted on rewards with high performance contingency with “a promise of pay for some objective, pre-established level of performance” (Newman et al. 2017, p. 353), usually operationalized by way of objective metrics such as physical outputs or

sales numbers (Gerhart 2017). Such pay plans, however, are implemented for less than 4% of US private sector employees, if we exclude sales jobs.

The pay plan investigated in this study, in contrast, is a type of pay plan that is expected to have low performance contingency, that is, IVPFP based on subjective performance evaluations or ratings, sometimes in combination with operational measures. Such pay plans are much more prevalent and used by 48% of publicly traded companies (Gerhart 2017). Gerhart (2017) also contends that negative consequences of PFP, such as an undermining effect on intrinsic motivation, are limited to “powerful” incentive pay plans where pay is a direct function of objective individual results without subjective performance evaluations. Accordingly, IVPFP that is less directly contingent on performance can be expected to have less or no negative effects on intrinsic motivation, but empirical research is needed before any conclusions can be drawn. Thus, by investigating the indirect link between the amount of IVPFP received and intrinsic motivation, we can add additional insights to the question of whether the most prevalent form of IVPFP will relate to intrinsic motivation in workplace settings (e.g., Grandey et al. 2013; Landry et al. 2017).

## Theory and hypothesis

In instrumentality theories, high levels of performance contingency are key to intended consequences because they reflect stronger incentive effects or reward expectancies, higher levels of instrumentality, or stronger “line of sight” between behaviors and rewards (Gerhart et al. 2009). Expectancy theory (Vroom 1964), for instance, predicts that individuals will engage in behaviors that are likely to lead to future valued outcomes, to the extent that they perceive that they are capable to produce such behaviors. Reinforcement theory posits that behaviors followed by a reinforcer (i.e., something that increases the desired behavioral response) are more likely to recur in the future (e.g., Stajkovic and Luthans 2003).

In SDT, it is also predicted that IVPFP can have incentive effects, but these effects are labelled controlling effects, which is predicted to undermine intrinsic motivation (Deci et al. 2017). The key in SDT is the degree to which employees’ locus of causality is external or internal (Gagné and Forest 2008). Thus, the extent to which work-related behaviors are justified by obtaining rewards will determine the degree

to which intrinsic motivation will be undermined or not. There is a dynamic inter-relationship between incentives, behaviors, and motivation (Bareket-Bojmel et al. 2014) and we propose that the more employees have received in IVPFP, the more their work behaviors will be affected by obtaining future rewards. Most people value money (Deci et al. 2017) and past behaviors that have led to higher amounts of IVPFP should therefore be reinforced (Stajkovic and Luthans 2003). This, in turn, implies that employees who have received higher amounts of IVPFP will behave in ways that increase the possibility of receiving IVPFP in the future. Therefore, their behaviors at work will be more affected or controlled by IVPFP, which ultimately can lead to lower intrinsic motivation. Employees who receive small or no amounts of IVPFP, on the other hand, have few reasons to behave in ways that increase the possibility of receiving future IVPFP and therefore be less affected or controlled by IVPFP.

Although the incentive plan we investigated could not be categorized as a “powerful” one according to Gerhart (2017), it includes employee achievement of operational goals in addition to subjective performance evaluations and ratings. In addition, subjective performance evaluations and ratings should also change behavior because good evaluations and ratings have positive consequences for the employee. Therefore, we hypothesize the following:

**Hypothesis 1** A controlling effect mediates the negative relationship between the amount of IVPFP received and intrinsic motivation.

