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The Undermining Effect Revisited: The Salience of Everyday Verbal Rewards and Self-Determined Motivation

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ABSTRACT

Self-determination theory suggests that some rewards can undermine autonomous motivation and related positive outcomes. Key to this undermining is the extent to which rewards are perceived as salient in a given situation; when this is the case individuals tend to attribute their behavior to the incentive and the intrinsic value of the task is undermined. The role of salience has yet to be explicitly tested with respect to work motivation; we know little about whether undermining occurs in relation to verbal rewards, which characterize everyday work. We examine this in a field-based quantitative diary study of 58 employees reporting 287 critical incidents of motivated behavior. When considering simple direct effects, the undermining effect was not supported; highly salient verbal rewards associated positively with introjected and external motivation, but at no cost to autonomous motivation. However, moderator analysis found support for the undermining effect for complex tasks; highly salient verbal rewards associated positively with external motivation while associating negatively with intrinsic and identified motivation. The findings suggest that verbal reward salience is an important characteristic of verbal reward perceptions and that salient verbal rewards are not advisable for more complex tasks but can have a valuable motivational impact for simple tasks.

Keywords:

Self-determination theory; task complexity; undermining effect; verbal rewards; diary study.

Introduction

The relationship between rewards and motivation has long been a point of heated debate (Fall & Roussel, 2014). In particular, there have been mixed findings in relation to the impact of reward on more autonomous types of motivation (particularly intrinsic motivation) (Lepper & Greene, 1979). Self-determination theory (SDT) proposes that some rewards can undermine autonomous motivation – referred to as the *undermining effect* – and are therefore associated with less positive outcomes (Deci & Ryan, 1985). This is because extrinsic rewards can be experienced as controlling, particularly when they are contingent upon achieving a certain level of performance (Ryan, Mims & Koestner, 1983), and therefore thwart the satisfaction of individuals' natural psychological need for autonomy (Deci, 1971). However, research on the undermining effect has largely focused on tangible, financial rewards (Deci, Koestner & Ryan, 1999a). While these are clearly an essential component of workplace incentive structures, short term performance incentives in everyday work are also likely to be characterized by verbal rewards. Verbal rewards are social recognition or praise, which can be in oral or written form (Bareket-Bojmel, Hochman, & Ariely, 2014).

Meta-analytic evidence suggests that while verbal rewards have been found, on the whole, to have a more positive impact on autonomous motivation than tangible rewards, the impact of verbal rewards on motivation is dependent on the nature of the reward (Deci, Koestner & Ryan, 2001). We make the distinction between feedback which provides information about one's progress towards goals (and tends to relate positively to autonomous motivation), and verbal rewards, which can have a significant controlling effect when they are administered in a controlling way (Ryan et al, 1983). Verbal rewards can, therefore, undermine autonomous motivation (Deci et al., 2001). One of the particular characteristics about rewards which theoretically defines this motivational impact is whether the reward is salient whilst the task is being performed (Ross, 1975). Key characteristics of salience include the extent to which the

reward is expected (Lepper & Greene, 1979) or conspicuous (Eisenberger & Selbst, 1994) whilst the task is being performed. More salient rewards emphasize the contingency of the reward and when greater contingency exists, the undermining effect is expected to occur (Deci et al., 2001). Despite the centrality of perceived salience to the undermining effect, it is rarely measured explicitly and is rather inferred as a theoretical explanation for why extrinsic rewards predict reduced intrinsic motivation (Lepper, Henderlong, & Gingras, 1999). We know little about the impact of the salience of everyday verbal rewards on motivation.

This paper therefore contributes to work motivation research and more specifically to better understanding the undermining effect proposed by SDT in relation to verbal rewards by, firstly, explicitly testing the role of perceived salience. Despite it being recognized as an important concept within psychological research (Taylor & Fiske, 1978), there appears to be no previous field-based research examining the role of the perceived salience of incentives on individuals' motivation attributions.

Secondly, while periodic financial rewards are clearly important in the work environment, performance-related incentives typically vary infrequently, perhaps only annually, unless the workplace operates piece-rate or commission-based pay (Rynes, Gerhart, & Parks, 2005). Instead, verbal rewards (e.g. gratitude spoken or by email) fluctuate on a daily basis, are a vital part of everyday management rewards, and consistent with motivation definitions that see motivation as highly dynamic (Lord, Diefendorff, Schmidt & Hall, 2010). Despite the fact that verbal rewards are an integral part of working life (Bareket-Bojmel et al., 2014) we know little about their impact on motivation.

Finally, reward research is dominated by studies which focus on simple, algorithmic tasks (Gerhart & Fang, 2014) and the extent to which task complexity moderates the motivational impact of rewards has therefore been neglected (Gagné & Forest, 2008). This is important because relatively simple tasks are less likely to be autonomously motivated (because

they have less inherent interest or perceived importance) meaning that the so-called undermining effect will be less relevant (Deci et al., 1999a). There are also questions about whether research based on simple tasks is generalizable to more complex jobs (Gerhart & Fang, 2014), which are a characteristic of knowledge work. This research therefore aims to build our understanding of the motivational impact of everyday verbal rewards by examining the relationship between individuals' perceived reward salience and their motivation attributions, as well as the moderating role of task complexity.

Self-determination theory and the motivation types

Central to SDT are four different types of motivation, which vary in the extent to which they are experienced as more autonomous or more controlled (Deci & Ryan, 1985; Gagné & Deci, 2005; Chemolli and Gagné, 2014). The first type, *intrinsic* motivation, is driven by a person developing an interest and therefore enjoyment in the task itself (e.g. I enjoy analyzing data) and is characterized by an internal perceived locus of causality (PLOC; deCharms, 1968). Intrinsic motivation is seen as autonomous in that individuals experience volition in performing intrinsically motivating activities. The second type of autonomous motivation is *identified* motivation. Individuals who are motivated because they identify with the importance or personal value of the task (e.g. I analyze data because my research is important) also experience a sense of volition and internal PLOC for their behavior (Koestner & Losier, 2002). The third type is *introjected* motivation, where self-worth is contingent upon performance of the task but the value of the task has not been accepted as one's own (Deci et al., 1994). This is therefore characterized by a sense of internal pressure to seek approval or to avoid feelings of guilt (e.g. I have to analyze these data to be a good researcher) so is internalized into the sense of self but is not autonomous (Chemolli and Gagné, 2014). Finally, behavior that is *externally* motivated relies on some kind of external contingency, which the individual seeks to obtain or avoid, such

as tangible reward or punishment (Deci & Ryan, 2008; Gagné & Deci, 2005; Ryan & Deci, 2000). Such motivation has not been internalized and is therefore characterized by an external PLOC (e.g. I need to publish research in order to gain tenure).

The distinction between the individual motivation types is important because, in the work environment, autonomous motivation (i.e. intrinsic or identified) has been shown to be more conducive than controlled motivation (i.e. introjected and external) to outcomes such as job satisfaction, affective commitment and acceptance for organizational change (Gagné, Koestner, & Zuckerman, 2000; Richer, Blanchard, & Vallerand, 2002).

Verbal rewards and the undermining effect

Workplace rewards can include “money, prizes, desirable activities or outcomes, praise, or recognition” (Byron & Khazanchi, 2012, p.810) which can therefore take a number of forms. In many workplaces everyday work is characterized less by rewards governed by formal structures (e.g. bonuses) than by informal, psychological rewards (e.g. verbal recognition) (Long & Shields, 2010). Verbal rewards can be seen as verbal recognition or praise as opposed to tangible rewards which are financial or symbolic, such as awards or gift certificates (Deci et al, 2001; Cameron & Pierce, 1994). We expand the definition of verbal rewards to include both oral and written rewards on the basis that everyday workplace rewards are often delivered by email in the 21st century. An example can be seen in the manipulation from Bareket-Bojmel et al (2014) who administered a “special thank you note from the departmental manager” (p. 9) which said; “Dear [Name of employee], thank you for your hard work and great achievements in yesterday’s shift, I appreciate your effort very much” (p. 8). These verbal rewards effectively serve as the interim incentive between periodic, tangible rewards to direct behavior (Ellingsen & Johannesson, 2008; Ilgen, Fisher, & Taylor, 1979).

In support of the incentive effect of verbal rewards, studies from neuroscience have demonstrated that verbal rewards activate the neural structures constituting the human reward system (e.g. Spreckelmeyer et al., 2009). In the work environment, verbal rewards such as praise or public recognition have been found to motivate specific behaviors including reduced absenteeism (Markham, Scott, & McKee, 2002), and higher levels of unit (Peterson & Luthans, 2006) or individual performance (Bareket-Bojmel et al., 2014). Verbal rewards are therefore an important motivator of work-related behaviors. These studies do not, however, tell us whether verbal rewards enhance controlled motivation at the expense of autonomous motivation (i.e. the undermining effect).

