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Show them the money? The role of pay, managerial need support, and justice in a self-determination theory model of intrinsic work motivation

ANJA H. OLAFSEN,^{1,2} HALLGEIR HALVARI,¹ JACQUES FOREST³ and EDWARD L. DECI^{1,4}

¹Buskerud and Vestfold University College, Hønefoss, Norway

²Norwegian School of Economics, Bergen, Norway

³ESG UQAM, Montreal, Canada

⁴University of Rochester, Rochester, NY, 14627, USA

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The link between money and motivation has been a debated topic for decades, especially in work organizations. However, field studies investigating the amount of pay in relation to employee motivation is lacking and there have been calls for empirical studies addressing compensation systems and motivation in the work domain. The purpose of this study was to examine outcomes associated with the amount of pay, and perceived distributive and procedural justice regarding pay in relation to those for perceived managerial need support. Participants were 166 bank employees who also reported on their basic psychological need satisfaction and intrinsic work motivation. SEM-analyses tested a self-determination theory (SDT) model, with satisfaction of the competence and autonomy needs as an intervening variable. The primary findings were that amount of pay and employees' perceived distributive justice regarding their pay were unrelated to employees' need satisfaction and intrinsic work motivation, but procedural justice regarding pay did affect these variables. However, managerial need support was the most important factor for promoting need satisfaction and intrinsic work motivation both directly, indirectly, and as a moderator in the model. Hence, the results of the present organizational field study support earlier laboratory experiments within the SDT framework showing that monetary rewards did not enhance intrinsic motivation. This seems to have profound implications for organizations concerned about motivating their employees.

Key words: Amount of pay, managerial need support, organizational justice, basic psychological need satisfaction, intrinsic work motivation, self-determination theory.

Anja H. Olafsen, Buskerud and Vestfold University College, Postboks 164, 3502 Hønefoss, Norway. E-mail: Anja.Olafsen@hbv.no

INTRODUCTION

Pay is intended to compensate employees for the time, effort, and skills they take into an organization and display on their jobs. Hence, pay is a core element in any human resource system. Gagné and Forest (2008) reviewed research on compensation systems and called for more research on the relation of compensation to different types of work motivation. The purpose of this paper was to examine how compensation is related to the motivational processes of self-determination theory (SDT; Deci & Ryan, 1985, 2000). This framework was chosen because it is a well-validated theory with direct relevance to monetary rewards and motivation.

Traditionally, economic agency theory (Jensen & Meckling, 1976) has supported the use of compensation to promote motivation and performance. The theory suggests that if the compensation system provides employees with more pay when their behaviors help achieve the organization's goals, the employees will be motivated to behave in those ways. It is less clear, however, how this view is related to the distinction between extrinsic and intrinsic motivation, which has been a central distinction in motivational research to explain the reason for doing work activities. Specifically, extrinsic motivation is related to external outcomes such as rewards, while intrinsic motivation stems from interest in the activity itself. Because intrinsic motivation has been related to positive outcomes such as goal attainment (Sheldon & Elliot, 1998), performance

(Amabile, Goldfarb & Brackfield, 1990; Baard, Deci & Ryan, 2004), and well-being (Gagné *et al.*, 2015; Ilardi, Leone, Kasser & Ryan, 1993), it seems important to study compensation in relation to this type of motivation in particular.

SDT is a motivational theory that stands in contrast to the economic agency perspective on human behavior. This theory differentiates types of motivation, maintains that the types are not necessarily additive, and suggests that greater pay does not necessarily yield better outcomes. Specifically, it assumes that people are naturally inclined toward intrinsic motivation and the integration of goals. Supporting environments, but not by money or other rewards, have been found to facilitate such integration. In fact, research has found that monetary and other tangible rewards are potentially undermining of people's intrinsic motivation and integration for they can easily be experienced as external controls that diminish the experience of autonomy (Deci, 1971; Deci, Koestner & Ryan, 1999). Specifically, research within the field of intrinsic motivation has indicated that rewards are undermining of intrinsic motivation when they are contingent (Deci, 1972), expected (Lepper, Greene & Nisbett, 1973), and salient (Ross, 1975), but are less likely to be undermining if they are non-contingent (Deci, 1972) or are administered in a context that is non-controlling (Ryan, Mims & Koestner, 1983).

Most of the research on the link between monetary rewards and intrinsic motivation has been conducted in laboratories with a focus on contingent rewards, although some recent studies on this topic have been conducted in the work domain (Cerasoli,

Nicklin & Ford, 2014; Fang & Gerhart, 2011). However, less is known about non-contingent compensation in terms of how the amount of monetary rewards affects intrinsic motivation. Because some form of fixed pay is the most widely used compensation for employees, it seems important to study such pay in relation to intrinsic motivation in the workplace.

Another concept that has received attention in the compensation literature is that of justice (e.g., Gagné & Forest, 2008; Heneman & Judge, 2000; Miceli & Lane, 1991). Building on equity theory (Adams, 1965), organizational justice refers to a subjective perception regarding employees' experiences of resource allocation (Cropanzano & Greenberg, 1997). The compensation literature has often linked pay justice to pay satisfaction (Tremblay, Sire & Balkin, 2000; Williams, McDaniel & Nguyen, 2006), but, little research has linked amount of pay and pay justice to motivational processes in the workplace. That motivation has been considered so little in relation to organizational justice seems unusual as it is strongly related to employee effort and behavior. Colquitt and Greenberg (2003, p. 99) asked "Why is it that job satisfaction and organizational commitment are popular dependent variables in justice research, but motivation is virtually ignored?" Similarly, Cropanzano and Rupp (2003, p. 91) asked "Wherefore organizational justice amidst theories of work motivation?" Recently, Zapata-Phelan, Colquitt, Scott and Livingston (2009) found that procedural justice predicted intrinsic motivation, but obtaining more knowledge on this relation within the context of compensation is necessary.

