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Trainees' perceived knowledge gain unrelated to the training domain: the joint action of impression management and motives

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Trainees' knowledge gains represent an important outcome in human resource development. In this research, we tested a model examining the joint influence of social desirability (impression management, self-deception) and motives (need for power, need for approval) on trainees' self-reported knowledge gain. We conducted a study with respondents who reported information related to individual differences and took a training program and reported their knowledge gain in domains that were both related and unrelated to the training program. Trainee unrelated knowledge gain was a function of the* joint *influence of individual* predispositions *(to impression manage or engage in self-deception) and* motives *(need for power, approval). Our findings suggest that impression management and self-deception are insufficient to influence respondents' reports of unrelated knowledge but do yield predictable patterns when examined with respondents' motives. We discuss these results and implications for human resource development research and practice.

The validity of self-reported knowledge gain is one of the most common limitations in human resource development (HRD) research reporting learning outcomes. Despite researchers' call for multirater (e.g., peer, manager, trainer) and objective (content-based) assessments in an attempt to triangulate scores and increase the precision of

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estimating learning outcomes, trainee self-reported data continue to be a common source of evaluation in many studies (cf. Arthur *et al*., 2003; Taylor *et al*., 2009). Although asking respondents to self-report knowledge gain seems to be advantageous (i.e., easy and efficient data collection), it also comes with the potential disadvantage of response bias, an effect diminished when using other rating sources or methods.

Collectively, research on self-assessment of knowledge (or of training transfer) has been less encouraging. When measuring learning compared with evaluating affective and behavioral outcomes, Sitzmann *et al*. (2010) found that knowledge self-assessment was more strongly associated with affective outcomes (e.g., reaction, motivation, self-efficacy) than with cognitive learning. This was the case even when learners were provided feedback on how to provide a more accurate self-assessment. Evidence of potential bias in self-reporting can also be gleaned from recent meta-analytic work. Indeed, Blume *et al*. (2010) found that self-ratings of training transfer were associated with self-reported predictors measured at the same time more strongly than nonself-ratings, suggesting problems in the use of self-reported information. From another direction, in assessing the effectiveness of managerial training, Taylor *et al*. (2009) found the largest population effect size estimates were for trainees' self-ratings (0.64), followed by ratings from superiors (0.53), peer (0.26) and then subordinates (0.13). Regarding the differential effect sizes across rating sources, Taylor *et al*. (2009) suggested that trainees' self-ratings likely suffered from trainees' perceptual biases.

Taken together, this research casts doubt on self-assessments as a valid measure of learning, suggesting instead that they may play a more reliable role in measuring affective outcomes. Sitzmann *et al*. (2010) speculate that self-assessments are influenced more by how learners *feel* about their experience in training rather than their ability to provide a valid estimation of how much they have learned. Despite its problems, the frequent use of self-reported knowledge gain poses important validity issues for HRD researchers and practitioners. Such issues are even more prominent in situations where self-reported outcomes (of learning or of training transfer) are the only metric used to evidence training success.

To render a clearer picture of the utility and efficacy of knowledge gain self-assessment as a measure of learning, we clarify the conditions under which learners *overestimate* knowledge gains. Prior research has already established in both primary (Chiaburu *et al*., 2010; Frese *et al*., 2003; Haccoun & Hamtiaux, 1994) and meta-analytic (Sitzmann *et al*., 2010; Taylor *et al*., 2005) work that individuals tend to overestimate a number of training outcomes, including their knowledge gain. Despite advances in establishing the existence of overestimation, additional theory building and empirical testing are necessary. As an overarching framework, we situate our study within a socially desirable responding (SDR) model, which explains how respondents – and, in our particular case, learners – inflate their own idea of competence to gain social acceptance (Crowne & Marlowe, 1960; Paulhus, 1984; Paulhus & John, 1998).

Prior research has indeed substantiated meta-analytically, across respondents and settings, that social desirability, assessed broadly, is positively related to training performance (Ones & Viswesvaran, 1998; Ones *et al*., 1996). Although this result is valuable and informative, finer-grained models connecting social desirability with training outcomes are necessary to explain this positive relationship. For example, in discussing the positive relationship between social desirability and instructor-rated training performance, Ones *et al*. (1996) suggest trainees' desire to self-enhance as an explanation. We build on this observation in several ways. First, if distortions in training outcomes originate from trainees' desire to self-enhance (as opposed to their self-deception) their impression, these two dimensions of social desirability need to be separated as predictors. We do so in the current study.