## Methods

### Sample and Procedure

To test the hypothesis, we collected data from an international retail organization that applied IVPFP to *improve performance, motivation, and responsibility*. We gained access to the organization through students enrolled in an executive education program at the business school where two of the authors are employed.<sup>1</sup> One of the students worked in the organization and she established contact with the organizations’ HR department. The respondents were employed in eight European countries, and the data collection was limited to permanent employees with a pay-for-performance plan at the headquarters in the respective countries. In addition to obtaining data on IVPFP from the organization (Time 1), we distributed surveys to all the potential respondents on two separate occasions (Time 2 and Time 3) to lessen

the potential influence of common method variance (Podsakoff et al. 2012). To increase the response rate, we distributed the surveys electronically via the HR director’s e-mail address. When inviting the respondents to participate, we informed them that participation was voluntary and that their responses would be treated confidentially. The first survey (Time 2), which was distributed to 1840 employees, was used to collect data on control variables, as well as on a controlling effect of the IVPFP plan. We received a total of 580 responses at Time 2, corresponding to a response rate of approximately 32%. Of these, a total of 304 (52%) employees also responded to the second survey three weeks later (Time 3), which was used to collect data on employees’ intrinsic motivation.

Following Mohseni et al. (2018) as well as recommendations in the literature (Cohen 1988; Westland 2010) we used an online a priori sample size calculator for structural equation models (Soper 2019) to determine efficient and adequate sample size for using structural equation model (SEM) analysis to test our hypothesized model. Given the number of observed (13) variables and latent constructs (2), anticipated effect size (0.3), desired probability (0.05), and statistical power levels (0.8), the result implied that a total sample size of 288 would be required to test our hypothesized model and a similar minimum sample size for model structure would be required, which is less than present sample size of 304.

Of the respondents, 41% were female and 59% were male. With regard to their age, 12.8% were between 20 and 29 years, 30.3% were between 30 and 39 years, 31.9% were between 40 and 49 years, 20.4% were between 50 and 59 years, and 4.6% were between 60 and 69 years.

### Measures

#### IVPFP

The company provided us with actual data on the amount of IVPFP received. The amount of variable pay for all employees was the end-of-year variable payouts for the year 2016. The majority (82.6%) of the respondents received a “support office bonus,” while a minority (17.4%) received a “sales bonus.” The support office employees ( $N=251$ ) received variable payouts ranging from NOK 0 to NOK 58,586 (USD 7289), with an average variable payout of NOK 56,335 (USD 7009). The sales employees ( $N=53$ ) received higher variable payouts, ranging from NOK 0 to NOK 212,489 (USD 26,438), with an average variable payout of NOK 82,854 (USD 10,309).

#### Controlling effect

We developed the measure of a controlling effect of IVPFP specifically for the purposes of the current study. Sample

<sup>1</sup> We would like to thank these students for their invaluable input and help collecting data for this study.

items include “The IVPFP plan affects my daily priorities” and “The IVPFP plan makes me do things I would not have done if we did not have the bonus system.” Because the use of exploratory factor analysis (EFA) is typically recommended in the early stages of scale development (Hurley et al. 1997; Kelloway 1995), we used SPSS to perform an EFA (principal axis factoring with Promax rotation) to inspect the factor structure. Data for this procedure was obtained via a pilot study with 113 employees (22.2% response rate) from three Norwegian organizations operating within the fields of telecom, computer, and rescue and transportation. The results indicated a single a priori dimension of a controlling effect (Cronbach’s  $\alpha = 0.89$ ), with an average factor loading of 0.75 ( $SD = 0.05$ ) thus providing initial support for construct validity. The items and corresponding factor loadings are presented in the Appendix. In support of the validity of this measure, we cross-validated the findings from the pilot study, with a supplemental confirmatory factor analysis (CFA) using independent data from the current main study ( $N = 304$ ; see the results section for additional information).

### Intrinsic motivation

For the measurement of intrinsic motivation (Cronbach’s  $\alpha = 0.90$ ), we used the six-item scale developed by Kuvaas (2006) and developed further by Kuvaas and Dysvik (2009) that taps both intrinsic motivation and identified regulation. Sample items include “Sometimes I become so inspired by my job that I almost forget everything else around me” and “My job is meaningful.”