Based on the lack of research on non-contingent compensation and between compensation, justice, and motivational process at work, the current study sought to contribute to the literature by using a SDT perspective to study employee motivation as a function of pay, pay justice, and need support through need satisfaction. Specifically, the study was intended to examine how the amounts of pay and perceived managerial need support relate to distributive and procedural justice, respectively, and how each of these four variables relates to satisfaction of basic psychological needs, and in turn to intrinsic work motivation. The conceptual model is illustrated in Fig. 1. A presentation of SDT in relation to this model, hypotheses, and supporting literature for these follows in the subsequent sections.

COMPENSATION AND MOTIVATION FROM THE SDT PERSPECTIVE

Central to SDT is the distinction between autonomous motivation and controlled motivation. Autonomy involves acting with a

sense of volition and the experience of choice. In contrast, being controlled involves acting with the sense of pressure – with the experience of having to engage in the actions. The use of extrinsic rewards tends to induce controlled motivation, which can motivate behaviors, but the quality and persistence of the behaviors tends to be poorer than for autonomous motivation (Deci & Ryan, 2000, 2012).

Activities that are not interesting require extrinsic motivation, so their initial enactment depends upon the perception of a contingency between the behavior and a desired consequence such as implicit approval or tangible rewards. However, an important aspect of SDT is the proposition that extrinsic motivation can vary in degree in which it is autonomous versus controlled. Specifically, SDT distinguishes between four types of extrinsic motivation; external regulation, introjected regulation, identified regulation, and integrated regulation (Deci & Ryan, 2002). Similar to the perspective of operant theory, external regulation concerns being motivated to obtain rewards or avoid punishments. Introjected regulation refers to motivation stemming from the individual performing a task to avoid guilt and shame or to attain contingent feelings of worth. Identified regulation involves a conscious valuing of a behavioral goal and regulation as personally important. Finally, integrated regulation is based on a desire to express oneself in one's actions and activities (Meyer & Gagné, 2008). The two first motivational regulations (i.e., external and introjected) are considered controlled, while the two latter (i.e., identified and integrated) are considered autonomous. In addition, intrinsically motivated behavior is the prototype of autonomous motivation and is defined as active engagement with tasks that people find interesting and enjoyable (Deci & Ryan, 1985, 2000).

Another central concept of SDT is that people have fundamental, evolved psychological needs. The theory specifies three – competence, autonomy, and relatedness. Competence concerns the experience of being effective in interacting with the environment (e.g., White, 1959), and autonomy concerns the experience of acting with volition, willingness, and choice (e.g., deCharms, 1968), the point being that people have a need to behave in this way. Finally, relatedness concerns the feeling of being cared for and respected, and in turn caring for and respecting others (e.g., Harlow, 1958). Research indicates that all three basic need satisfactions are necessary for the type of autonomous motivation that results from internalization and integration of extrinsic motivation. However, although substantial research has linked satisfaction of the needs for autonomy and competence to intrinsic motivation (Deci & Ryan, 2000),

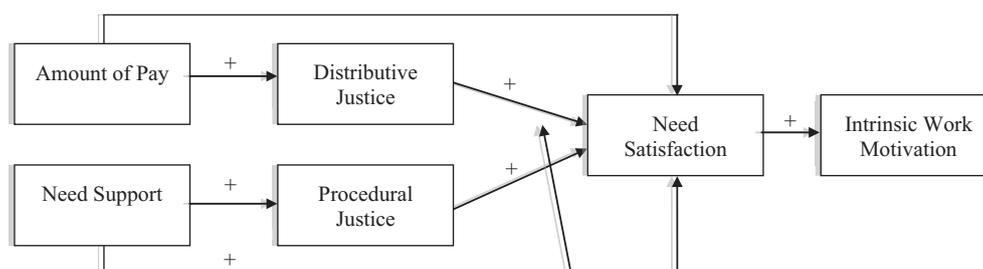


Fig. 1. Theoretical model.

there is little evidence that proximal relatedness is essential for intrinsic motivation.

With respect to organizations, SDT has focused on interpersonal environments in the workplace that are need-supportive, because need support has consistently been shown to facilitate intrinsic motivation, autonomous motivation more generally, effective performance, and psychological well-being (Deci & Ryan, 2002). Specifically, the concept of managerial need support refers to the supervisor understanding and acknowledging employees' perspectives, providing meaningful information, offering opportunities for choice, and encouraging self-initiation (Deci, Eghrari, Patrick & Leone, 1994). That is, the concept describes the immediate interpersonal climate in the work environment created by their supervisors rather than the job characteristics themselves (Baard *et al.*, 2004). Moreover, it is important to mention that recent studies of need support have highlighted the importance of need support not only from managers, but also from co-workers (e.g., Jungert, Koestner, Houliort & Schatke, 2013; Moreau & Mageau, 2012).

In this study we used the mechanisms of SDT to test a model of intrinsic motivation in the context of pay. Specifically, this study examines the amount of pay, which reflects the employees' compensation for their effort in the organization and has been a central component in research on compensation (e.g., Dyer & Theriault, 1976; Williams *et al.*, 2006). The other independent variable of interest is managerial need support from the SDT-framework just described. Finally, there are two other concepts that seem relevant to whether pay and need support would impact need satisfaction and intrinsic motivation, namely, the concepts of distributive and procedural justice. For the study of compensation, Gagné and Forest (2008) emphasized the role of these two justice dimensions that have been frequently examined in the compensation literature (see e.g., Williams *et al.*, 2006). Distributive justice is defined as employees' perceived fairness of the outcomes of decisions related to their contribution (Colquitt, 2001). In a compensation context, it concerns whether the amount of pay a person receives is experienced as being fair and just. Procedural justice encompasses the perceived fairness of both the processes used to arrive at outcome decisions and the employees' influence over the outcomes (Colquitt, 2001). In a compensation context, this concerns whether the way in which the level of pay was determined is perceived to be fair and just. Given the definitions of distributive and procedural justice, it seems reasonable to think about employees' level of pay as it relates to perceived distributive justice, and to think about need support as it relates to the experience of procedural justice.