Second, although the SDR model offers a parsimonious explanation for possible causes of response bias, response inflation behavior can also depend on respondents' motives – especially in a training setting (Ones *et al*., 1996) – thus being only partially captured by respondents' impression management and self-deception forms of SDR (i.e., Leak & Parsons, 2001; Paulhus *et al*., 2003). Our introduction of motives as forces modifying the relationship between social desirability and training outcomes is

consistent with empirical findings across studies, showing the lack of moderators situated outside the individual – at the job level (Ones & Viswesvaran, 1998; Viswesvaran *et al*., 2001). Thus, theory-based research of potential modifying aspects situated within the individual, as motives, rather than within the context, may be more productive. From a theoretical standpoint, drawing on the insight that behavior can be optimally situated at the confluence of both traits and motives (i.e., Winter *et al*., 1998), we situate our propositions within a broader theoretical framework of SDR.

More specifically, we propose and test the joint influence of respondents' SDR propensities (impression management and self-deception) and of their motives (need for power and need for approval) on their overestimation of self-reported knowledge gain. As noted in previous research, one approach to assess individuals' overestimating of self-reported knowledge gain is to include *untrained constructs* (e.g., behaviors *not* addressed by training) in evaluation measures (Taylor *et al*., 2009). In their comprehensive review of training and HRD literature, Aguinis and Kraiger (2009) noted that several studies (cf. Aguinis & Branstetter, 2007; Frese *et al*., 2003; Haccoun & Hamtiaux, 1994) included an untrained knowledge measure to enhance the rigor of their assessment. To disentangle perceptions of actual learning from inflated report of learning, we follow prior work and measure response bias by focusing on untrained constructs as outcomes. A review of our theoretical framework and study hypotheses follows.

Theoretical framework and study hypotheses

Impression management and self-deception

According to extensive research by Paulhus (1984, 2002) on response bias, SDR is conceptualized along two fundamental dimensions: an intentional attempt to project a favorable self-image (*impression management*) and a tendency to claim positive attributes and deny negatives ones (*self-deception*). Both impression management and self-deception may lead to the possibility of knowledge gain overestimation. This is due to respondents' attempts to intentionally create a certain impression or to their unrealistic, but honestly held, view of their own competence. Despite the possibility for impression management and self-deception to exert a direct influence on individuals' overestimation of knowledge gain, this idea is not entirely consistent with current empirical findings. The extent to which impression management and self-deception relate to response bias has been inconsistent across studies (i.e., Leak & Parsons, 2001; Paulhus *et al*., 2003). Indeed, both SDR components may be situation specific: Paulhus and Reid (1991) noted that impression management is heavily dependent on situational cues and may vary across situations, and von Hippel and Trivers (2011) argued that self-deception can manifest itself in a variety of psychological processes. Research on the application of personality measures in personnel selection settings has indicated that SDR possibly functions in a complex manner rather than affecting all personality traits in a similar fashion (i.e., Ones *et al*., 1996). For example, if SDR results in response bias on different personality scales, correcting for SDR can recover uninflated personality scores, yet research has shown that correcting for SDR in responding is ineffective in producing scores that approximate honest scores (Ellingson *et al*., 1999).

The extant literature also points toward the difficulty to simplistically expect a direct and positive association between either impression management or self-deception and overestimation of knowledge gain. For example, Dunning *et al*. (2004) suggested that learners are likely to overestimate their learning based on preconceived beliefs about their own competence. Yet their 'top-down' approach (p. 84) of individual beliefs about competence generated only a modest relationship to actual (objectively derived) performance across multiple studies and contexts, resulting in individuals being an imprecise appraiser of their own intellectual skills and suggesting that other factors may influence why individuals overestimate their knowledge gain.