SDT suggests that some forms of reward can reduce levels of autonomous motivation such that the reward will undermine the satisfaction of their basic psychological need for autonomy. This is because it creates a sense of pressure (“I have to complete this task”) rather than volition (“I want to complete this task”) (Deci & Ryan, 1985; 2000). Individuals are therefore likely to attribute their behavior to the reward and not to the interest in the task itself, resulting in a more external (extrinsic) than internal (intrinsic) PLOC (Deci & Porac, 1979). It is important to note, therefore, that SDT does not propose that rewards are not motivating. Rather, that motivation focused on the rewards rather than on the activity itself, or on the internalized value of the activity, is poorer quality and therefore related to sub-optimal functioning (e.g. Houliort, Koestner, Joussemet, Nantel-Vivier, & Lokes, 2002).

A number of meta-analyses conducted in the late 1990s/early 2000s concluded that verbal rewards predicted *increased* intrinsic motivation (Cameron & Pierce, 1994; Deci et al, 1999a, 1999b, 2001; Eisenberger & Cameron, 1996; Tang & Hall, 1995). The theoretical explanation for the positive relationship between verbal rewards and intrinsic motivation is that verbal rewards often communicate information about performance and can therefore enhance individuals’ basic psychological need for competence, which in turn predicts more autonomous

motivation (Deci et al., 2001). However, a key distinction can be made between rewards that are expected while the task is being performed versus those that are unexpected (Ilgen et al., 1979). For example, in their meta-analyses (1999a, 2001) Deci et al. found that expected financial rewards did undermine intrinsic motivation, but not unexpected financial rewards. This is because any positive effect of expected financial rewards on intrinsic motivation as a result of fulfilling competency needs is outweighed by undermining the need for autonomy and so the net effect on intrinsic motivation is negative (Gagné & Forest, 2008). With respect to verbal rewards, however, this distinction has not been made. This is important because the expectation of the reward can be seen as an indicator of the extent to which the reward is salient. The basis of the undermining effect is that incentives are likely to be experienced as controlling (and therefore detrimental to autonomous motivation) only when they are particularly salient (Deci & Porac, 1979; Ross, 1975) but this characteristic has not been explicitly examined.

The salience of rewards and the undermining effect

The role of salience originates from attribution theory (Heider, 1958), which states that individuals make causal inference based on salient aspects of their environment, which could be seen as reasons for behavior (Kelley, 1973). In psychological research, the salience of stimuli has been found to influence perceptions of causality (Taylor & Fiske, 1978). In other words, individuals are more likely to attribute the reasons for their actions to stimuli that are more salient (i.e., salient stimuli are controlling). In this case, then, when verbal rewards are more salient they will draw causal attribution to the reward, therefore undermining autonomous motivation, because the contingency of the reward on the task is more salient. The concept of salience has been applied, in a small number of studies, to understand the impact of rewards on behavior.

As a result of the dominance of experimental methods there is no clear operationalization of incentive salience outside of controlled conditions, and the term has not been clearly defined. Based on a review of theory and experimental studies (e.g. Eisenberger & Selbst, 1994; Lepper et al., 1973; Ross, 1975) we suggest here that salience can be operationalized as the expectation and conspicuousness of the reward while the task is being performed. We discuss each characteristic in turn and how they can be controlling.

Beginning with the expectation of rewards, the distinction between expected and unexpected verbal rewards is particularly important because they have different reward effects. Ilgen and colleagues (1979) draw the distinction between incentives and reinforcements on the basis of the temporal location of the reward to the task. Rewards act as incentives when they are expected while performing a task or activity, rather than a reinforcement which is not expected but delivered after the task is completed. With respect to verbal rewards, Deci, Koestner and Ryan (2001, pp. 3–4) suggest that the undermining effect should apply to expected verbal rewards which “can have a significant controlling aspect leading people to engage in behaviors specifically to gain praise, so verbal rewards have the potential to undermine intrinsic motivation”. In this respect, expected verbal rewards make the contingency of the reward particularly salient (Ross, 1975).

The evidence in relation to expected verbal rewards with respect to an undermining effect is mixed. In the following studies, expectation is manipulated simply by making participants aware that they will receive the verbal reward following the task. For example Harackiewicz, Abrahams, & Wageman (1987, p.1018) told high school participants; “Later you will be shown whether the number of words you found is better or worse than the average number of words found on these very same puzzles by other New Jersey high school students.” Such a command serves to direct the recipient’s attention toward an expected evaluation, thereby making it salient. In support of the undermining effect, these authors found that

anticipated normative performance evaluation reduced intrinsic interest in adolescents. Likewise, Pekrun and colleagues (2014) found that anticipated normative evaluation predicted greater adoption of performance, rather than mastery, goals in college students. Performance goals reflect an external PLOC whereas mastery goals reflect an internal PLOC (Ryan and Connell, 1989). Dollinger and Thelen (1978) found that children who expected verbal rewards demonstrated *higher* levels of free-time task persistence (used as a proxy for intrinsic motivation) than those who received tangible rewards, although marginally lower than those who received neither. Somewhat contradictory to this, a recent study by Bareket-Bojmel, Hochman, & Ariely (2014) examined the impact of expected verbal rewards (in written form) on productivity, which the authors use to make inferences about intrinsic motivation, in the work environment. Participants in this field-based experimental study were assigned to four groups; financial bonus, non-financial bonus (family pizza voucher), promised (and therefore expected) verbal reward and a choice between financial and non-financial bonus. These authors found that participants receiving verbal and non-financial bonuses displayed the highest levels of productivity, and the productivity of those who received the verbal reward did not reduce after this incentive was removed (unlike the other reward conditions, which did). This, therefore, could contradict the other studies if, as the authors suggest, we infer intrinsic motivation from changes in productivity. It is questionable, however, whether productivity is analogous to intrinsic motivation (Ambrose and Kulick, 1999); an increase in productivity could be explained by either, or both, extrinsic and intrinsic motivation (Cerasoli, Nicklin, Ford and Hinshaw, 2014).

Turning now to conspicuousness, we base this characteristic on social psychological research which examines the impact of salience on causal attribution. Jones and Nisbett (1972) propose that stimuli (e.g. verbal rewards) are salient when they are perceptually prominent. This is supported by Taylor and Fiske (1978) who, based on a review of experimental manipulations

of salient stimuli, emphasize the prominence of the stimulus defined by a number of characteristics. Of particular importance to verbal rewards (which could be written or auditory) is that visual prominence and auditory prominence are characteristics of salient stimuli. The auditory and visual prominence of the verbal reward therefore makes the stimulus more conspicuous.

Research examining the impact of reward salience as characterized by conspicuousness is more limited than research examining expectation. In two experimental studies, Ross (1975) found that preschool children had lower levels of post-test task persistence (playing with a drum) when they had been offered a salient reward (marshmallows) for doing so. In the second experiment, children displayed lower persistence when they were instructed to think about the marshmallows while playing with the drum. In a similar study, children were asked to think about the taste of eating a marshmallow and the same effect was found (Mischel & Baker, 1975). Thinking about the reward in these studies therefore made the reward more perceptually conspicuous, thereby undermining their intrinsic motivation. Likewise, in an experimental study by Eisenberger and Selbst (1994), the impact of rewards on children's creativity on a word quiz task was examined. The salience of the reward was manipulated by placing, or not placing, the coins that the child was rewarded in front of him or her during the task. When the reward was conspicuous in this way, children's creativity was lower but when the reward was out of sight, there was no effect of the reward on their creativity. Creativity can be seen as an outcome of intrinsic motivation (Amabile, Barsade, Mueller and Staw, 2005) so this indicates that the conspicuousness made the reward more controlling, thereby undermining their intrinsic motivation.

The findings of the studies reviewed here suggest that reward salience explains the extent to which reward undermines children's task interest (intrinsic motivation) and it has been theorized that this is because they attribute the causality for their actions to the incentive

(external PLOC), thereby reducing interest in the task (internal PLOC) when the reward is no longer present (Ross, 1975). As a result of these experimental manipulations, and in the absence of a clear operationalization of reward salience, we propose that reward salience is indicated by the expectation and conspicuousness of the reward while the task is being performed.

The first set of hypotheses are made on the basis that salient stimuli influence perceived causality for behavior (Taylor & Fiske, 1978). Specifically, that individuals will attribute their behavior to the verbal reward (controlled motivation) when it is particularly conspicuous and expected. Thus salient rewards are experienced as more controlling and therefore undermine autonomous motivation (Deci, 1971; Deci & Porac, 1979).

Hypothesis 1a: Reward salience is negatively related to autonomous motivation (intrinsic and identified.).

Hypothesis 1b: Reward salience is positively related to controlled motivation (introjected and external).

Our final consideration is the nature of the work which is associated with the verbal reward. It is important to note that the undermining theory outlined above is proposed to hold primarily with respect to inherently interesting or stimulating tasks (Deci et al., 1999a). This is because tasks requiring more complex or creative thought encourage greater levels of intrinsic interest or identification with the task (Amabile et al, 2005). On the other hand, simple or repetitive tasks provide little intrinsic interest and appear relatively unimportant (because of their simplicity) so do not engender identification with the importance of the task (Deci et al., 1999a). In the latter conditions, therefore, the task is unlikely to encourage autonomous motivation so there is nothing to undermine. In this study, we therefore consider the moderating role of the extent to which the task requires heuristic thought. Tasks requiring greater heuristic thought are those which involve reasoned, creative thinking and the application of skills and knowledge

(McGraw, 1979). More heuristic tasks are likely to be more interesting than algorithmic (simple, repetitive) tasks but also, through the inherent challenge of the task, appear to individuals to be more important than simple tasks.