### Control variables

There is an ongoing debate about the use of control variables in organizational research. For instance, Spector and Brannick (2011, p. 287) noted that “The automatic or blind inclusion of control variables in multiple regression and other analyses, intended to purify observed relationships among variables of interest, is widespread and can be considered an example of practice based on a methodological urban legend.” Later, Bernerth and Aguinis (2016, p. 273) argued that researchers often include control variables solely because they believe reviewers or editors “expect [them to] include something as a control,” and explicitly warned against this. Furthermore, Becker et al. (2016) published recommendations for organizational researchers, including “If the hypotheses do not include CVs [control variables], do not include CVs in the analysis” (p. 162), and “Run results with and without the CVs and contrast the findings” (p. 164), and suggested that “...if the results do not differ, then only the analyses without controls need be reported, along with

a statement that the results were essentially identical when CVs were included” (p. 164).

Following these guidelines, as well as Carlson et al. (2012) recommendation that control variables should be added last in the analysis to reduce the chance of committing a Type II error, we present the results of our analyses without the control variables in the hypothesis test, and note that the results did not differ substantially when controlling for potential sociodemographic differences such as gender (female = “0”; male = “1”) and age (measured on an ordinal scale from 1 = “20 to 29 years” to 5 = “60 to 69 years” owing to company restrictions and issues of anonymity). The theoretical rationale for the inclusion of these controls were, for instance, that past research on motivation has suggested a tendency for males to have lower intrinsic motivation than females (Kuvaas et al. 2017; Pelletier et al. 1995). We also controlled for whether the employees received an annual sales bonus or support office bonus as the type of IVPFP could be relevant because it may have stronger incentive effects and the variable payouts were substantially higher for the sales bonuses.

### Analyses

Before testing the hypothesis, we estimated a CFA with the use of the main study sample ( $N = 304$ ) to ensure the adequacy of our measurement model, and to cross-validate the exploratory results obtained via the EFA performed on the controlling effect measure as described above. To perform the CFA, we used the WLSMV estimator (of the *Mplus* 8.2 software) because it provides a precise treatment of ordinal or ordered categorical data and is a robust estimator that does not assume normally distributed variables (Rhemtulla et al. 2012). Because the observations were nested within countries, we used cluster robust standard errors at the country level to account for the nested nature of the data. After having ensured the adequacy of our measurement model, we proceeded to test our hypothesis by estimating a SEM with the use of the same procedures as with the CFA.

According to several researchers, the SEM approach applied in the present study should be given priority over the causal steps approach of Baron and Kenny (1986) due to its estimation of everything at once rather than assuming independent equations (Zhao et al. 2010). Besides, the Baron and Kenny (1986) approach has been criticized for having low statistical power (Fritz and MacKinnon 2007).

### Results

The results of our CFA, specifying distinct latent factors for controlling effect, and intrinsic motivation ( $\chi^2 [53] = 143.75$ ,  $p < 0.01$ ; RMSEA = 0.075; CFI = 0.98;

**Table 1** Descriptive statistics, correlations including confidence intervals, and Cronbach’s Alphas (on the diagonal)

	Mean	SD		1	2	3	4	5	
1. Age <sup>a</sup>	2.74	1.07	Pearson’s r	–					
			Upper 95% CI	–					
			Lower 95% CI	–					
2. Gender <sup>b</sup>	.59	.49	Pearson’s r	.23	–				
			Upper 95% CI	.33	–				
			Lower 95% CI	.12	–				
3. Type of bonus <sup>c</sup>	.17	.38	Pearson’s r	.19	.24	–			
			Upper 95% CI	.29	.34	–			
			Lower 95% CI	.08	.13	–			
4. IVPFP <sup>d</sup>	60,574	65,018	Pearson’s r	.41	.18	.15	–		
			Upper 95% CI	.50	.29	.26	–		
			Lower 95% CI	.31	.07	.04	–		
5. Controlling effect	2.30	.81	Pearson’s r	.01	.11	.23	.13	–	
			Upper 95% CI	.13	.22	.33	.24	– (.80)	
			Lower 95% CI	–.10	–.00	.12	.02	– –	
6. Intrinsic motivation	3.74	.68	Pearson’s r	.11	–.07	.04	.15	–.16	–
			Upper 95% CI	.22	.04	.15	.26	–.05	– (.90)
			Lower 95% CI	–.00	–.18	–.07	.04	–.27	– –

N = 304

<sup>a</sup>1 = “20 to 29 years”; 2 = “30 to 39 years”; 3 = “40 to 49 years”; 4 = “50 to 59 years”; 5 = “60 to 69 years.”