Although learner beliefs about their own competence and their desire to look good in the eyes of others can inflate subsequent reports of their perceived learning, the exact

conditions that facilitate or hinder the effect of SDR remain unexplored. We next turn to trait-activation theory (Tett & Burnett, 2003; Tett & Guterman, 2000) as a lens to understand the influence of SDR. Directly relevant to the current focus, trait-activation theory reconciles the search for universal influences of traits with situational specificity of behaviors. Specifically, Tett and Burnett (2003) proposed that the linkage between a particular personality trait and a relevant behavior can be moderated by organizational, social and task cues. Indeed, social cues have been found to influence how impression management affects behavior (Uziel, 2010). Therefore, we examine social or task cues in the current context as moderators of the degree to which impression management and self-deception can lead to inflated self-report of knowledge gain. In particular, we turn to individuals' motives, provided that such motives can give rise to idiosyncratic interpretation of ambiguous situations (Holmes, 2002; Horowitz *et al*., 2006) and, furthermore, may interact with traits to influence behaviors (Winter *et al*., 1998).

Individuals are operating in (and taking cues from) both task and *social* domains, and direct their attention toward cues concerning advantageous behaviors. The interpretation of the task and social context may be 'in the eyes of the beholder' and depend on the motives of the individual. The same social context can be perceived in different lights by individuals with different motives, resulting in different behaviors (i.e., Terhune, 1968). Paulhus and John (1998) discussed two underlying mechanisms for individuals' self-deceptive styles: agentic values and need for power, versus communal values and need for approval. Even though Paulhus and John (1998) aligned need for power and self-deception on the egoistic self-deceptive dimension, and need for approval/affiliation and impression management on the moralistic self-deceptive dimension, such alignments are not the only ones possible and need to receive further support in the literature (cf. Kacmar *et al*., 2004). In what follows, we argue for the possibility of a complementary process underlying the influence of SDR and motives.

Specifically, need for power and need for approval affect how individuals interpret and perceive personality and individual assessment, thus giving rise to the effects of self-deception and impression management. The training context is likely ambiguous, with learning potentially associated with perceptions of increased prestige (power) and desirable evaluation (approval). Thus, trainees are presented with opportunities to interpret the training context in different manners consistent with their motives. Taken together, when individuals evaluate themselves and their knowledge gain, their (potentially biased) self-assessment is likely cognitively reinterpreted (a process known as motivated cognition) based on specific motives influenced by incoming social information (Dunning, 1999). To describe this relationship, we present hypotheses capturing the joint influence of SDR and motives.

Joint influence of impression management and need for power

The effect of individuals' impression management tendencies on the unrelated knowledge gain needs to be interpreted in light of their need for power. In what follows, we provide arguments for their joint influence. Impression management is defined as an individual's tendency to consciously and purposefully give favorable self-descriptions to others (Paulhus & Reid, 1991), and includes a myriad of enhancement behaviors (i.e., favor rendering, self-promotion, boasting, ingratiation) used to create a desirable impression. Situations where individuals typically use impression management tactics are in job interviews and during performance appraisals (Bolino *et al*., 2008), where the stakes are high and can lead to consequential outcomes.

Research examining the contexts in which individuals commonly use impression management behaviors has primarily focused on dyadic interactions that occur during the interview or appraisal meetings. However, as a precursor to these contexts, organizations are likely to assess individuals' qualifications (i.e., for a job candidate) or to gauge employees' learning outcomes resulting from training (i.e., for performance appraisal purposes), in an effort to assess applicants' or employees' overall competence. It is in these situations that individuals are also likely to engage in more desirable responding given the expected outcomes of creating a favorable impression and the

potential rewards of gaining more power, influence or status. More relevant to our study, these tendencies can also become manifest in training settings. In fact, as noted by Ones *et al*. (1996) who reported a positive relationship of 0.19 between social desirability and training performance (rated by instructors), 'it is likely that self-enhancement ability is an aspect of social competence. Those individuals who distort their responses in a socially desirable direction may be the same individuals who can impress instructors [d]uring their training periods' (p. 668). Such desire to impress reflects, at least in part, a need for power positioned in our model as enhancing the effect of impression management on unrelated training outcomes.