We further suggest that pay, need support, and justice would be related to intrinsic work motivation to the extent that they influence employees' satisfaction of the basic psychological needs for autonomy and competence. The focus on these two needs was chosen because autonomy and competence have, as mentioned, been found to be the primary determinants of intrinsic motivation in particular (Deci & Ryan, 2000). In addition, these two needs are the most discussed in the compensation literature (e.g., Deci *et al.*, 1999). In the current research, these two needs were used together and referred to as need satisfaction to enable evaluating the role of pay and justice perceptions regarding pay on the combined need satisfaction of autonomy and competence.

HYPOTHESES

Among the most clearly established links in SDT research are those between need satisfaction and intrinsic motivation, as well as need satisfaction and autonomous motivation more generally (e.g., Deci *et al.*, 1999). Hence, in the present study, we expected need satisfaction to be positively related to intrinsic motivation in work settings where people are being paid. However, investigating the relation between pay and work motivation requires a distinction between different categories of rewards (i.e., pay). According to Deci *et al.* (1999), salary represented by amount of pay generally falls into the category of task non-contingent rewards. This refers to pay given to people for being on the job rather than being dependent on engaging in specific tasks or doing the tasks well. In general, amount of pay falls into this non-contingent category because employees think about themselves being paid for doing their jobs, whether they be a secretary, a primary-care physician, or a CEO, and not for engaging in specific tasks, such as typing a paper, taking a medical history, or having a meeting with the vice presidents. Thus, they do not think about having their pay directly tied to the specific work tasks they perform on a daily basis. And, the task non-contingent category in the meta-analysis by Deci *et al.* (1999) was found to have no effect on intrinsic motivation.

A more recent study by Kuvaas (2006) did however find that higher base pay was associated with better performance and affective commitment partially mediated through higher pay fostering intrinsic motivation. To explain the mediating effect of intrinsic motivation, Kuvaas (2006) argued that high base pay signaled high competence. Such an argument is in line with the discussion of monetary rewards in Deci *et al.* (1999), which proposes a possible positive effect of rewards on the need for competence if the rewards reflect on the individual's skills. However, such rewards may at the same time be detrimental to autonomy need satisfaction if they are contingent on doing behaviors well because the rewards can create a feeling of pressure to do the action well in order to receive the rewards. If the pay were experienced as task-non-contingent, the controlling aspect of the compensation might be relatively non-salient which could allow the competence affirmation implicit in high pay to have a positive effect without being offset by the undermining of autonomy. This may have been the underlying reasoning for the proposition in Gagné and Forest (2008) that proposed a positive relation between pay level and need satisfaction. The problem with that, however, is that if the rewards were task non-contingent and therefore did not affect autonomy, they would have been unlikely to convey competence because non-contingent rewards (i.e., pay level) are not directly linked to the person's performance. All things considered, in light of past research on intrinsic motivation, it seems most likely that the amount of pay would not be directly related to need satisfaction given that such pay appears to be task non-contingent.

Gagné and Forest (2008) also proposed a link between pay level and distributive justice, as well as between distributive justice and need satisfaction. Accordingly, the link between amount of pay and need satisfaction was suggested to be partly through distributive justice as higher levels of pay may lead people to feel greater distributive justice, which may in turn be related to need satisfaction. As for the relation between pay and distributive

justice, there has been little research on the antecedents of justice. Hauenstein, McGonigle and Flinder (2001) suggested that future research would usefully look at the mediation effect of organizational justice rather than just organizational outcomes of justice perceptions. It makes straightforward sense that people would perceive greater distributive justice if they got more pay – after all most people believe they deserve more. Hence, as an antecedent of justice, pay is expected to relate to the concept of distributive justice, as proposed by Gagné and Forest (2008).

Relatively little research has examined the relation between distributive justice and need satisfaction, as the justice research has tended either to investigate the relations of an overall perception of organizational justice (Mayer, Bardes & Piccolo, 2008) or of the procedural dimension in particular (Gagné, 2008; Van Prooijen, 2009). Only one study that we know of, by Gagné, Bérubé and Donia (2007), showed that perceptions of both procedural justice and distributive justice were positively related to autonomous motivation through satisfaction of the basic psychological needs. However, regarding distributive justice, as research has indicated that need-supportive contexts have strong positive implications for need satisfaction in compensation situations (e.g., Goodman, 2000; Ryan *et al.*, 1983), we would expect that the relation between distributive justice and need satisfaction might be moderated by need support. That is, within SDT, perceived need support is a primary determinant of need satisfaction, and because it has been found that pay has different implications for motivation depending on the perception of need support, it is possible that the relation of distributive justice to need satisfaction will differ when the work environment is perceived as supportive vs. non-supportive. Specifically, we propose that when need support is high, it would yield high need satisfaction with distributive justice contributing very little, but when need support is low, distributive justice, based on high pay, could compensate for the lack of need support yielding some significant need satisfaction.

Based on the existing literature the first four hypotheses are as follows:

Hypothesis 1: Amount of pay will be positively related to distributive justice about pay.

Hypothesis 2: Amount of pay will not be directly related to basic need satisfaction, but it will relate positively to need satisfaction through distributive justice.

Hypothesis 3: Distributive justice will relate positively to intrinsic motivation through need satisfaction.

Hypothesis 4: The link from distributive justice to need satisfaction will be moderated by perceived need support, with a stronger link under low need support than high need support

Another relation frequently found in the SDT literature is a direct positive relation between need support and need satisfaction (e.g., Baard *et al.*, 2004), which is again expected; and it is expected that need support will be related to intrinsic motivation through need satisfaction. Further, Gagné and Forest (2008) have argued that it is important to study managerial need support with respect to the perception of the compensation system being

procedurally fair. Because autonomy support provides people with opportunities to make inputs and have two way communications concerning decisions, including about compensation, we suggest that greater need support should lead people to perceive the processes of determining their pay to be fair, so we expect need support to be directly positively related to procedural justice concerning pay. The relation has not been thoroughly investigated, but one study by Van Prooijen (2009) found a positive relation between autonomy and procedural justice in that people who were given low autonomy support perceived less procedural justice. Together with the literature presented above concerning the relation between organizational justice and need satisfaction, this leads to the last four hypotheses:

Hypothesis 5: Perceived need support will positively relate to employees' perceived procedural justice concerning compensation.