There does not appear to be any research which has explicitly tested the moderating role of task complexity on the relationship between incentives and motivation as proposed by SDT, despite calls for this (Gagné & Forest, 2008). The limited body of research examining the impact of verbal rewards on motivation has focused primarily on simple tasks. For example, Bareket-Bojmel, Hochman, & Ariely's (2014) work-based experimental study was based in a production environment where "the nature of the work (producing computer chips) provides a clear articulation of the desired outcomes expected...[and] employees engaged in their routine jobs using their standard work schedules" (p. 7). If the expected moderating effect of task complexity is present, the findings of their study (failing to support the undermining effect) would therefore be unsurprising.

We make the following hypotheses on the basis that the presence of more salient rewards for tasks which are in themselves stimulating (heuristic) has the potential to direct individuals' attribution towards the verbal reward, thereby increasing their controlled motivation and undermining their autonomous motivation. For less heuristic tasks, the motivation is likely to have been more controlled in the first place so this will not take place.

Hypothesis 2a: Task heuristic moderates the relationship between reward salience and autonomous motivation (intrinsic and identified) such that reward salience is negatively related to autonomous motivation for tasks which require more heuristic thought but there is no association for less heuristic tasks.

Hypothesis 2b: Task heuristic moderates the relationship between reward salience and controlled motivation (introjected and external) such that reward salience has a

stronger positive relationship with controlled motivation for more heuristic tasks than for less heuristic tasks.

Method

Participants and procedure

Participants were all employees of a UK-based public corporation. The organization is part funded by government but operates independently, including decisions about HR practices. Respondents were employed in a wide range of jobs, mostly desk based and largely requiring a degree or professional qualification. Of 145 respondents who volunteered to take part in the study following an earlier survey, 72 respondents completed at least 3 diary entries (50% response rate), totaling 442 daily responses. We retained only those responses which indicated verbal or written reward and who had completed at least 3 diary entries. This resulted in 287 responses (58 respondents) including verbal (N = 186), written (N = 43), or both verbal and written reward (N = 58) which were retained for analysis. The average number of diary entries was 5 (range = 3 to 9), out of a possible 10. Of the 58 respondents, 33% were female. Ages ranged from 23 to 63 years (mean = 44 years) and average organization tenure was 10 years. 44% were educated to postgraduate level. The sample was representative of the five job levels within the organization. All demographic variables are representative of the whole organization population with the exception of gender, which is slightly more evenly split than this sample would suggest (42% female).

We utilized a diary methodology to sample tasks from the working day (Bolger, Davis, & Rafaeli, 2003; Weiss & Rupp, 2011), and examined within-person variation in motivation and related verbal incentives. Adopting the view that daily life is structured around episodes, which are self-imposed structures that individuals use to understand their constant stream of

experience (Beal & Weiss, 2012), a diary methodology allows respondents to identify their own motivated behavior episodes and related verbal incentives. The two-week diary study was administered via an email link at around 3pm each day and participants were instructed to complete the diary at a convenient time towards the end of their working day.

Participants were asked two open ended questions in order focus them on critical incidents of motivated behavior from that day. The first was about the activity itself; “describe an activity or task that you have spent a significant amount of time or effort on at work today”. The second question asked them to describe; “any feedback, recognition or reward that you received or expected to receive in relation to the task.” This question was originally designed to tap rewards as both reinforcements and incentives but respondents indicated that all diary entries were expected rewards, rather than received, so all are incentives rather than reinforcements. They were also given the following instructions: “This could be, for example, positive or negative verbal feedback, visual feedback or recognition in the form of body language, or a material reward such as a gift or management reward”. These critical incidents allow individuals to select meaningful activities from their working day (Beal, Weiss, Barros, & MacDermid, 2005; Weiss & Rupp, 2011) and to “hook” their experiences to tangible examples which brings the task to the front of their mind (Chell, 2004). The qualitative data collected from these questions were not taken forward for further analysis as often insufficient detail was provided by respondents. Examples of the reward episodes are provided in the results section.

Measures

The self-report scales included in the diary are outlined in turn below. The length of the scales is two-items and, in the case of task heuristic, a single item to reduce respondent fatigue and drop-out which is a risk as respondents completed the same scales for 10 consecutive working

days. Unlike traditional survey methods, daily diary studies reduce the risk of recall bias as respondents answer the questions relating to events from the same day so one or two item scales are more acceptable. The use of shorter scales is common in diary studies for this reason (e.g. Conway & Briner, 2002; Niessen, Sonnentag and Sach, 2012). Reliability of the two-item scales was tested using the Spearman-Brown split-half prediction test as this has been shown to be more appropriate to two-item measures than the more commonly used Cronbach's alpha (Eisinga, Te Grotenhuis, & Pelzer, 2012).

Task motivation. Items were adapted from the Multidimensional Work Motivation Scale (MWMS; Gagné et al, 2014) to measure motivation focused on specific tasks (rather than work in general). There were 8 items in total, two for each of the motivation types. Items were as follows; "To get recognised or rewarded by others for the effort that I put in" and "To avoid being criticised by others (e.g., manager, colleagues)" (external), "Because I would have felt bad about myself if I didn't" and "Because putting the effort in made me feel good about myself" (introjected), "Because I considered it personally important" and "Because the task or activity was of personal significance to me" (identified) , and "Because the task itself was interesting" and "Because I got enjoyment from doing the task/activity" (intrinsic). All items were scored on a 5-point Likert scale in response to the question "to what extent do the following statements reflect reasons that you put particular time or effort into the task or activity?" from 1 (not at all) to 5 (a great deal). Multi-level confirmatory factor analysis (CFA) confirmed that the theoretical four-factor model was a good fit; $\chi^2 = 46.21$ ($df = 13$) $p < .00$, CFI = .96, TLI = .91, RMSEA = .08. The four factor model was a superior fit to all 3, 2, and single factor models arrived at by combining items measuring the motivation types. Spearman-Brown reliability coefficients for the subscales are; .66 (external), .63 (introjected), .78 (identified), and .87 (intrinsic).

Reward salience. Research into reward salience is almost entirely based in the lab (e.g. Eisenberger & Selbst, 1994; Ross, 1975) and there are no available self-report measures of perceived reward salience. Therefore, a measure of reward salience was developed for this research. Two items measured each of expectation and conspicuousness, in response to the question: “Please rate the following statements according to how you felt *while you were performing the task*”. Items were; “I was expecting the performance of the task to lead to the feedback, recognition or reward” and “I expected to receive feedback, recognition or reward in relation to the task” (expectation); “I was thinking about the feedback, recognition or reward” and “I was conscious of the feedback, recognition or reward whilst I was performing the task” (conspicuousness). Items were scored on a 5-point Likert scale.

Scale validation was carried out in several stages in MPlus. Firstly, exploratory factor analysis, using Robust Maximum Likelihood estimation, revealed a single-factor model factor, with loadings of between 0.83 and 0.89. This was supported with multi-level CFA. There was no significant difference between the one- and two-factor models in the CFA so the one-factor model was adopted for parsimony. This represented a very good fit to the data; $\chi^2 = 0.529$ ($df = 1$) $p = .467$, CFI = 1.000, TLI = 1.005, RMSEA = .000 (95% confidence intervals = .000 and .116). Finally, we tested measurement and factorial invariance on the single factor model in MPlus. This was estimated using a random split sample of the data with 221 respondents in each group. In line with the procedure set out by Meredith (1993) and expanded by Marsh et al (2009), models were estimated to examine firstly *structural invariance*, then *weak measurement invariance* and finally *strong measurement invariance*. The desirable outcome is for good model fit for all three models with either no change or an improvement in fit at each step (Marsh et al., 2010). These criteria were achieved and the fit of the strong factorial invariance model was very good; CFI = 1.000, TLI = 1.016, RMSEA = .000 with no significant change in model fit from the weak measurement invariance model ($\Delta\chi^2 = 0.786$, $p = 0.853$). The factor loadings

also showed consistency between the two random samples. This therefore indicates that the single factor model adequately explains variance in the observed salience items. The single factor model was therefore adopted and Cronbach's alpha coefficient for the four item scale was .86.

Task heuristic. A single item was adapted from the problem solving subscale of the Work Design Questionnaire (WDQ; Morgeson & Humphrey, 2006): "The task involved solving problems that had no obvious correct answer". Respondents rated the statement in relation to the task from 1 (strongly disagree) to 5 (strongly agree). This item was selected on the basis of McGraw's (1979, p. 36) definition of a heuristic task as a "complex problem requiring insight" where individuals draw on their prior skills and experience. In support of the choice of this item, task heuristic has a strong positive correlation with job level (Table 1; $r = .46, p < .001$) as would be expected on the basis that more senior jobs require more heuristic thought. In addition, task heuristic is predictive of intrinsic motivation (Table 2) in line with the theoretical justification set out above, thereby supporting the validity of the measure.