Need for power – an agentic motive – is characterized by the concern to exert impact on other people's behavior or emotions (Winter, 1973). When trainees had high levels of need for power, they will tend to view the training context as an opportunity for them to gain status and prestige. When these trainees have a dispositional tendency to engage in impression management, they will likely overreport their knowledge gain as a means to achieving the perceived heightening of status. In other words, trainees' impression management will be activated in the training context when they are generally motivated to seek out power and influence over others. Therefore, we propose that individual need for power will accentuate the relationship between impression management and response bias in situations where perceived ability is used as an outcome. This is consistent with the trait activation theory: when need for power accentuates the task and social context correspondingly, high impression management can exert stronger influence. It is also in line with prior work positing that a desire to impress may underlie positive relationships between social desirability and training outcomes (Ones *et al*., 1996). Thus, we formally hypothesize,

H1: Trainees' need for power will strengthen the relationship between impression management and their overestimationof untrained knowledge, such that the relationship is accentuated for trainees with stronger need for power.

Joint influence of self-deception and need for approval

Unlike intentional attempts to self-enhance based on impression management, the other SDR dimension (self-deception) represents an individual's response tendency to cast oneself in a favorable light, often without an explicit intention to do so (Paulhus & John, 1998). Unaware of their own self-deceptive beliefs (Dunning, 2005; Dunning *et al*., 2004), individuals may hold unrealistic positive self-evaluations of their knowledge and skill, and this may lead to others liking them more (Crowne & Marlowe, 1960). Balcetis (2008) describes such processes as 'intense cognitive cookery' (p. 362) to explain how individual motivations can intervene at basic stages of information processing to support self-deceptive beliefs and behaviors.

Similar to impression management, self-deceptive practices may be more acute when individuals are prompted to affiliate, connect with or seek approval from others. For example, in a study examining personality characteristics and dishonest behavior, McLeod and Genereux (2008) found that individuals with a high need for approval were much more likely to lie in order to gain social acceptance than for other reasons (e.g., avoid conflict, self-gain, altruism). They were also more likely to perceive engaging in lying as an acceptable practice, if done to win favor with others. As the task and social context being perceived as highly communal by individuals high on need for approval, the corresponding effect of self-deception is triggered. Thus, as overestimating knowledge can be seen as a form of misrepresenting reality, we posit that a trainee's need for approval will accentuate the relationship between self-deception and self-reported knowledge gain. Thus, we formally hypothesize,

H2: Trainees' need for approval will strengthen the relationship between self-deception and their overestimation of untrained knowledge, such that the relationship is accentuated for trainees with stronger need for approval.

Methods

Sample and procedures

Respondents were 133 undergraduate students (male: $N = 81$; female: $N = 52$) who participated in the study in exchange for course credit. They were enrolled in an undergraduate business class at a large university in the southwestern United States. The mean age of the participants was 19.56 years (standard deviation [SD] = 1.04), a slight majority was men (61 per cent), and 18 per cent was of non-Caucasian ethnicity. Participants had an average of 22.7 months of work experience (SD = 19.6) and an average of 3.4 months of supervisory experience (SD = 9.40).

The study was conducted using computer-based materials. To diminish participant suspicion and to separate measurement in time (Podsakoff *et al*., 2003), participants were informed that their participation will consist of two ostensibly unrelated parts, labeled as such in the materials (Higgins *et al*., 1977). In part one, they were asked to provide information about individual differences (desirable responding: impression management and self-deception, as well as motives: need for power and need for approval, described hereafter). The desirable responding items and the motive items were separated by other individual difference measures (i.e., a measure of five-factor model personality traits) not used in this study. In the same first part, participants rated their self-perceived knowledge, skills and abilities on making business plans, which was the domain of the training intervention, used in the second part. Participants also provided information on knowledge unrelated to this training domain, described in more detail hereafter.

We conducted the second part of the study 2 weeks after the first. We did so because when both predictor and criterion data are obtained from the same source, spatial separation has shown to diminish the salience, relevance and availability of respondents' previous responses (Podsakoff *et al*., 2003). The second part, ostensibly unrelated to the first, was presented as a new activity and framed as aiming to determine 'the extent to which learning depends on trainees' personality and other individual preferences and beliefs'. During this second part, participants underwent a 20-min online training program detailing how to create a business plan. To increase their attention to the program content, participants were instructed not to take notes and to follow the instructional material in the order presented. Participants' instructional time was recorded. After completing the training, the computer prompted them to self-assess their knowledge, skills and abilities about making business plans. The knowledge assessment included both training-related and unrelated questions as described hereafter. Finally, respondents took a declarative knowledge test (16 questions) pertaining to the training and used to control for their objective learning. Participants were then debriefed, thanked and asked to recheck the information necessary to receive extra credit. Corresponding measures are described hereafter.