Hypothesis 6: Perceived need support will relate positively to need satisfaction through procedural justice.

Hypothesis 7: Perceived need support will positively relate to intrinsic motivation through need satisfaction.

Hypothesis 8: Employees' perceived procedural justice will relate positively to intrinsic motivation through need satisfaction.

METHOD

Procedure and participants

Invitations to participate in a study were sent to 277 employees of a Norwegian banking corporation. They were told that the topic of the study was pay, justice, work environments, and intrinsic motivation, that they would complete a questionnaire sent to them electronically, and that the estimated time for participation was 8 to 10 minutes. Confidentiality and anonymity of responses were conveyed in the invitation and secured by anonymous responses so the identity of the respondent could not be determined. The research project was approved by the Norwegian Social Science Data Services (NSD).

The result of this distribution was a convenience sample of 166 (105 women and 61 men, with a 59.93% response rate). Of the participants, 104 had higher education and the sample consists of regular employees (75.3%) and managers (24.7%). Of the respondents, 13.3% had worked in the company for one year or less, 25.3% had worked in the company up to 10 years, 19.9% had worked in the company up to 20 years, and 41.6% had worked more than 20 years. The average wage was 423,784.37 NOK (SD = 149,377.15).

Measures

The measurement scales used for the present study were translated into Norwegian according to the guidelines of the International Test Commission (Hambleton, 1993). Reliability of the scales in the present study is reported in Table 1.

Amount of pay. The amount of pay received was measured by the following question: "Report your total salary (gross NOK) for your position the last 12 months. Remember to include any bonuses etc. you may have received. Benefits (non-monetary) should not be included. Round off to the nearest 10 thousand¹ (e.g., 340,000)." In the result section the

amount has been divided by 100,000 (NOK) to be able to operate with smaller numbers in the analyses and reports. It is also important to note that the employees in the corporation studied are not given bonuses based on individual performance; potential bonuses are based on the corporations overall performance and are equal for all employees. As such, bonuses were included in the measure of pay level as it does not represent a performance contingency but is likely to be perceived as part of their overall, non-contingent pay level for the year.

Managerial need support. This was assessed with the six-item version of the Work Climate Questionnaire (WCQ) used in Baard *et al.* (2004), which is an adaption of two comparable questionnaires related to the health domain (Williams & Deci, 1996; Williams, Grow, Freedman, Ryan & Deci, 1996, $\alpha = 0.96$ and 0.92 , respectively). A sample item is "I feel understood by my manager." The items were measured on a scale from 1 (completely disagree) to 7 (completely agree).

Distributive justice. Distributive justice was assessed in relation to the employees' salary by using items from Colquitt's (2001; $\alpha = 0.93$) scale. A sample item is "Is your salary appropriate for the work you have completed?" Four items were reported on a scale ranging from 1 (to a very little extent) to 7 (to a very large extent).

Procedural justice. Procedural justice was also assessed in relation to the employees' salary with seven items from Colquitt's (2001, $\alpha = 0.93$) justice scale. A sample item is "Have those procedures been based on accurate information?" The items were reported on a seven-point scale ranging from 1 (to a very little extent) to 7 (to a very large extent).

Need satisfaction. Satisfaction of the autonomy and competence needs were assessed using items from the Work-related Basic Needs Scale (W-BNS; Van den Broeck, Vansteenkiste, De Witte, Soenens & Lens, 2010, $\alpha = 0.81$ and 0.85 , respectively). Three items for autonomy need satisfaction (e.g., "The tasks I have to do at work are in line with what I really want to do") and three items for competence need satisfaction (e.g., "I am good at the things I do in my job") were measured on a scale ranging from 1 (totally disagree) to 5 (totally agree).

Intrinsic work motivation. The employees' intrinsic motivation was assessed by three items from the Multidimensional Work Motivation Scale (MWMS; Gagné *et al.*, 2015; $\alpha = 0.94$). Employees responded to the following stem: "I will exert effort at work ..." and a sample item is "Because the work I do is interesting." The items were reported on a scale ranging from 1 (not at all for this reason) to 7 (exactly for this reason).

ANALYSES AND RESULTS

Structural equation models

The measurement model and the proposed theoretical model were tested by means of structural equation modeling (SEM)

using LISREL 8.80 (Jöreskog & Sörbom, 2006). The analyses were conducted on covariance matrices with maximum likelihood estimation. SEM provides a simultaneous test of models with multiple dependent variables, thereby statistically controlling for the relations between these variables. The overall fits of the models were evaluated using the Chi-Square test (χ^2), its degrees of freedom (*df*) and *p*-value, as well as on the basis of the root mean square approximation (RMSEA), comparative fit index (CFI), and non-normed fit index (NNFI). The χ^2 statistic should be non-significant with a *p*-value above 0.05 and the ratio of χ^2 to degrees of freedom smaller than 3:1 (Gefen, Straub & Boudreau, 2000). A good fit for RMSEA is suggested to be close to 0.06 (Hu & Bentler, 1999) or have an upper limit of 0.07 (Steiger, 1990). CFI and NNFI should have a value of 0.95 or above (Hu & Bentler, 1999).

Confirmatory factor analysis (CFA) was conducted to examine the factor structure of the measurement scales. Due to low factor loadings, cross loadings, and high residual values, two indicators from procedural justice were removed. These items were carefully read to make sure that removing them also made sense from a theoretical point. For example "Have you been able to appeal the salary arrived at by those procedures" relates more to the outcome and not only the fairness of the decision process itself based on information, non-bias, etc. In addition, results revealed problems with the negatively worded items for autonomy satisfaction in terms of their correlation with the other need items. These items, thus, demonstrated poor validity and were removed from further analyses resulting in a single item for this dimension of need satisfaction.²

Results of the final CFA yielded satisfactory fit indices, χ^2 (*df* = 211, *N* = 166) = 323.59, $p < .001$, CFI = 0.99, NNFI = 0.98, and RMSEA (90% CI) = 0.057 (0.044 – 0.069). In the final measurement model all factor loadings were close to 0.7 and all loadings were significant, indicating a measurement model with adequate convergent validity (see Appendix Table A1). Composite reliability (CR), average variance extracted (AVE), and squared correlations among the study variables are reported in Table 1. Results show adequate reliability with CR above 0.7 (Nunnally, 1978) and discriminant validity by having AVE values larger than the squared correlations (Fornell & Larcker, 1981).