Examples from the qualitative descriptions of events revealed that more heuristic tasks (rated 4 or 5) included writing papers for boards and committees, carrying out investigations or research alone, and data analysis (e.g. "[I] worked on developing a skills matrix for engineers. I find this task particularly challenging because I have to design and come up with a formula to analyze the data collated"). Simpler tasks (rated 1 or 2) included attending regular meetings, undertaking standardized administrative tasks and producing or checking standard reports (e.g. "preparing month end reports...this is a [standard] task which is repetitive but essential for audit and control purposes").

Control variables. Between-person effects of gender, job level, age and organization tenure were included as control variables as these have been found to impact on both motivation and reward attitudes in multiple studies. Day of the week that the diary was completed

(Monday, Tuesday etc.) and the diary day (i.e. 1st, 2nd, 3rd ... up to 10th possible diary entry) were also included as control variables. These variables control for diary fatigue (Bolger et al., 2003) and the impact of day of the week, which has been shown to have an impact on affective experience, including motivation (Ryan, Bernstein, & Brown, 2010). The final control was a between-person level of motivation towards work in general, using the original version of the MWMS (Gagné et al, 2014). This enabled us to isolate general motivational tendencies and examine only task-level motivation as measured through the diary. Each multi-level model reported in tables 2a and b includes the respective motivation type at between-person level.

Analyses

Hierarchical linear modelling (HLM) is a form of multiple regression which recognizes that the data are structured such that individual responses can be ‘nested’ within higher level units and therefore not independent of one another (Singer & Willett, 2003). In this case, individual day responses are nested within the higher level unit of individuals. HLM enables the separation of both within-person (level 1) and between-person (level 2) effects (Snijders & Bosker, 1999). The interest of this study was within-person (level 1) relationships because the focus is on daily experience rather than general individual tendencies. To ensure that level 1 effects were not biased by between-person differences, the level 1 independent variables were group-mean centered (by subtracting the person-level aggregate from the daily response; Raudenbush & Bryk, 2002). In line with the procedure set out by Zhang, Zyphur, and Preacher (2009) the level 2 aggregate was also included in the model, although is not reported, to control for the between-person effects.

As with standard regression analysis, it is possible to examine the variance explained by each variable added into the model. In HLM this is done by examining the change in -2 x Log Likelihood (-2LL), also known as the deviance, between models when new predictor variables are added. The amount of change in the -2LL relative to the change in degrees of

freedom between models is compared against a chi-square significance table to ascertain the significance of the change in fit between models (Tabachnick & Fidell, 2005). The variance explained is also examined by calculating a “pseudo- R^2 ” (Singer & Willett, 2003). This is calculated by dividing the difference between the variance component of the earlier model and that of the later model by the variance component of the earlier model (e.g. $(.43-.35)/.35 = .23$ or 23% of variance explained).

Results

Preliminary analysis

Means, standard deviations, scale reliability statistics and zero-order correlations between the variables are presented in table 1.

Respondents were presented with an item that listed several categories of reward and asked to indicate whether the reported reward incident was verbal, written, nonverbal or financial. Of 442 reported incidents, only 6 (2%) included financial reward and 33 (7%) non-verbal recognition. Therefore, as outlined above, the majority were verbal and written. There were also 155 (36%) responses which did not include any indication as to the nature of the reward. These were excluded because non-response was ambiguous: participants who did not select a reward from the list may indicate expecting no reward; however, it may indicate they expected a reward but not one listed (e.g., time-off). The responses suggest that financial rewards are not salient on a day to day basis in this context, which supports our assertion that everyday rewards are more commonly verbal. Example responses are: “I hope the project is successful and implemented on time, as that will result in my getting a bigger bonus this year” (financial); “I believe I will receive a verbal recognition for completing the task in such a short time frame” (verbal) and “I'd expect to receive an email from the project manager saying my input was helpful” (written). All instances of non-verbal incentives were reported by respondents as co-occurring with verbal or written rewards (e.g. the reward was seen as both

verbal and non-verbal) indicating that this behavior is supported by clearer written or verbal feedback or recognition and were thus retained in the analysis.

Table 1 about here

Before hypothesis testing, the variables were examined to ensure that a significant proportion of total variance was explained at within-person level, in line with the procedure followed by Spence et al (2011). Between 45% and 68% of variance was explained at within-person level in the test variables and so supporting the multi-level approach.

Hypothesis testing

Hierarchical linear models were estimated with the independent variables relating to each of the motivation types (intrinsic, identified, introjected and external) in turn and are reported in table 2. Hypotheses 1a and 1b are addressed in model 2 and hypotheses 2a and 2b in model 4.

Tables 2a and b about here

Hypothesis 1a is not supported. The direct effects of reward salience on intrinsic and identified motivation were non-significant, suggesting that salience has a negligible negative effect on these autonomous motivation types (model 2; table 2a). Hypothesis 1b was supported; incentive salience positively related to introjected motivation ($\gamma_{03} = .14, p < .05$) and external motivation as expected ($\gamma_{03} = .25, p < .001$) (model 2; table 2b).

Hypothesis 2a was supported, in relation to both intrinsic and identified motivation: the interaction between task heuristic and incentive salience was significantly negatively related to intrinsic motivation ($\gamma_{05} = -.17, p < .05$), and identified motivation ($\gamma_{05} = -.13, p < .05$; model 4, table 2a). The slopes for these relationships are depicted in figures 1 and 2 respectively. The

high and low points on the graph represent +/- 1SD in line with recommendations from Aiken and West (1991). Perceived incentive salience was negatively related to intrinsic and identified motivation for tasks requiring high heuristic thought and was positively related to intrinsic and identified motivation for tasks requiring low heuristic thought. The optimal conditions for both types of motivation are highly heuristic tasks and low incentive salience. Hypothesis 2b was also partially supported, with respect to external motivation ($\gamma_{05} = .13, p < .05$; model 4, table 2b). The slopes for the relationship with external motivation are depicted in figure 3. Both slopes are positive indicating that incentive salience relates positively to external motivation at high and low levels of heuristic thought, as predicted. The slope is steeper for tasks requiring more heuristic thought, indicating that salient incentives relate to the perceived locus of causality more strongly for more complex tasks, also in line with the hypothesis. The interaction did not have a significant relationship with introjected motivation. In summary, the interaction effects are in line with the hypotheses in that incentive salience relates to lower intrinsic and identified motivation and higher external motivation for tasks requiring higher levels of heuristic thought.

Insert Figures 1, 2 and 3 about here

Discussion

The aim of this study was to test the theory that salient verbal rewards undermine more autonomous types of motivation by encouraging an external perceived locus of causality for behavior (Deci et al., 1999a; Deci, 1971). Our first hypothesis tested the undermining effect in a general respect across all tasks, whereas our second hypothesis distinguished between heuristic and non-heuristic tasks. Working adults participated in a diary study, completing a

short questionnaire every day for 10 working days. Diaries focused on a critical incident of motivated behavior earlier during the working day and the salience (expectation and conspicuousness) of any related verbal reward.

Considering the general test of the undermining effect across all tasks, the results indicate that verbal reward salience is associated with causal attribution in that perceived salience positively predicted external motivation, which is characterized by an external perceived locus of causality. This, therefore, supports the suggestion that perceived verbal reward salience is an important characteristic in understanding the motivational impact of rewards (Ross, 1975). Although this is the basis of several theories of reward and motivation (Lepper & Greene, 1979), including SDT (Deci & Porac, 1979), previous studies have not explicitly tested the role of perceived salience in influencing the effects of workplace rewards on motivation. Importantly, the higher external motivation was not to the detriment of intrinsic motivation (Gagné & Deci, 2005). In other words, while individuals are more likely to attribute the cause for their behavior to a verbal reward when it is salient, this does not reduce their intrinsic or identified interest in the task. In general terms, therefore, the undermining theory was not supported.

We do, however, find support for the undermining effect with respect to intrinsic and identified motivation when distinguishing between heuristic and non-heuristic tasks. Both intrinsic and identified motivation were lower in the presence of more salient verbal rewards for more heuristic tasks but higher for less heuristic tasks. More salient verbal rewards also predicted greater levels of external motivation, and more so for more complex tasks. In other words, individuals attribute their motivation for more complex tasks towards the verbal reward (external motivation) and less so to the interest or importance of the task, in the presence of salient verbal rewards. But for simpler tasks, it seems that more salient verbal rewards predict greater identification with or enjoyment of the task to a small extent. Perhaps this is because a

salient incentive makes a simpler task seem more important or interesting than its complexity would suggest, thereby helping individuals to internalize the value of the task.

The findings with respect to the moderating effect of task heuristic are important because they may explain some of the previous mixed results with respect to verbal rewards and the undermining effect. For example, Bareket-Bojmel, Hochman, & Ariely (2014) found a positive relationship between verbal rewards and productivity but did so in relation to simple, routine jobs. These authors' findings would not be contradicted by the findings of the present research. It therefore seems important to take into account both the perceived salience of the incentive and the complexity of the task.