Measures

SDR

Impression management and *self-deception* were measured using Paulhus's (1991) balanced inventory of desirable responding (BIDR). We used 20 items from the BIDR to assess people's tendency to consciously adopt *impression management* ($\alpha = 0.84$) and another 20 items to measure individuals' propensity to unconsciously engage in *self-deception* ($\alpha = 0.69$). Sample items are: 'I never cover up my mistakes' (impression management) and 'I am fully in control of my fate' (self-deception). Participants indicated their agreement with each statement on a Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Motives

Need for power ($\alpha = 0.75$) was measured with Steers and Braunstein's (1976) five-item scale. A sample item reads, 'I find myself organizing and directing the activities of

others'. *Need for approval* ($\alpha = 0.84$) was operationalized with Martin's (1984) five-item measure. A sample item is 'In order to get along and be liked, I tend to be what people expect me to be'. The same 7-point Likert scale described above was used for these measures.

Untrained knowledge

In line with prior research (i.e., Chiaburu *et al*., 2010; Frese *et al*., 2003; Haccoun & Hamtiaux, 1994), our dependent variable consisted of items *unrelated* (untrained) to the content domain the trainees prepared for. Specifically, participants responded to nine questions assessing knowledge content *not covered* in the training session. To assess perceived gain on untrained knowledge, the same knowledge content items appeared twice, once before the training and once after the training. To convey to our respondents that they have to report their knowledge resulting from the training program they took, we emphasized in the post-training assessment that 'We are interested to what extent you have specific knowledge *as a result of the training program*'. The questions were designed to be unambiguously unrelated to the training content (developing business plans), such as 'design a human resource information system aligned with the organization's mission and vision', and participants responded to each item using a 7-point Likert scale ranging from '*not at all*' to '*to a great extent*'. Estimated reliability for the scale was 0.90 for the pretraining assessment and 0.93 for the post-training assessment.

Control variables

We used the participants' gender and grade point average (GPA) as control variables. We also controlled for participants' actual learning using an objective declarative knowledge test after the training. The declarative knowledge test consisted of 16 multiple choice items, administered to assess the extent to which participants know the trained material. In a prior study, average participant scores on a similar test (one question was added in the current version) were 75 per cent of the total score. An illustrative question is 'Some argue that the ___ is the most important part of a Business Plan and should be written last', followed by four multiple choices 'executive summary', 'description of products and services', 'organization and management' and 'background research'.

Due to the low-stake nature of the current study, respondents may fail to fully comply with survey instructions and produce insufficient effort responses (Huang *et al*., 2012). Huang *et al*. (2012) demonstrated that insufficient effort responding may exhibit overly fast response times due to the lack of cognitive processing. Thus, we recorded the amount of time respondents spent on the self-report of knowledge items as a means to detect insufficient effort responding. The response time index tapped on the same underlying construct as the other indexes of insufficient effort responding and also correlated strongly with them (Huang *et al*., 2012). Therefore, we adopted the same 2-s-per-page criterion and identified 20 suspect insufficient effort respondents in the current dataset who responded in an overly fast fashion to either pretraining or post-training items. Thus, we excluded their responses from further analyses.

Results

Prior to the hypothesis testing, we conducted confirmatory factor analysis to ascertain the validity of the operationalization for the predictor constructs and specifically the extent to which items for impression management, self-deception, need for power and need for approval measured their respective constructs appropriately. Considering the modest sample size in the present study (cf. MacCallum *et al*., 1999), we adopted the partial disaggregation approach by Williams and O'Boyle (2008) and created five random item parcels for impression management and self-deception (four items per parcel), and two random item parcels for need for power and need for approval (two to

three items per parcel). An expected four-factor model yielded satisfactory fit to the data, CFI = 0.91, TLI = 0.88, χ^2 (71) = 116.58, RMSEA = 0.075. All factor loadings were higher than 0.50, $p < 0.001$.