To be able to analyze need satisfaction as a total score in the structural model, the single indicator for autonomy need satisfaction and an aggregated score for the three indicators of

Table 1. Means, (*M*), standard deviations (*SD*), composite reliability (*CR*), average variance extracted (*AVE*), squared correlations, and correlations among the Study variables

Variables	M	SD	CR	1	2	3	4	5	6	7	8
1. Amount of pay	4.24	1.49	-	-	0.24**	0.43**	0.36**	0.23**	0.19*	0.24**	0.25**
2. Need support	5.37	1.43	0.96	0.06	0.80	0.43**	0.47**	0.59**	0.61**	0.67**	0.56**
3. Distributive justice	3.54	1.56	0.93	0.19	0.18	0.77	0.59**	0.41**	0.28**	0.40**	0.28**
4. Procedural justice	3.54	1.25	0.87	0.13	0.22	0.35	0.57	0.44**	0.44**	0.50**	0.37**
5. Autonomy satisfaction	3.54	0.99	-	0.05	0.34	0.17	0.19	-	0.58**	0.91**	0.56**
6. Competence satisfaction	4.09	0.85	0.95	0.04	0.37	0.08	0.20	0.33	0.88	0.87**	0.63**
7. Total need satisfaction	3.81	0.81	-	0.06	0.45	0.16	0.25	0.82	0.75	-	0.67**
8. Intrinsic motivation	4.98	1.33	0.94	0.06	0.31	0.08	0.14	0.31	0.40	0.45	0.84

Notes: AVE (bold) in the diagonal. Squared correlations below the diagonal. Correlations above the diagonal. ** $p < 0.01$, * $p < 0.05$.

competence need satisfaction were used as two indicators for a latent need satisfaction variable. Hence, the structural model was composed of 22 indicators (one for amount of pay, six for need support, five for procedural justice, four for distributive justice, two for need satisfaction, three for intrinsic motivation, and one for the interaction term). Paths were specified according to the hypotheses. In addition, we let distributive and procedural justice covary because empirical research has revealed strong correlations between these concepts that are important to acknowledge (Hauenstein *et al.*, 2001). In the model estimation we also added a direct path from amount of pay to need satisfaction in order to confirm our assumption about the lack of relation between these variables.

The model we tested had an acceptable fit to the data: χ^2 ($df = 199$, $N = 166$) = 374.81, $p < 0.001$, CFI = 0.98, NNFI = 0.97, and RMSEA (90% CI) = 0.073 (0.062 – 0.084). However, both the path from amount of pay to need satisfaction (which was not expected to be significant) and the path from distributive justice to need satisfaction (which was expected to be significant, although moderated) were not significant. The estimated model appears in Fig. 2 with path coefficients included. The conclusions did not change when controlling for gender and position (i.e., manager vs. regular employee).

Test of moderation

The relation between distributive justice and need satisfaction was expected to be, in part, contingent on perceived need support. To further test for the significant interaction terms for this moderation in the SEM, we used hierarchical multiple regression analysis. In the first block of the model, need satisfaction was regressed onto need support, distributive justice, and procedural justice because main effects should be accounted for when testing possible moderator effects. In the second block of the model, we entered the interaction product term constructed using mean-adjusted main effects (Aiken & West, 1991; Jaccard, Wan & Turrisi, 1990).

The regression of need satisfaction as a function of main effects (block 1) yielded a significant effect for the overall model ($F_{3,162} = 52.87$, $p < 0.001$; $R^2 = 0.49$). Significant positive beta coefficients were obtained for need support ($\beta = 0.56$, $p < 0.001$) and procedural justice ($\beta = 0.21$, $p < 0.01$), but not for distributive justice ($\beta = 0.03$, $p > 0.10$) consistent with the

SEM shown in Fig. 2. By entering the interaction term to the model (block 2) the results yielded an additional explanatory power of 2.9% and a total $R^2 = 0.52$ [$F_{\text{Change:1,161}} = 9.75$, $p < 0.01$]. The cross-product of need support by distributive justice indicated that need support moderated the link between distributive justice and need satisfaction ($\beta = -0.21$, $p < 0.01$), according to Cohen, Cohen, West and Aiken (2003).

As shown in Fig. 3, plots of the regression lines for this moderator effect illustrating low versus high scores on perceived distributive justice and low versus high scores on need support revealed a significant positive relation between perceived distributive justice and need satisfaction for employees low in need support ($\beta = 0.12$, $p < 0.05$), but no significant relation for employees high in need support ($\beta = -0.06$, $p > 0.10$). As such, employees experiencing high need support also showed high need satisfaction, but their level of distributive justice was not related to need satisfaction. In contrast, employees low in need support tended to be low in need satisfaction, but experiencing high distributive justice did relate positively to feelings of need satisfaction. In short, in addition to the strong positive main effect of need support on need satisfaction, experiencing high need support had a particularly strong enhancement of need satisfaction for employees with low perceived distributive justice.

Test of indirect relations

Indirect relations were investigated to further test the mediating role of distributive justice, procedural justice, and need satisfaction in the model. Consequently, confidence interval estimates of the indirect relations were calculated to confirm the significance of mediations. First, there was no indirect relation either between amount of pay and need satisfaction ($\beta = -0.02$; 95% CI [-0.06, 0.02]) or between distributive justice and intrinsic work motivation ($\beta = -0.07$; 95% CI [-0.19, 0.05]) because the direct relation between distributive justice and need satisfaction was non-significant. Second, results revealed two indirect relations from need support: (1) to need satisfaction ($\beta = 0.12$; 95% CI [0.04, 0.20]) through procedural justice; and (2) to intrinsic work motivation ($\beta = 0.46$; 95% CI [0.30, 0.62]) through need satisfaction. Third, we found an indirect relation from procedural justice to intrinsic work motivation ($\beta = 0.23$; 95% CI [0.09, 0.37]), through need satisfaction. Estimates for the indirect links are summarized in Table 2.