<sup>b</sup>0 = female; 1 = male

<sup>c</sup>0 = “Support office bonus”; 1 = “Sales bonus”

<sup>d</sup>NOK 60,574 = USD 7,536

TLI = 0.98; SRMR = 0.053), provided an indication of a well-defined measurement model demonstrating convergent and discriminant validity. Specifically, both the RMSEA and SRMR were below 0.08 (e.g., Hooper et al. 2008; MacCallum et al. 1996), and the CFI and TLI indices exceeded 0.90, which is considered evidence of satisfactory fit by several authorities (e.g., Bollen 1989; Fan et al. 1999). Furthermore, all factor loadings were statistically significant, with a mean standardized factor loading of 0.77. The factor loadings ranged from 0.50 to 0.90 for the controlling effect items, and 0.68 to 0.90 for the intrinsic motivation items.

Accordingly, the CFA (performed using independent data from the main study) supported the results of our pilot study (devised to explore the factor structure of our new measure of a controlling effect) and provided additional evidence of convergent and discriminant validity (in relation to intrinsic motivation). Table 1 reports the means, standard deviations, inter-correlations, their confidence intervals and coefficient alphas among all the study variables.

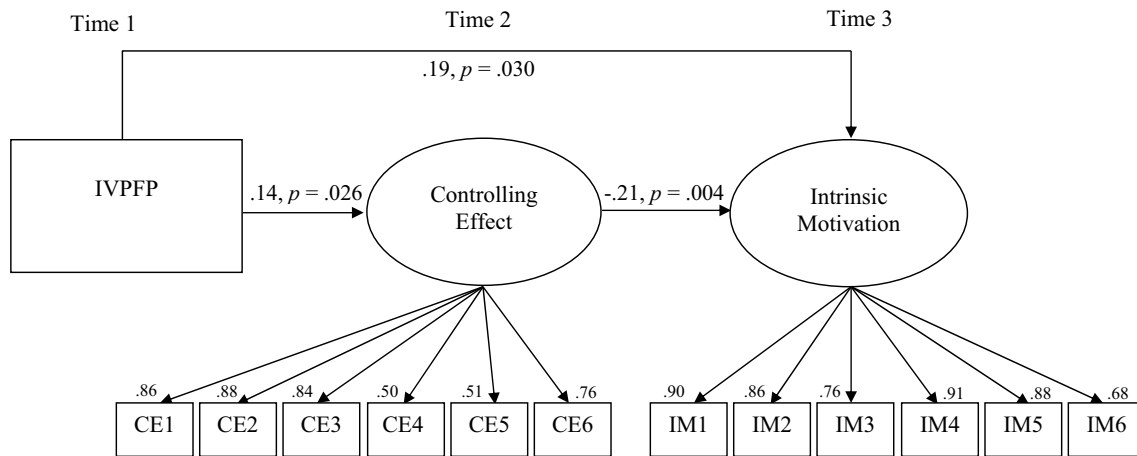
With satisfactory fit for our measurement model, we proceeded to test the hypothesis using a structural equation model ( $\chi^2 [63] = 175.89, p < 0.01$ ; RMSEA = 0.078; CFI = 0.98; TLI = 0.98; SRMR = 0.053), indicating good fit with the data. The results, which we also graphically illustrate in Fig. 2, showed a positive relationship between IVPFP

and a controlling effect ( $\gamma = 0.14, S.E. = 0.062, p = 0.026$ ) as well as a negative relationship between a controlling effect and intrinsic motivation ( $\beta = -0.21, S.E. = 0.071, p = 0.004$ ). In addition we observed a positive relationship between IVPFP and intrinsic motivation ( $\gamma = 0.19, S.E. = 0.088, p = 0.030$ ).