Implications for theory

This study has three important theoretical implications. Firstly, while SDT is growing in popularity as a theory of work motivation (Gagné & Deci, 2005) the undermining theory of incentives on autonomous motivation has been controversial within the work environment (Rynes et al., 2005). In large part this is due to the lack of field-based research which does not recognize that rewards are the norm in the work environment. This research adds to a growing body of research which has examined the impact of financial rewards on motivation in a work setting (Fang & Gerhart, 2012; Kuvaas, 2006) but rather focuses on the type of verbal rewards that individuals experience in their day-to-day work. It furthers the theory in suggesting that salient verbal rewards *can* undermine the extent to which individuals experience autonomous motivation towards a task when the task is more complex. The fact that this was supported with respect to identified, as well as intrinsic motivation, which has traditionally been the focus, is important because individuals may identify with the value of the task even when it is not intrinsically interesting (which could be said about many work tasks) and identified motivation has been related to persistence on important but non-interesting tasks (Koestner & Losier,

2002). These results would therefore support the suggestion that both intrinsic and identified motivation are important in the work domain (Gagné & Deci, 2005).

Secondly, the present study furthers our knowledge of workplace motivation. In particular, it is novel in focusing on episodic motivation, focused on specific tasks rather than a general attitude towards work. Motivation is acknowledged as highly dynamic (Lord et al, 2010), fluctuating according to momentary events and environment conditions, yet it is rarely researched in a manner consistent with this (Beal and Weiss, 2012). This means that crucial time-proximal drivers of motivation, such as verbal rewards, have tended to be neglected. This is the first study to examine episodic motivation from an SDT perspective in the work environment and we have shown that a within-person approach can effectively tap rewards that vary on a daily basis and the salience of these constructs affects motivation. This could be extended in future research to examine different motivation antecedents, such as non-linguistic rewards.

Thirdly, this research adds to our knowledge of reward perceptions in developing the concept of perceived reward salience. Research into reward salience has previously been confined to the lab, despite suggestions that it is likely to influence attribution in everyday situations (Lord & Smith, 1983). This study supports previous experimental research in suggesting that reward salience does influence causal attribution (e.g. Ross, 1975). It suggests that perceived salience should be considered to be an important subjective reward perception but unlike subjective reward perceptions such as fairness and satisfaction, perceived salience requires less cognitive processing (Lord & Smith, 1983) and comparison with others. By setting out an operational definition of perceived salience, this paper offers opportunities for further expansion of this theory, which has previously been inferred but not fully tested. For example, it would be interesting to examine antecedents to perceived salience by combining the self-report scale with experimental methods to examine the influence of different types of rewards

(e.g. financial, symbolic) and objective characteristics of rewards (e.g. amount, frequency) on perceived salience.

Implications for practice

SDT and the undermining effect have found considerable interest with management practitioners in recent years (e.g. Pink, 2010). The findings of this study have implications for practitioners in that verbal rewards tend to be delivered by managers, rather than through formal procedures. This research would suggest that managers should make rewards salient to encourage intrinsic and identified motivation for simple tasks but not for more complex tasks. For simpler tasks, this could be done effectively by creating an expectation of an reward (e.g. “I will be very impressed if you sort all of these files by the end of the day”) or making this conspicuous by reiterating the promised incentive on email while the task is being performed (e.g. “thank you for your hard work on this task, I really appreciate your efforts”). For more complex tasks, however, it would be better not to make rewards expected or conspicuous. This could be done by using reinforcements rather than incentives so that the reward is not salient while the task is being performed. Identified motivation could also be encouraged for more complex tasks by making the importance of the task more salient than any incentive (e.g. “your effort on this project is key to the success of the organization”) where intrinsic motivation could be encouraged by emphasizing the nature of the task itself (e.g. “I hope you will enjoy being part of this project team”).

Limitations and future research

A first limitation is that all of the items in the diary were self-report there is a risk of common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2012). Steps were taken to try to reduce this by ensuring anonymity of responses (to reduce social desirability bias), randomizing the order of scales as much as possible (to reduce day-to-day priming) and piloting the diary to

ensure comprehension. In addition, partitioning the within- and between-person effects in the analysis controlled for stable effects as much as possible.

Secondly, as the incentives captured within the diary responses were verbal it is not possible to conclude whether the findings of this study generalize to financial incentives. Future research would be valuable to examine this, perhaps in situations where financial rewards are more salient on a day to day basis (e.g. piece rates, or sales commission) or an experimental study (e.g., Bareket-Bojmel et al., 2014). In particular, whether certain characteristics of financial incentives lead to higher perceived salience, and how this in turn relates to motivation. It would also be beneficial to explore this relating both to day-to-day rewards and also general reward perceptions. This would help to test whether causal attributions are based on momentary perceptions or general attitudes.

Our third suggestion relates to task complexity, which was examined as a self-reported item. Firstly, future research should also measure managers' ratings of their direct reports' task heuristic. This would enable multi-level analysis not only within- and between-person but also clustered within managers and also between managers. Obtaining both parties perceptions would permit examining the extent to which task complexity is subjective and differs across viewpoints, and examine conditions that influence these perceptions, such as how managers can offer verbal feedback without undermining heuristic task motivation. Secondly, there are multiple components of task complexity (Morgeson & Humphrey, 2006) which could be explored further as some may be more associated with salient rewards than others. For example, the amount of time expended on the task, whether it was a solo or team activity, or whether it was concerned with internal or external stakeholders.

Our fourth suggestion relates to additional characteristics of the verbal reward. Firstly, relating to the type of contingency attached to the reward. More salient reward is controlling such that it makes the contingency of the reward more salient (Deci & Porac, 1979). The meta-

analyses by Deci et al (1999a, 1999b, 2001) make the additional distinction between the type of contingency attached to the reward. While we examine the magnitude of the contingency (through salience) we do not examine the type of contingency. The second characteristic refers to the extent to which the nature of the verbal reward is more informational or controlling. Ryan, Mims and Koestner (1983) found that rewards administered in these different ways might impact on motivation. We do not explicitly examine informational versus controlling verbal rewards. Future research might, therefore, examine the extent to which the type of contingency of the reward, and the way in which the reward is administered, interact with perceived salience to affect motivation.

Finally, in the present study we were unable to test the direction of causality of the proposed relationships. This is because diary measures were collected only once, at the end of the working day and episodes were not necessarily connected across days. The theory that salient rewards predict motivation rather than the other way around is in line with the work of Taylor and Fiske (1979) on salience and causality, which would strongly support the salience of stimuli preceding changes in behavior. This is further supported by previous experimental research included in Deci, Koester and Ryan's (2001) meta-analysis. Future research might, however, explore this further within the field environment. As many complex tasks continue for more than one day, sampling connected episodes across a period of days would allow longitudinal analysis and inferences about changes in motivation and related causal processes.

Conclusion

The perceived salience of verbal rewards emerged as an important characteristic in defining their motivational impact. Verbal reward salience influenced causal attribution for behavior in that it was associated with an increase in external motivation. This research also highlights the importance of task complexity as a moderator of the motivational impact of verbal rewards. More salient verbal rewards were associated with intrinsic and identified motivation for simpler

tasks but were detrimental to these motivation types for more complex tasks, consistent with the undermining effect. This study contributes to our understanding of how everyday verbal rewards influence day-to-day work behaviors, not those set out in formal organizational policies.

REFERENCES

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park: Sage.
- Amabile, T. M., Barsade, S. G., Mueller, J. S., & Staw, B. M. (2005). Affect and Creativity at Work. *Administrative Science Quarterly*, 50(3), 367–403.
- Ambrose, M. L., & Kulik, C. T. (1999). Old Friends, New Faces: Motivation Research in the 1990s. *Journal of Management*, 25(3), 231–292.
- 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*, 0149206314535441. doi:10.1177/0149206314535441
- Beal, D. J., & Weiss, H. M. (2012). “The Episodic Structure of Life at Work” In A. B. Bakker & K. Daniels (Eds.), *A Day in the Life of a Happy Worker* (pp. 8–24). Psychology Press.
- Beal, D. J., Weiss, H. M., Barros, E., & MacDermid, S. M. (2005). An Episodic Process Model of Affective Influences on Performance. *Journal of Applied Psychology*, 90(6), 1054–1068. doi:10.1037/0021-9010.90.6.1054
- Bolger, N., Davis, A., & Rafaeli, E. (2003) DIARY METHODS: Capturing Life as it is Lived. *Annual Review of Psychology*, 54(1), 579.
- Byron, K., & Khazanchi, S. (2012). Rewards and creative performance: A meta-analytic test of theoretically derived hypotheses. *Psychological Bulletin*, 138(4), 809–830.
<http://doi.org/10.1037/a0027652>
- Cameron, J., & Pierce, W. D. (1994). Reinforcement, Reward, and Intrinsic Motivation: A Meta-Analysis. *Review of Educational Research*, 64(3), 363. doi:10.2307/1170677

- 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. doi:[10.1037/a0035661](https://doi.org/10.1037/a0035661)
- Chell, E. (2004). Critical Incident Technique. In *Essential Guide to Qualitative Methods in Organizational Research*. Sage Publications Ltd.
- Chemolli, E., & Gagné, M. (2014). Evidence against the continuum structure underlying motivation measures derived from self-determination theory. *Psychological Assessment*, 26(2), 575–585. doi:10.1037/a0036212
- Conway, N., & Briner, R. B. (2002). A daily diary study of affective responses to psychological contract breach and exceeded promises. *Journal of Organizational Behavior*, 23(3), 287–302. doi:10.1002/job.139
- Csikszentmihalyi, M. (1975). *Beyond Boredom and Anxiety: Experiencing Flow in Work and Play* (25th Anniversary Edition.). Jossey Bass.
- Csikszentmihalyi, M. (1978). Intrinsic Rewards and Emergent Motivation. In *Hidden Costs of Reward* (1st ed.). Lawrence Erlbaum.
- deCharms, R. (1968). *Personal Causation*. Academic Press Inc.
- Deci, E. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18(1), 105–115. doi:10.1037/h0030644
- Deci, E., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, 62(1), 119–142. doi:10.1111/j.1467-6494.1994.tb00797.x
- Deci, E., Koestner, R., & Ryan, R. (1999a). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125(6), 627–668. doi:10.1037/0033-2909.125.6.627