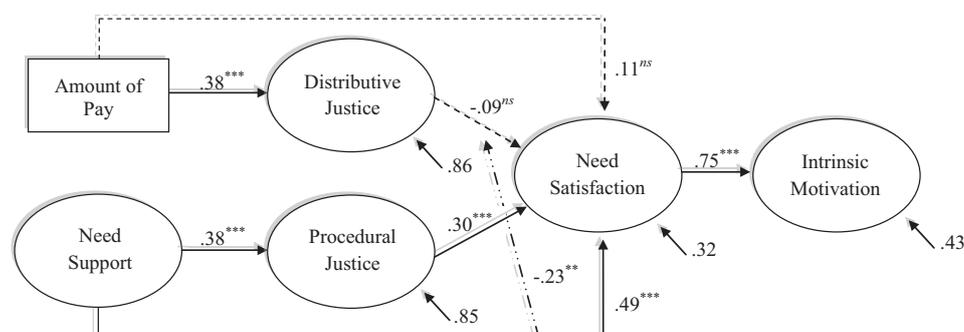


Fig. 2. Results from the Structural Equation Analysis. Note. All coefficients are standardized. For the sake of clarity, the measurement model is not presented and covariances among error terms are not shown. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed).

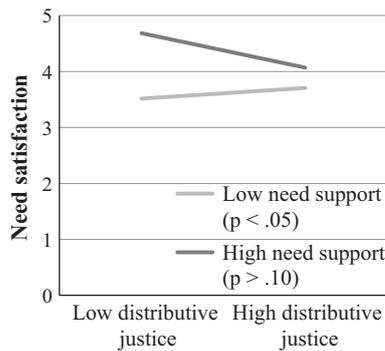


Fig. 3. The moderating effect of autonomy support on the relation between distributive justice and need satisfaction.

Support of hypotheses

Concerning the tests of our hypotheses, Fig. 2 and the subsequent analyses show the following. First, amount of pay had a significant positive relation to distributive justice, confirming Hypothesis 1. Further, amount of pay did not relate to need satisfaction, and pay was not indirectly related to need satisfaction because distributive justice was not related to need satisfaction. Therefore, the first part of Hypothesis 2 was supported by the lack of a relation between pay and need satisfaction; but the second part of Hypothesis 2 and Hypothesis 3 were rejected because of the lack of a relation between distributive justice and need satisfaction. The moderation analyses indicated that need support moderated the relation between distributive justice and need satisfaction, thus supporting Hypothesis 4. Need support was positively related to procedural justice and to need satisfaction through procedural justice, thus supporting Hypotheses 5 and 6. As well, need support related positively to intrinsic motivation through need satisfaction, confirming Hypothesis 7, and procedural justice also related to intrinsic motivation through need satisfaction, thus Hypothesis 8 was supported.

DISCUSSION

The main purpose of the present research was to examine the relation of the amount of people’s pay to need satisfaction and intrinsic work motivation when considered in relation to managerial need support and the variables of distributive and procedural justice about pay. We incorporated those variables in an SDT model of intrinsic work motivation in order to examine

this use of pay and people’s experience of justice. Of eight hypotheses, one was rejected while a second hypothesis was only partly supported. Results showed a positive link between amount of pay and distributive justice, but not between either pay and need satisfaction or distributive justice and need satisfaction, although the latter link was significantly moderated by need support. There were also significant positive links from need support to procedural justice, from procedural justice to need satisfaction, and from need support to need satisfaction. Finally, there was a very strong positive relation between need satisfaction and intrinsic work motivation. In sum, it seems that the factors most directly related to people’s actual pay outcome (i.e., amount of pay and perceived distributive justice) were not themselves related to need satisfaction or intrinsic motivation. Only the procedures related to determining the compensation (i.e., procedural justice) were of significant importance for predicting need satisfaction and intrinsic motivation. Moreover, need support proves to be the most important factor in the model, both as a predictor of need satisfaction and, in turn, intrinsic motivation, and as a moderator to enhance need satisfaction especially for employees with low perceived distributive justice. These findings have a number of implications.

First, the results from the present research indicated that the amount of pay is a predictor of distributive justice. Specifically, when people get higher pay they experience more distributive justice. Literature on this particular relation is scarce, but pay has been indicated as an antecedent of justice (Gagné & Forest, 2008; Hauenstein *et al.*, 2001; Tyler, 1994). As distributive justice concerns how people feel about the compensation they are receiving, it is logical to think that when employees receive more money they will experience greater distributive justice.

Second, amount of pay was unrelated to need satisfaction in the structural model. This finding is somewhat inconsistent with the study by Kuvaas (2006) who found a positive relation between pay level and intrinsic work motivation. On the other hand, the finding is in line with the results of the meta-analysis of laboratory experiments by Deci *et al.* (1999), which showed that task non-contingent rewards did not have a relation to intrinsic motivation, and thus presumably need satisfaction. Because pay level is not directly related to task performance it is unlikely to reflect directly upon the employees’ skills and performance and will, thus, not create a feeling of competence as Kuvaas (2006) argued. Furthermore, it is doubtful that amount of pay has any effect on autonomy satisfaction. These two factors combined might be the reason for a lack of relation between

Table 2. Tests of the indirect links emerging in Fig. 2

Independent variable (IV)	Mediator (M)	Dependent variable (DV)	Point estimate	SE	t-value	Bootstrapping BC 95% CI	
						Lower	Upper
Amount of pay	Distributive justice	Need satisfaction	-0.02	0.02	-1.16	-0.0592	0.0192
Distributive justice	Need satisfaction	Intrinsic motivation	-0.07	0.06	-1.19	-0.1876	0.0476
Need support	Procedural justice	Need satisfaction	0.12	0.04	2.92**	0.0416	0.1984
Need support	Need satisfaction	Intrinsic motivation	0.46	0.08	5.99***	0.3032	0.6168
Procedural justice	Need satisfaction	Intrinsic motivation	0.23	0.07	3.27***	0.0928	0.3672

Note: *** p < .001, ** p < .01.

such monetary rewards and intrinsic work motivation. However, the present study measured amount of pay as gross pay, which may include group bonuses. As such, the conditions and finding are not completely comparable to the Kuvaas (2006) study, although the reported pay in the present study consisted of fixed pay and non-contingent bonuses, making it somewhat similar to the base pay in the Kuvaas (2006) study.