Importantly, in support of our hypothesis, stating that a controlling effect mediates the negative relationship between the amount of IVPFP received and intrinsic motivation, the results of this SEM also demonstrated a statistically significant indirect relationship between IVPFP and intrinsic motivation via controlling effect (standardized effect = -0.03, S.E. = 0.008,  $p = 0.001$ ). In line with recommendations in the literature (e.g., Becker et al. 2016; Bernerth and Aguinis 2016; Carlson et al. 2012), we also report that the hypothesis was still supported when including additional control variables in a subsequent SEM with similar fit indices ( $\chi^2 [93] = 187.66, p < 0.01$ ; RMSEA = 0.059; CFI = 0.98; TLI = 0.98; SRMR = 0.054).

## Discussion

A core question in research on compensation and motivation is whether “real world” IVPFP can undermine intrinsic motivation in the workplace. Although recent research



**Fig. 2** Structural equation model.  $N = 304$ . We report standardized path coefficients. Fit indices:  $\chi^2 [63] = 175.88$ ,  $p < 0.001$ ; RMSEA = 0.078; CFI = 0.98; TLI = 0.98; SRMR = .053. The indirect relationships

between IVPFP and intrinsic motivation via a controlling effect was statistically significant (standardized effect =  $-.03$ , S.E. = .008,  $p = .001$ )

indirectly supports an undermining effect beyond previous findings derived from laboratory studies (e.g., Cerasoli et al. 2014; Kuvaas et al. 2016), how and why this occurs has not been empirically explored in work settings by way of actual compensation data. In the current study, we drew on SDT and instrumentality theory to hypothesize that a controlling mediates the negative relationship between the amount of IVPFP and intrinsic motivation. By obtaining support for this hypothesis, we offer meaningful theoretical and practical contributions to the literature on compensation and motivation.

### Implications for theory and practice

Our primary contribution lies in observing that the magnitude of a controlling effect can explain the negative relationship between IVPFP and intrinsic motivation. Prior field studies that have investigated the association between perceived instrumentality and motivation and related constructs have not included actual pay data and measured perceived instrumentality as a perception or expectation that there is a link between performance and rewards. Such perceptions or expectations may reflect favorable self-attributions or may inform the recipients about their level of competence. When the latter is the case, IVPFP will, according to SDT and the significant positive association between IVPFP and intrinsic motivation in Fig. 2, increase rather than decrease intrinsic motivation (Deci et al. 2017) because the pay is interpreted as not being contingent on particular performance levels, similar to the way base pay is often interpreted (Igalens and Roussel 1999; Kuvaas 2006; Kuvaas et al. 2016).

When IVPFP changes behaviors, however, which is typically the intention of organizations implementing IVPFP, it may be perceived as controlling and therefore reduce

intrinsic motivation. The irony, therefore, is that to the extent that the pay plan we investigated worked as intended, that is, changed employee behaviors, it seems to have decreased intrinsic motivation. If our findings are generalizable to other countries and contexts, the weak association between IVPFP and controlling effect may, however, represent good news for organizations that have implemented similar pay plans.

The combination of a low mean for controlling effect, the weak positive associations between the amount of IVPFP and a controlling effect, and the negative relationship between a controlling effect and intrinsic motivation are interesting. Gerhart (2017) recently argued that negative consequences of PFP, such as an undermining effect on intrinsic motivation, are limited to “powerful” pay plans where IVPFP is based on objective, pre-established levels of performance. The pay plan we investigated was not “powerful,” as evidenced by both its design (e.g., based on subjective performance evaluations or ratings), the low mean for controlling effect, and the weak relationship between IVPFP and a controlling effect. Still, we obtained findings in support of an undermining effect on intrinsic motivation in line with SDT. Accordingly, even the most prevalent pay plans where IVPFP is based on subjective evaluations can have unintended effects on intrinsic motivation.

Although the primary concern of our study was the relationships between IVPFP, controlling effect, and intrinsic motivation, our findings may also have implications for work performance and employee well-being. The meta-analysis by Cerasoli et al. (2014) convincingly showed that intrinsic motivation is a moderate to strong predictor of work performance across tasks (qualitative and quantitative) and contexts (in the workplace, in education, and for physical activity). Intrinsic motivation has also been found to relate

strongly to human wellness across domains (see Ryan and Deci 2017 for a review).