- Deci, E., Koestner, R., & Ryan, R. (1999b). The undermining effect is a reality after all—
Extrinsic rewards, task interest, and self-determination: Reply to Eisenberger, Pierce,
and Cameron (1999) and Lepper, Henderlong, and Gingras (1999). *Psychological
Bulletin*, 125(6), 692–700. doi:10.1037/0033-2909.125.6.692
- Deci, E., Koestner, R., & Ryan, R. (2001). Extrinsic Rewards and Intrinsic Motivation in
Education: Reconsidered Once Again. *Review of Educational Research*, 71(1), 1–27.
doi:10.3102/00346543071001001
- Deci, E., & Porac, J. (1979). Cognitive Evaluation Theory and the Study of Human
Motivation. In *The Hidden Costs of Reward: New Perspectives on the Psychology of
Human Motivation*. John Wiley & Sons Inc.
- Deci, E. & Ryan, R. (1985). *Intrinsic Motivation and Self-determination in Human Behavior*.
Springer.
- Deci, E. & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human
motivation, development, and health. *Canadian Psychology*, 49(3), 182–185.
- Dollinger, S. J., & Thelen, M. H. (1978). Overjustification and children's intrinsic motivation:
Comparative effects of four rewards. *Journal of Personality and Social
Psychology*, 36(11), 1259–1269. doi:[10.1037/0022-3514.36.11.1259](https://doi.org/10.1037/0022-3514.36.11.1259)
- Eisenberger, R., & Cameron, J. (1996). Detrimental effects of reward: Reality or myth?
American Psychologist, 51(11), 1153–1166. doi:10.1037/0003-066X.51.11.1153
- Eisenberger, R., & Selbst, M. (1994). Does reward increase or decrease creativity? *Journal of
Personality and Social Psychology*, 66(6), 1116–1127. doi:10.1037/0022-
3514.66.6.1116
- Eisinga, R., Te Grotenhuis, M., & Pelzer, B. (2012). The reliability of a two-item scale:
Pearson, Cronbach, or Spearman-Brown? *International Journal of Public Health*.
doi:10.1007/s00038-012-0416-3

- Ellingsen, T., & Johannesson, M. (2008). Anticipated verbal feedback induces altruistic behavior. *Evolution and Human Behavior*, 29(2), 100–105.
doi:10.1016/j.evolhumbehav.2007.11.001
- Fall, A. & Roussel, P. (2014) Compensation and Work Motivation: Self-Determination Theory and the Paradigm of Motivation through Incentives In Gagné, M.. *The Oxford Handbook of Work Engagement, Motivation, and Self-Determination Theory*. OUP USA Oxford Library of Psychology.
- Fang, M., & Gerhart, B. (2012). Does pay for performance diminish intrinsic interest? *The International Journal of Human Resource Management*, 23(6), 1176–1196.
doi:10.1080/09585192.2011.561227
- Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, 26(4), 331–362.
- Gagné, M., & Forest, J. (2008). The Study of Compensation Systems Through the Lens of Self-Determination Theory: Reconciling 35 Years of Debate. *Canadian Psychology-Psychologie Canadienne*, 49(3), 225–232.
- Gagné, M., Forest, J., Vansteenkiste, M., Crevier-Braud, L., Van den Broeck, A., Aspeli, A.K., Bellerose, J., Bénabou, C., Chemolli, E., Güntert, S.T., Halvari, H., Indiyastuti, D.L., Johnson, P.A., Molstad, M.H., Naudin, M., Ndao, A., Hagen Olafsen, A., Roussel, P., Wang, Z. & Westbye, C. (2014): The Multidimensional Work Motivation Scale: Validation evidence in seven languages and nine countries, *European Journal of Work and Organizational Psychology* Published online: 05 Feb 2014. doi:
<http://dx.doi.org/10.1080/1359432X.2013.877892>
- Gagné, M., Koestner, R., & Zuckerman, M. (2000). Facilitating Acceptance of Organizational Change: The Importance of Self-Determination. *Journal of Applied Social Psychology*, 30(9), 1843–1852. doi:10.1111/j.1559-1816.2000.tb02471.x

- Gerhart, B., & Fang, M. (2014). Pay for (individual) performance: Issues, claims, evidence and the role of sorting effects. *Human Resource Management Review*, 24(1), 41–52. doi:10.1016/j.hrmr.2013.08.010
- Harackiewicz, J. M., Abrahams, S., & Wageman, R. (1987). Performance evaluation and intrinsic motivation: The effects of evaluative focus, rewards, and achievement orientation. *Journal of Personality and Social Psychology*, 53(6), 1015–1023. doi:[10.1037/0022-3514.53.6.1015](https://doi.org/10.1037/0022-3514.53.6.1015)
- Heider, F. (1958). *The Psychology of Interpersonal Relations*. Hillsdale, N.J: Lawrence Erlbaum.
- Heneman, R., Wang, Z.-M., & Fay, C. (2001). Compensation Systems in the Global Context. In D. S. O. Neil Anderson (Ed.), *Handbook of Industrial, Work & Organizational Psychology - Volume 2* (pp. 77–92). SAGE Publications Ltd.
- Houliort, N., Koestner, R., Joussemet, M., Nantel-Vivier, A., & Lekes, N. (2002). The impact of performance-contingent rewards on perceived autonomy and competence. *Motivation and Emotion*, 26(4), 279–295.
- Ilgén, D. R., Fisher, C. D., & Taylor, M. S. (1979). Consequences of individual feedback on behavior in organizations. *Journal of Applied Psychology*, 64(4), 349–371. doi:10.1037/0021-9010.64.4.349
- Jones, E. E., & Nisbett, R. E. (1972). The actor and the observer: divergent perceptions of the causes of behavior. In E. E. Jones, D. E. Kanouse, H. H. Kelley, R. E. Nisbett, S. Valins, & B. Weiner (Eds.), *Attribution: Perceiving the causes of behavior*. General Learning Press.
- Kelley, H. H. (1973). The processes of causal attribution. *American Psychologist*, 28(2), 107–128. doi:10.1037/h0034225

- Koestner, R., & Losier, G. (2002). Distinguishing Three Ways of Being Internally Motivated: A Closer Look at Introjection, Identification and Intrinsic Motivation. In *Handbook of Self-Determination Research* (Soft Cover Ed.). University of Rochester Press.
- 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. doi:10.1002/job.377
- Lepper, M. R., & Greene, D. (1979). *The Hidden Costs of Reward: New Perspectives on the Psychology of Human Motivation*. John Wiley & Sons Inc.
- Lepper, M. R., Greene, D., & Nisbett, R. E. (1973). Undermining children's intrinsic interest with extrinsic reward: A test of the 'overjustification' hypothesis. *Journal of Personality and Social Psychology*, 28(1), 129–137. doi:10.1037/h0035519
- Lepper, M. R., Henderlong, J., & Gingras, I. (1999). Understanding the effects of extrinsic rewards on intrinsic motivation - Uses and abuses of meta-analysis: Comment on Deci, Koestner, and Ryan (1999). *Psychological Bulletin*, 125(6), 669–676.
- Long, R. J., & Shields, J. L. (2010). From pay to praise? Non-cash employee recognition in Canadian and Australian firms. *International Journal of Human Resource Management*, 21(8), 1145–1172. <http://doi.org/10.1080/09585192.2010.483840>
- Lord, R. G., Diefendorff, J. M., Schmidt, A. M., & Hall, R. J. (2010). Self-regulation at work. In S. T. Fiske (Ed.). *Annual Review of Psychology*, 61, 543-568. Chippewa Falls, WI: Annual Reviews.
- Lord, R. G., & Smith, J. E. (1983). Theoretical, Information Processing, and Situational Factors Affecting Attribution Theory Models of Organizational Behavior. *Academy of Management Review*, 8(1), 50–60. doi:10.5465/AMR.1983.4287658