Third, the proposed relation between distributive justice and need satisfaction proved non-significant in the structural model. The finding is somewhat in contradiction to previous research, which has found a positive relation between the combined organizational justice dimensions and need satisfaction (Gagné, 2008; Gagné *et al.*, 2007; Mayer *et al.*, 2008). However, research on this relation is not always clear when it comes to which justice dimension is of importance. For example, Mayer *et al.* (2008) investigated the relation of overall organizational justice to satisfaction of the three psychological needs. Hence, these findings did not identify the relation of the specific justice dimensions to need satisfaction, so the relations in previous research may be due to combining the two types of justice or to the inclusion of the psychological need for relatedness, and either of these may be the reason why the present study did not find a specific relation between distributive justice and satisfaction of just the combined autonomy and competence needs.

Based on this discussion, there is a possibility that the perceived fairness of the compensation outcomes is not relevant to promote autonomy and competence need satisfaction and, in turn, intrinsic motivation. This seems plausible as amount of pay did not play a role in the motivational process either. However, as hypothesized, the relation between distributive justice and need satisfaction was moderated by need support. Specifically, employees who reported highly supportive work environments reported high need satisfaction more or less regardless of their perception of distributive justice, but employees perceiving lower degrees of need support were more dependent on high distributive justice to obtain need satisfaction. These results indicate that pay may be more important when the work environment is not supportive, in which case people would be experiencing high pay as compensation for an unpleasant work climate. To our knowledge, need support has rarely, if ever, been used as a moderator to explain organizational relations. Nevertheless, the finding indicates that this variable may be an extremely important one to take into account not only for its strong direct effects, but also as a moderating variable, when studying the SDT-model in relation to different organizational questions. Indeed, it may be important regardless of the model being used.

Fourth, need support was positively related to procedural justice in line with the research by Van Prooijen (2009). This finding indicates that managerial styles relate to procedural justice perceptions of how the compensation was determined. Furthermore, the hypothesized relation between need support and need satisfaction proved significant. These findings are in line with previous research on the SDT model in the work context (e.g., Baard *et al.*, 2004). Moreover, need support was indirectly related to intrinsic work motivation through need satisfaction. The present study, thus, highlights need support as a very important factor for intrinsic work motivation through need satisfaction, and shows that this is an important

aspect of the work environment that is prone to bring positive consequences.

Fifth, the hypothesized positive relation between procedural justice and need satisfaction proved significant, meaning that if the procedure for determining the compensation was perceived as fair, the employees felt more autonomous and more competent, and, in turn, more intrinsically motivated for their work. Thus, out of the two justice dimensions, procedural justice seems to be most important for positive outcomes associated with determining employees' compensation, while distributive justice is less important unless the work climate is perceived as unsupportive. Moreover, these findings seem in line with the SDT framework as distributive justice appears to be a more extrinsic evaluation of one's pay, while procedural justice is more related to the interpersonal climate than to the objective pay outcome.

In sum, as suggested by some previous SDT research (e.g., Deci *et al.*, 1999) and as confirmed in the current research, non-contingent external rewards do not in general positively predict intrinsic motivation. Gagné and Forest (2008) suggested a positive relation between pay level and need satisfaction and Kuvaas (2006) indicated that such compensation might have a positive influence on the feeling of competence, but we did not find support for either in the present study. Although the primary analyses in the present study only tested the combination of autonomy and competence need satisfactions, one can see from the correlations that competence need satisfaction had lower correlations with amount of pay and distributive justice than did autonomy need satisfaction. Moreover, a supplemental SEM analysis containing only competence need satisfaction showed no relation between amount of pay and competence need satisfaction. As such, pay did not play nearly as central a role in promoting need satisfaction and intrinsic work motivation as did need support. Such results showing that pay level and feelings of justice about pay level are not related to intrinsic motivation are interesting as many firms seem to focus persistently on compensation and pay incentives to motivate employees' effective performance. Importantly, because research has shown that it is intrinsic (or autonomous) motivation that promotes better performance, especially when heuristic rather than algorithmic performance is necessary (e.g., Baard *et al.*, 2004; Cerasoli *et al.*, 2014), it is important to pay attention to what type of motivation is being prompted in a situation. Because monetary incentives do not promote intrinsic motivation, they are unlikely to prove useful for productivity and performance in contemporary organizations. Still, it is important to underscore that the present study focused on intrinsic work motivation, not performance.

LIMITATIONS AND FUTURE RESEARCH

Certain limitations should be taken into consideration when interpreting the results of the present research. First, the data are correlational in nature and conclusions about causality are unwarranted. Although more research designed to focus on directionality and causality is needed, SDT is a well-validated process theory of human motivation and based on the existing literature the directionality of the hypotheses seems like the most justified option.

Second, the study relies on self-reports. Although this might be a weakness, other methods are not necessarily superior

because most key constructs are experiential and construct validity of the self-report scales has been demonstrated (Conway & Lance, 2010) and is presented in Table 1 and Appendix Table A1. Furthermore, to secure accuracy of the self-reports, the respondents were guaranteed anonymity, and the predictor and criterion variables were measured with scales that contained different endpoints (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). Also, the consistency of our findings with theory rooted hypotheses indicates that common method bias is not a major concern in the present study.

Third, only one item was used for autonomy need satisfaction as the two other items, which were both worded negatively, had very low correlations with the positively phrased autonomy items and the competence items. It would have been preferable to have several items for measuring a latent variable (e.g., Howell, Breivik & Wilcox, 2007; Pedhazur & Schmelkin, 1991). However, Hayduk and Littvay (2012) argued that the use of a single indicator is enough for each latent variable because adding redundant indicators provides less research benefit than single indicators of additional latent variables. Because the single-item autonomy satisfaction as a latent variable provided support for our hypotheses and is in line with previous research on this construct, we find this solution adequate.