### Limitations and future research

Unfortunately, we did not have access to base pay data and could therefore not control for base pay levels in our analysis. In contrast to prior research on perceived instrumentality and motivation, we did, however, have objective data on the amount of IVPFP received and a measure of a controlling effect that captured the extent to which the pay plan affected behaviors. Even though we had data from eight European countries, we do not know whether the findings are generalizable to other countries and contexts. We therefore need research from countries outside of Europe before conclusions can be drawn.

It is also important to note that our respondents worked at the national headquarters in the respective countries and performed relatively complex heuristic tasks that typically are evaluated in terms performance quality. Accordingly, our findings are probably not generalizable to employees doing simple and algorithmic tasks that can be measured quantitatively.

Furthermore, the respondent drop-out from Time 2 to Time 3 may have resulted in a potential non-response bias. It is possible, that for instance, differences in the amount of pay-out related to the types of jobs performed could have explained some of the drop-out from Time 2 to Time 3, since support office employees ( $N = 251$ ) received lower variable payouts (an average variable payout of NOK 56,335 (USD 7,009) than the sales employees ( $N = 53$ ), who received an average variable payout of NOK 82,854 (USD 10,309). Still, we have no reason to believe that the differences in the amount of pay-out relates to the drop-out from the first to second survey, and our hypothesis was still supported after including type of bonus (which also related to the kind of jobs the respondents performed) into the SEM as a control variable.

Additionally, we did not investigate satisfaction of the need for autonomy and could therefore not empirically establish that our findings can be explained by lower need satisfaction as predicted by SDT. Thus, future research should measure need satisfaction in addition to IVPFP and a controlling effect (Landry et al. 2017).

Finally, SDT has long acknowledged that rewards can positively affect intrinsic motivation through an informing effect on internal locus of control and satisfaction of the

needs for competency and autonomy (e.g., Gagné and Forest 2008). Specifically, rewards that acknowledge effort and performance may enhance feelings of competence, and rewards that recognize volitional behavior may increase autonomy and thereby intrinsic motivation (Landry et al. 2017). Thus, in addition to investigate a controlling effect, future research could develop a measure of an informing effect and investigate whether such an effect can explain a positive association between IVPFP and intrinsic motivation.

### Conclusion

Our research identifies a controlling effect measured as a perception that individual IVPFP affects employees' work-related behavior as a key to how IVPFP indirectly and negatively affects intrinsic motivation. Our study helps to resolve theoretical controversies about IVPFP by supporting SDT with respect to how financial rewards can negatively affect intrinsic motivation.

**Acknowledgements** Open Access funding provided by Norwegian Business School.

**Funding** This study was not funded by anyone.

### Compliance with ethical standards

**Conflict of interest** None of the authors has any conflict of interest.

**Ethical approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed consent** Informed consent was obtained from all individual participants included in the study.

**Research involving human and animal participants** This article does not contain any studies with animals performed by any of the authors.

**Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

## Appendix

See Table 2.

**Table 2** Pilot study exploratory factor analysis

Items	Incentive effects
The IVPFP makes me do things I would not have done if we did not have the IVPFP	.73
The IVPFP plan affects my daily priorities	.83
If we did not have the IVPFP plan we currently have, I would have performed my tasks at work in a different way	.74
There are other factors than the IVPFP plan that influence how I do my job on a daily basis [R]	.70
I rarely think about the IVPFP plan when I make priorities between different tasks at work [R]	.77
It is hard not to think about the IVPFP plan when I perform my tasks at work	.73
Eigenvalue	3.82
% of variance	63.73

$N=113$ . The exploratory factor analysis (principal axis factoring) was performed using Promax rotation. [R] signifies the item is reverse-scored