- Markham, S. E., Scott, K. D., & McKee, G. H. (2002). Recognizing good attendance: A longitudinal, quasi-experimental field study. *Personnel Psychology*, *55*(3), 639–660. doi:[10.1111/j.1744-6570.2002.tb00124.x](https://doi.org/10.1111/j.1744-6570.2002.tb00124.x)
- Marsh, H. W., Lüdtke, O., Muthén, B., Asparouhov, T., Morin, A. J., Trautwein, U., & Nagengast, B. (2010). A new look at the big five factor structure through exploratory structural equation modeling. *Psychological Assessment*, *22*(3), 471.
- Marsh, H. W., Muthén, B., Asparouhov, T., Lüdtke, O., Robitzsch, A., Morin, A. J., & Trautwein, U. (2009). Exploratory structural equation modeling, integrating CFA and EFA: Application to students' evaluations of university teaching. *Structural Equation Modeling: A Multidisciplinary Journal*, *16*(3), 439–476.
- McGraw, K. (1979). The detrimental effects of reward on performance: A literature review and a prediction model. In *Hidden Costs of Reward* (1st ed.). Lawrence Erlbaum.
- Meredith, W. (1993). Measurement invariance, factor analysis and factorial invariance. *Psychometrika*, *58*(4), 525–543. doi:[10.1007/BF02294825](https://doi.org/10.1007/BF02294825)
- Mischel, W., & Baker, N. (1975). Cognitive appraisals and transformations in delay behavior. *Journal of Personality and Social Psychology*, *31*, 254-261
- Morgeson, F. P., & Humphrey, S. E. (2006). The Work Design Questionnaire (WDQ): Developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology*, *91*(6), 1321–1339. doi:[10.1037/0021-9010.91.6.1321](https://doi.org/10.1037/0021-9010.91.6.1321)
- Niessen, C., Sonnentag, S., & Sach, F. (2012). Thriving at work—A diary study. *Journal of Organizational Behavior*, *33*(4), 468–487. doi:[10.1002/job.763](https://doi.org/10.1002/job.763)
- Pekrun, R., Cusack, A., Murayama, K., Elliot, A. J., & Thomas, K. (2014). The power of anticipated feedback: Effects on students' achievement goals and achievement

- emotions. *Learning and Instruction*, 29, 115–124.
doi:[10.1016/j.learninstruc.2013.09.002](https://doi.org/10.1016/j.learninstruc.2013.09.002)
- Peterson, S. J., & Luthans, F. (2006). The impact of financial and nonfinancial incentives on business-unit outcomes over time. *Journal of Applied Psychology*, 91(1), 156–165.
doi:[10.1037/0021-9010.91.1.156](https://doi.org/10.1037/0021-9010.91.1.156)
- Pink, D. H. (2010). *Drive: The Surprising Truth About What Motivates Us*. Canongate Books Ltd.
- Pittman, T. S. (1980). Informational versus controlling verbal rewards. *Personality and Social Psychology Bulletin*, 6(2), 228–233. doi:[10.1177/014616728062007](https://doi.org/10.1177/014616728062007)
- 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*, 65, 539-569
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: applications and data analysis methods*. Thousand Oaks: Sage Publications.
- Richer, S. F., Blanchard, C., & Vallerand, R. J. (2002). A Motivational Model of Work Turnover. *Journal of Applied Social Psychology*, 32(10), 2089–2113.
doi:[10.1111/j.1559-1816.2002.tb02065.x](https://doi.org/10.1111/j.1559-1816.2002.tb02065.x)
- Ross, M. (1975). Salience of reward and intrinsic motivation. *Journal of Personality and Social Psychology*, 32(2), 245–254. doi:[10.1037/0022-3514.32.2.245](https://doi.org/10.1037/0022-3514.32.2.245)
- Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, 43, 450-461.
- Ryan, R. M., Bernstein, J. H., & Brown, K. W. (2010). Weekends, work, and well-being: Psychological need satisfactions and day of the week effects on mood, vitality, and physical symptoms. *Journal of Social and Clinical Psychology*, 29, 95-122

- Ryan, R., & Deci, E. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68–78.
- Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, *57*(5), 749–761.
- Ryan, R. M., Mims, V., & Koestner, R. (1983). Relation of reward contingency and interpersonal context to intrinsic motivation: A review and test using cognitive evaluation theory. *Journal of Personality and Social Psychology*, *45*(4), 736–750.
doi:10.1037/0022-3514.45.4.736
- Rynes, S. L., Gerhart, B., & Parks, L. (2005). Personnel psychology: Performance evaluation and pay for performance. *Annual Review of Psychology*, *56*, 571–600.
- Singer, J. D., & Willett, J. B. (2003). *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence*. OUP USA.
- Snijders, T. A. B., & Bosker, R. (1999). *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling*. Sage Publications Ltd.
- Spence, J. R., Ferris, D. L., Brown, D. J., & Heller, D. (2011). Understanding daily citizenship behaviors: A social comparison perspective. *Journal of Organizational Behavior*, *32*(4), 547–571. doi:10.1002/job.738
- Spreckelmeyer, K. N., Krach, S., Kohls, G., Rademacher, L., Irmak, A., Konrad, K., ... Gründer, G. (2009). Anticipation of monetary and social reward differently activates mesolimbic brain structures in men and women. *Social Cognitive and Affective Neuroscience*, *4*(2), 158–165. doi:[10.1093/scan/nsn051](https://doi.org/10.1093/scan/nsn051)
- Tabachnick, B. G., & Fidell, L. S. (Eds.). (2005). *Using Multivariate Statistics* (5th ed.). Pearson.

- Tang, S.-H., & Hall, V. C. (1995). The overjustification effect: A meta-analysis. *Applied Cognitive Psychology, 9*(5), 365–404. doi:10.1002/acp.2350090502
- Taylor, S. E., & Fiske, S. T. (1978). Salience, Attention, and Attribution: Top of the Head Phenomena. In Leonard Berkowitz (Ed.), *Advances in Experimental Social Psychology* (Vol. Volume 11, pp. 249–288). Academic Press.
- Trevor, C. O., & Wazeter, D. L. (2006). A contingent view of reactions to objective pay conditions: Interdependence among pay structure characteristics and pay relative to internal and external referents. *Journal of Applied Psychology, 91*(6), 1260–1275. doi:10.1037/0021-9010.91.6.1260
- Vallerand, R. J., & Pelletier, L. G. (1992). The Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational & Psychological Measurement, 52*(4), 1003.
- Van Dijk, D., & Kluger, A. N. (2011). Task type as a moderator of positive/negative feedback effects on motivation and performance: A regulatory focus perspective. *Journal of Organizational Behavior, 32*(8), 1084–1105. doi:10.1002/job.725
- Vansteenkiste, M., Sierens, E., Soenens, B., Luyckx, K., & Lens, W. (2009). Motivational Profiles From a Self-Determination Perspective: The Quality of Motivation Matters. *Journal of Educational Psychology, 101*(3), 671–688.
- Weiss, H. M., & Rupp, D. E. (2011). Experiencing work: An essay on a person-centric work psychology. *Industrial and Organizational Psychology: Perspectives on Science and Practice, 4*(1), 83–97. doi:10.1111/j.1754-9434.2010.01302.x
- Zhang, Z., Zyphur, M. J., & Preacher, K. J. (2009). Testing Multilevel Mediation Using Hierarchical Linear Models Problems and Solutions. *Organizational Research Methods, 12*(4), 695–719. doi:10.1177/1094428108327450

Table 1: Correlations between variables, descriptive statistics and reliability coefficients

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
Level 1 (within-person) N = 287													
1 Intrinsic motivation ¹	3.14	1.12	(.88)										
2 Identified motivation ¹	3.21	1.15	.56***	(.80)									
3 Introjected motivation ¹	3.32	1.02	.45***	.40***	(.63)								
4 External motivation ¹	2.65	0.99	-.01	-.01	.26***	(.66)							
5 Reward salience ¹	2.19	1.11	-.01	.01	.14*	.28***	(.86)						
6 Task heuristic ¹	3.13	1.21	.14*	.11	.15**	.08	.12*	-					
7 Day of response	-	-	-.15*	-.05	-.16**	-.14*	.03	-.09	-				
8 Day of week	-	-	-.15*	-.04	-.08	-.09	.06	-.04	.43***	-			
Level 2 (between-person) N = 58													
9 Gender	1.66	0.54	.26***	-.08	-.07	.07	.01	-.16**	-	-	-		
10 Job level	2.93	1.08	.06	.03	-.18**	-.11	.20**	.43***	-	-	-.01	-	
11 Age (years)	44.15	10.00	.05	-.02	.01	-.24**	.02	.23***	-	-	.24***	.28***	-
12 Tenure (years)	9.38	8.39	.20**	.18**	.09	.09	-.09	-.12	-	-	-.19**	-.05	.43***

Notes:

*** p < .001 ** p < .01 * p < .05.

At level 2 diary variables were aggregated to between-person level to examine intercorrelations with demographic variables

¹ Measured on 5-point Likert scale.