Fourth, the measure of pay level included bonuses. This would be a limitation if the bonuses were contingent, but executives in this banking corporation indicated that individual performance-based compensation was not used, and that the bonuses were based on the overall performance of the company. Moreover, Norway is known for not using compensation that is performance-contingent (Hvitved-Jacobsen, 2002), especially in non-sales jobs. Hence, the salary reported should, to a large extent, be pure pay level.

Lastly, due to the sampling procedure used, we must be very cautious in generalizing the results. Future studies will need to validate our model in other working populations.

From the discussion and possible limitations of the present study, future research should focus on the following issues related to investigation of the relations of compensation systems to work motivation. First, amount of pay is the only specific characteristic of the compensation system itself in the present study, while Gagné and Forest (2008) proposed several aspects of the compensation system (i.e., variable vs. fixed pay ratio) that should be studied in relation to need satisfaction and autonomous motivation. Second, future studies may include the need for relatedness to examine the relation of compensation to the composite of the three needs as well as each separately. Third, the relation of distributive justice to need satisfaction should be further evaluated as this relation has been ambiguous in past research. As mentioned, it may also be important to consider this variable along with procedural justice in relation to each basic psychological need as the relations may vary. Fourth, extrinsic motivation could be included in the model in order to examine the relations of the relevant variables to extrinsic as well as intrinsic motivation, because compensation traditionally is linked to more extrinsic forms of work motivation. Fifth, as recent studies have suggested that need support may also come from co-workers, future studies might include need support from colleagues to establish the implications of this in a compensation

context as, for example, justice is often seen in relation to one's peers and may have further implications for moderation effects. Lastly, because of the limitations of the cross-sectional method, future research should attempt to replicate the findings in the present study using longitudinal designs.

CONCLUSION

In the present study, we demonstrate how amount of pay, managerial need support, and justice perceptions regarding pay related to employee' intrinsic work motivation through basic psychological need satisfaction. Based on the results, the interpersonal climate had a substantially greater impact than any of the compensation variables examined in predicting intrinsic motivation at work. Moreover, of the compensation-related variables, only procedural justice was related to intrinsic work motivation by showing that how people's compensation is determined and communicated has implications for employees' need satisfaction. That is, amount of pay and distributive justice were found not to be related to need satisfaction and intrinsic motivation at work.

These findings not only contribute to identifying a theoretical mechanism for explaining the link from compensation level and justice perceptions to work motivation, but may have potentially far-reaching implications for organizations' use of compensation to promote motivation and performance among employees. The bottom line appears to be that organizations should strive to create a need-satisfying work climate to motivate employees to perform better rather than focusing all of their efforts on compensation systems. This can be done through such means as providing positive feedback, acknowledging the employees skills and efforts, offering opportunities to learn new things, asking open-ended questions, listening actively to the employees, inviting participation in solving important problems, acknowledging the employees' perspective, and offering choices within the structure of the organization. Equitable levels of pay have long been known to be necessary for employees' motivation and performance (Adams, 1965), but it appears that showing the money as an avenue to motivating employees is much less effective than satisfying their psychological needs through creating a need-supportive work environment.

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NOTES

¹ Note that the rounding is done in NOK. Therefore, pay of 396,000 NOK rounded to 400,000 would be a rounding error in one's yearly pay equivalent to only about US\$640.

² In the final CFA, autonomy satisfaction is included as a single-item latent variable where the error variance is fixed to 0.15. The same is the case for amount of pay, which also is comprised of one indicator.

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APPENDIX

Table A1. Item means, standard deviations, factor loadings, and *t*-values for the final measurement model

	Mean	Standard deviation	Loading	<i>t</i> -value
Amount of pay				
Total amount of pay last 12 months divided by 100,000	4.24	1.49	0.97	-
Need support				
I feel that my manager provides me choices and options	5.36	1.55	0.89	14.53
I feel understood by my manager	5.41	1.56	0.92	15.33
My manager conveys confidence in my ability to do well at my job	5.72	1.49	0.90	14.74
My manager encourages me to ask questions	5.19	1.56	0.87	13.96
My manager listens to how I would like to do things	5.39	1.59	0.93	15.70
My manager tries to understand how I see things before suggesting a new way to do things	5.16	1.65	0.89	14.47
Distributive justice				
Does your salary reflect the effort you have put into your work?	3.40	1.65	0.90	14.70
Is your salary appropriate for the work you have completed?	3.35	1.61	0.96	16.72
Does your salary reflect what you have contributed to the organization?	3.29	1.68	0.90	14.73
Is your salary justified given you performance?	4.12	1.97	0.73	10.70
Procedural justice				
Have you been able to express your views and feelings during those procedures?	3.74	1.79	0.66	9.18
Have you had influence over the (outcome) arrived at by those procedures?	2.77	1.66	0.66	9.10
Have does procedures been applied consistently?	-	-	-	-
Have those procedures been free of bias?	3.56	1.50	0.78	11.52
Have those procedures been based on accurate information?	3.77	1.33	0.82	12.40
Have you been able to appeal the (outcome) arrived by at those procedures?	-	-	-	-
Have those procedures upheld ethical and moral standards?	3.86	1.48	0.82	12.27
Autonomy satisfaction				
At work, I feel like I have to follow other peoples commands (R)	-	-	-	-
If I could choose, I would do things at work differently (R)	-	-	-	-
The tasks I have to do at work are in line with what I really want to do	3.54	0.99	0.92	-
Competence satisfaction				
I really master my tasks at my job	4.11	0.86	0.93	15.85
I feel competent in my job	4.08	0.90	0.94	16.11
I am good at the things I do in my job	4.08	0.89	0.93	15.84
Intrinsic motivation				
Because I have fun doing my job	4.90	1.43	0.83	13.04
Because what I do in my work is exciting	4.92	1.42	0.96	16.62
Because the work I do is interesting	5.12	1.38	0.96	16.64

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