## References

- Bareket-Bojmel, L., Hochman, G., & Ariely, D. (2014). It's (not) all about the jacksons: Testing different types of short-term bonuses in the field. *Journal of Management*. <https://doi.org/10.1177/0149206314535441>.
- Baron, R., & Kenny, D. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182.
- Becker, T. E., Atinc, G., Breugh, J. A., Carlson, K. D., Edwards, J. R., & Spector, P. E. (2016). Statistical control in correlational studies: 10 essential recommendations for organizational researchers. *Journal of Organizational Behavior*, *37*(2), 157–167. <https://doi.org/10.1002/job.2053>.
- Bernerth, J. B., & Aguinis, H. (2016). A critical review and best-practice recommendations for control variable usage. *Personnel Psychology*, *69*(1), 229–283.
- Bollen, K. A. (1989). *Structural equations with latent variables*. New York: Wiley.
- Carlson, K., Zeitzmann, H. K., & Flynn, J. (2012). Add artifact control variables last in hierarchical regression analyses. *Academy of Management Proceedings*, *2012*(1), 16952. <https://doi.org/10.5465/AMBPP.2012.16952abstract>.
- Cerasoli, C. P., Nicklin, J. M., & Ford, M. T. (2014). Intrinsic motivation and extrinsic incentives jointly predict performance: A 40-year meta-analysis. *Psychological Bulletin*, *140*(4), 980–1008. <https://doi.org/10.1037/a0035661>.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.
- Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017). Self-determination theory in work organizations: The state of a science. *Annual Review of Organizational Psychology and Organizational Behavior*, *4*(1), 19–43. <https://doi.org/10.1146/annurev-orgpsych-032516-113108>.
- Deci, E. L., & Ryan, R. M. (1980). The empirical exploration of intrinsic motivational processes. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology* (Vol. 13, pp. 39–80). New York: Academic Press.
- Deci, E. L., & Ryan, R. M. (2000). The "what and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268.
- Deci, E. L., Ryan, R. M., & Koestner, R. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*(6), 627–668.
- Eisenberger, R., & Aselage, J. (2009). Incremental effects of reward on experienced performance pressure: Positive outcomes for intrinsic interest and creativity. *Journal of Organizational Behavior*, *30*, 95–117.
- Fan, X. B., Thompson, B., & Wang, L. (1999). Effects of sample size, estimation method, and model specification on structural equation modeling fit indices. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*, 56–83.
- Fang, M. Y., & Gerhart, B. (2012). Does pay for performance diminish intrinsic interest? *The International Journal of Human Resource Management*, *23*(6), 1176–1196. <https://doi.org/10.1080/09585192.2011.561227>.
- Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science*, *18*(3), 233–239.
- Gagné, M., & Forest, J. (2008). The study of compensation through the lens of self-determination theory: Reconciling 35 years of debate. *Canadian Psychology*, *49*(3), 225–232.
- Gerhart, B. (2017). Incentives and pay for performance in the workplace. In A. J. Elliot (Ed.), *Advances in Motivation Science* (Vol. 4, pp. 91–140). San Diego: Elsevier.
- Gerhart, B., Rynes, S. L., & Fulmer, I. S. (2009). Pay and performance: Individuals, groups, and executives. *The Academy of Management Annals*, *3*(1), 251–315.
- Grandey, A. A., Chi, N.-W., & Diamond, J. A. (2013). Show me the money! Do financial rewards for performance enhance or undermine the satisfaction from emotional labor? *Personnel Psychology*, *66*(3), 569–612. <https://doi.org/10.1111/peps.12037>.
- Hooper, D., Coughlan, J., & Mullen, M. R. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, *6*(1), 53–60.
- Hurley, A. E., Scandura, T. A., Schriesheim, C. A., Brannick, M. T., Seers, A., Vandenberg, R. J., et al. (1997). Exploratory and confirmatory factor analysis: Guidelines, issues, and alternatives. *Journal of Organizational Behavior*, *18*, 667–683. <https://doi.org/10.1002/job.1002>.