TABLE 2a: Multi-level model results for intrinsic and identified motivation

	Intrinsic				Identified			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Level 1: within-person (N = 287)								
Intercept γ_{00}	2.50***	2.69***	2.84***	-0.82	2.65***	2.32***	2.26**	-1.52
Day of week ^a γ_{01}	0.56**	0.56**	0.56**	0.53**	0.16	0.16	0.16	0.15
Day of completion ^b γ_{02}	-0.03	-0.03	-0.03	-0.03	0.00	0.00	0.00	0.00
Incentive salience γ_{03}		-0.02	-0.03	0.02		-0.01	-0.02	0.02
Task heuristic γ_{04}			0.14*	0.16*			0.09	0.10
Saliency * Task heuristic γ_{05}				-0.17*				-0.13*
Level 2: between-person (N = 58)								
Gender γ_{06}	0.39*	0.37	0.39	0.37*	0.25	0.28	0.28	0.25
Job level γ_{07}	0.11	0.09	0.03	-0.44	-0.04	0.00	-0.01	-0.42
Age γ_{08}	-0.01	-0.01	-0.02	-0.03	-0.05	-0.06	-0.07	-0.09
Tenure γ_{09}	0.16	0.16	0.17	0.13	0.12	0.13	0.14	0.11
Between-person motivation γ_{10}	0.39***	0.39***	0.41***	0.31***	0.49***	0.48***	0.48***	0.42***
Model summary								
-2LL	692.05	691.55	686.43	661.85	654.27	653.20	650.80	631.55
Δ -2LL ^c	145.29***	0.50	5.12	24.58***	109.41***	1.07	2.40	19.25***
Level 1 intercept	0.77	0.77	0.76	0.78	0.60	0.60	0.61	0.60
Pseudo R^2 for change	0.10	0.00	0.02	-0.03	-0.03	0.00	-0.01	0.02

See notes under table 2b

TABLE 2b: Multi-level model results for introjected and external motivation

	Introjected				External			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Level 1: within-person (N = 287)								
Intercept γ_{00}	3.19***	2.68***	2.77***	2.49**	2.60***	1.89***	2.02***	1.02
Day of week ^a γ_{01}	0.09	0.11	0.12	0.11	0.07	0.12	0.12	0.11
Day of completion ^b γ_{02}	-0.05*	-0.05*	-0.04*	-0.04*	-0.03*	-0.03*	-0.03*	-0.03
Incentive salience γ_{03}		0.14*	0.13*	0.15*		0.25***	0.25***	0.23***
Task heuristic γ_{04}			0.10	0.11*			0.03	0.03
Saliency * Task heuristic γ_{05}				-0.11				0.13*
Level 2: between-person (N = 58)								
Gender γ_{06}	0.19	0.26	0.27	0.28	-0.18	-0.12	-0.11	-0.10
Job level γ_{07}	0.10	0.16	0.12	0.08	0.23	0.31	0.29	0.17
Age γ_{08}	0.02	0.02	0.01	0.01	-0.01	-0.05	-0.05	-0.07
Tenure γ_{09}	0.18*	0.19*	0.20**	0.19*	0.10	0.13	0.13	0.15*
Between-person motivation γ_{10}	0.40***	0.42***	0.42***	0.41***	0.31***	0.24**	0.23**	0.21*
Model summary								
-2LL	644.84	634.57	630.73	627.01	761.22	734.24	733.64	726.90
Δ -2LL ^c	159.93***	10.27**	3.84	3.72	47.94***	26.98***	0.60	6.74*
Level 1 intercept	0.58	0.57	0.56	0.56	0.60	0.55	0.55	0.55
Pseudo R^2 for change	0.03	0.02	0.02	0.01	0.02	0.08	0.00	0.00

Notes:

Model 1 = control variables; model 2 = hypothesis 1; model 3 = task heuristic (as a control); model 4 = (hypothesis 2).

^aMonday, Tuesday etc. ^b Days 1 - 10 of diary period. ^c χ^2 test used for significance of Δ -2LL based on Δ degrees of freedom (df). Δ df for model 1 = 7, Δ for models 2,3 and 4 = 2 (fixed effect was added at both level 1 and level 2).

* $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 1: Impact of interaction between verbal reward salience and task heuristic on intrinsic motivation

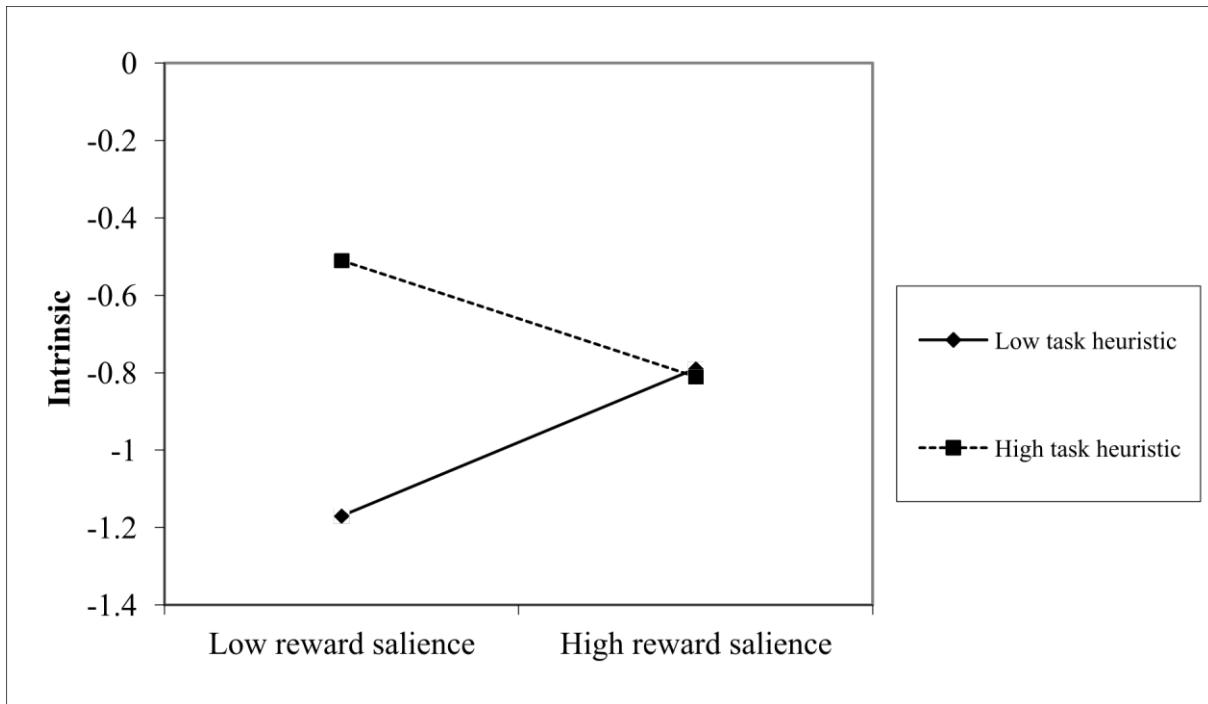


Figure 2: Impact of interaction between verbal reward salience and task heuristic on identified motivation

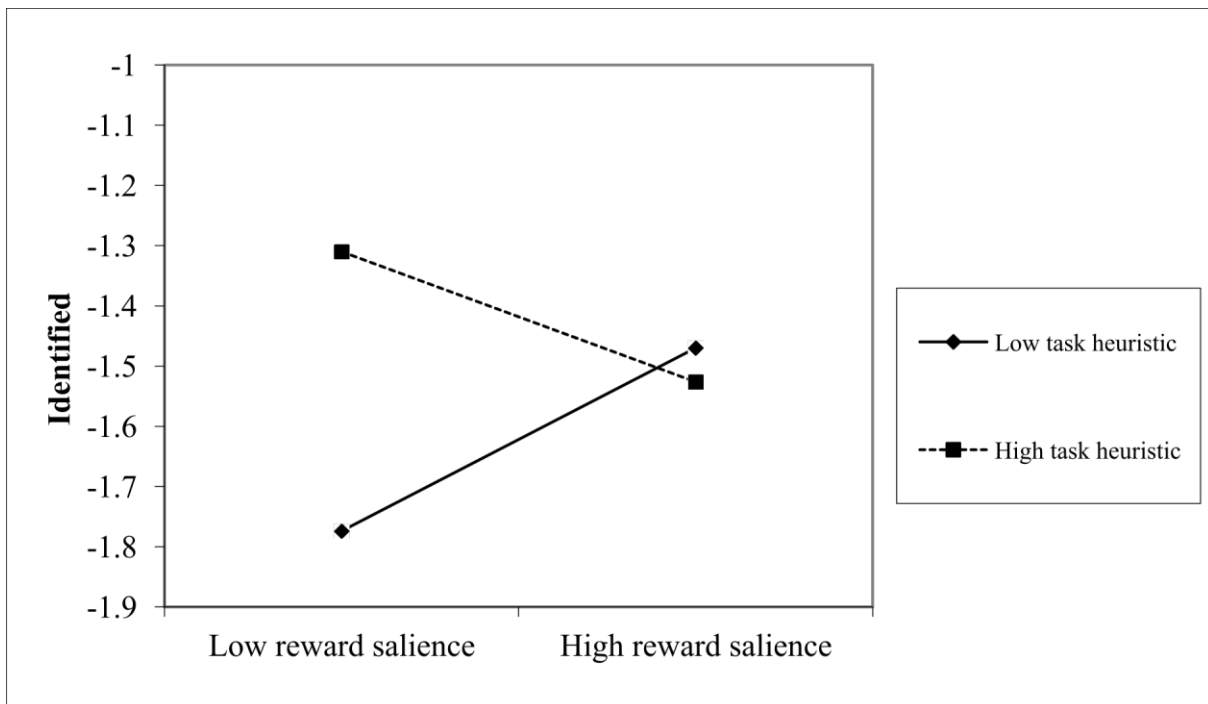


Figure 3: Impact of interaction between verbal reward salience and task heuristic on external motivation