- [://doi.org/10.1002/\(SICI\)1099-1379\(199711\)18:6%3c667::AID-JOB874%3e3.0.CO;2-T](https://doi.org/10.1002/(SICI)1099-1379(199711)18:6%3c667::AID-JOB874%3e3.0.CO;2-T)
- Igalens, J., & Roussel, P. (1999). A study of the relationship between compensation package, work motivation and job satisfaction. *Journal of Organizational Behavior*, *20*(7), 1003–1025.
- Kelloway, E. K. (1995). Structural equation modeling in perspective. *Journal of Organizational Behavior*, *16*, 215–224. <https://doi.org/10.1002/job.4030160304>.
- Kuvaas, B. (2006). Work performance, affective commitment, and work motivation: The roles of pay administration and pay level. *Journal of Organizational Behavior*, *27*(3), 365–385.
- Kuvaas, B., Buch, R., Gagné, M., Dysvik, A., & Forest, J. (2016). Do you get what you pay for? Sales incentives and implications for motivation and changes in turnover intention and work effort. *Motivation and Emotion*, *40*(5), 667–680. <https://doi.org/10.1007/s11031-016-9574-6>.
- Kuvaas, B., Buch, R., Weibel, A., Dysvik, A., & Nerstad, C. G. L. (2017). Do intrinsic and extrinsic motivation relate differently to employee outcomes? *Journal of Economic Psychology*, *61*: 244–258. <https://doi.org/10.1016/j.joep.2017.05.004>
- Kuvaas, B., & Dysvik, A. (2009). Perceived investment in employee development, intrinsic motivation, and work performance. *Presented at the annual meeting of the Academy of Management, Chicago, Illinois*.
- Landry, A. T., Gagne, M., Forest, J., Guerrero, S., Seguin, M., & Papachristopoulos, K. (2017). The relation between financial incentives, motivation, and performance an integrative sdt-based investigation. *Journal of Personnel Psychology*, *16*(2), 61–76. <https://doi.org/10.1027/1866-5888/a000182>.
- MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, *1*(2), 130–149.
- Mohseni, S., Jayashree, S., Rezaei, S., Kasim, A., & Okumus, F. (2018). Attracting tourists to travel companies' websites: the structural relationship between website brand, personal value, shopping experience, perceived risk and purchase intention. *Current Issues in Tourism*, *21*(6), 616–645. <https://doi.org/10.1080/13683500.2016.1200539>.
- Newman, J., Gerhart, B., & Milkovich, G. T. (2017). *Compensation* (12th ed.). New York: McGraw-Hill/Irwin.
- Pelletier, L. G., Tuson, K. M., Fortier, M. S., Vallerand, R. J., Briere, N. M., & Blais, M. R. (1995). Toward a new measure of intrinsic motivation, extrinsic motivation, and amotivation in sports: The Sport Motivation Scale (SMS). *Journal of Sport and Exercise Psychology*, *17*(1), 35–53.
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *63*, 539–569. <https://doi.org/10.1146/annurev-psych-120710-100452>.
- Rhemtulla, M., Brosseau-Liard, P. É., & Savalei, V. (2012). When can categorical variables be treated as continuous? A comparison of robust continuous and categorical SEM estimation methods under suboptimal conditions. *Psychological methods*, *17*(3), 354–373.
- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York: Guilford.
- Skinner, B. F. (1957). *Verbal behavior*. New York: Appleton-Century-Crofts.
- Soper, D. S. (2019). A-priori sample size calculator for structural equation models [software]. Retrieved from <https://www.danielsoper.com/statcalc>
- Spector, P. E., & Brannick, M. T. (2011). Methodological urban legends: The misuse of statistical control variables. *Organizational Research Methods*, *14*(2), 287–305. <https://doi.org/10.1177/1094428110369842>.
- Stajkovic, A. D., & Luthans, F. (2003). Behavioral management and task performance in organizations: Conceptual backgrounds, meta-analysis, and test of alternative models. *Personnel Psychology*, *56*, 155–194.
- Vroom, V. H. (1964). *Work and motivation*. New York: Wiley.
- Westland, J. C. (2010). Lower bounds on sample size in structural equation modeling. *Electronic Commerce Research and Applications*, *9*(6), 476–487. <https://doi.org/10.1016/j.eelerap.2010.07.003>.
- Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research*, *37*(2), 197–206.

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.