Table 1 presents descriptive statistics and intercorrelations for study variables. It is worth noting some significant relationships among the predictor variables. First, impression management and self-deception were moderately associated, $r = 0.46$. Such positive association has been reported in prior studies (i.e., Barrick & Mount, 1996; Berry *et al*., 2007). Need for approval and need for power shared a moderate negative association, $r = -0.36$, which suggests that individuals who value power and status are less likely to also focus on seeking approval from others. Finally, self-deception had a negative moderate association with need for approval, $r = -0.30$, which again was reported in earlier studies and suggested the undesirable nature of reporting such needs (cf. Paulhus & Reid, 1991). Taken together, however, the pattern of correlations among predictors offered a strong evidence for discriminant validity (Campbell & Fiske, 1959).

We proceeded to inspect correlations among other study variables. As expected, pretraining and post-training self-assessments of untrained knowledge were significantly related, $r = 0.45$ (moderate association; Davis, 1971). Interestingly, whereas the pretraining self-assessment of untrained knowledge was unrelated to the declarative knowledge test score, the post-training self-assessment was positively associated with the objective test score, $r = 0.34$ (moderate association, Davis, 1971). It appeared that trainees who learned better also tended to perceive themselves to possess knowledge in the untrained domain. The post-training self-assessment of untrained knowledge was not related to impression management, self-deception or need for approval, but it was positively related to need for power. The effect was, however, relatively small ($r = 0.21$; low association, Davis, 1971).

To further ascertain the extent of change in trainees' self-assessment, a paired-samples *t*-test was performed. The results indicated that the increase of self-assessment was significant, $t_{(112)} = 6.54$, $p < 0.001$, Cohen's $d = 0.62$. Thus, after the training, trainees perceived an overall increase in the untrained knowledge domain.

We conducted moderated regression to examine the two hypotheses simultaneously. To capture the inflation of self-assessment of untrained knowledge, we controlled for

Table 1: Descriptive statistics and intercorrelations for study variables

	1	2	3	4	5	6	7	8	9
1. Preuntrained knowledge	0.90								
2. Gender (Male)	0.04	–							
3. GPA	–0.01	0.06	–						
4. Impression management	–0.03	–0.02	0.05	0.84					
5. Self-deception	0.13	0.06	0.22	0.46	0.69				
6. Need for approval	–0.01	–0.05	–0.27	–0.15	–0.30	0.84			
7. Need for power	0.31	–0.06	0.06	–0.02	0.16	–0.36	0.75		
8. Declarative knowledge test	–0.11	0.09	0.02	0.06	0.14	0.03	–0.12	–	
9. Postuntrained knowledge	0.45	0.03	–0.08	–0.06	0.06	0.10	0.21	0.34	0.93
M	3.56	0.58	3.14	4.12	4.44	3.35	4.74	8.63	4.29
SD	1.16	0.50	0.56	0.90	0.60	1.14	0.93	2.69	1.08

Note: Cronbach's alphas are presented on the diagonal.
$n = 113$. When $|r| \geq 0.19$, $p < 0.05$; when $|r| \geq 0.25$, $p < 0.01$; $|r| \geq 0.31$, $p < 0.001$.
GPA = grade point average, SD = standard deviation, M = mean.

pretraining self-assessment and distinguished it from post-training self-assessment. Because the focus of the study is the inflation of self-assessment, we also decided to remove the proportion of variance associated with actual learning. To summarize, in a hierarchical regression model, we controlled for (1) gender, GPA and pretraining self-assessment of untrained knowledge and for (2) declarative knowledge test score in the first two blocks. We then entered mean-centered need for power, need for approval, impression management and self-deception in the third block and added the two interaction terms in the last block of analysis.

Results of the moderated regression are presented in Table 2. In support of the hypotheses, the inflation of untrained knowledge was influenced by both impression management × need for power and by self-deception × need for approval. Together, the two interactions explained 6 per cent of additional variance in the dependent variable. To understand in greater detail the nature of the interactions, we plotted them in Figures 1 and 2. Following the common practice in plotting interactions involving continuous variables, we used values that were 1 SD below and above the mean for low and high scores on each variable (Cohen *et al*., 2003).

Table 2: Results of moderated regression analysis predicting post-training self-assessment of untrained knowledge

	Block 1		Block 2		Block 3		Block 4	
	β	*p*	β	*p*	β	*p*	β	*p*
GPA	–0.08	0.36	–0.08	0.29	–0.05	0.56	–0.07	0.37
Gender (Male)	0.00	1.00	–0.04	0.65	–0.02	0.79	–0.06	0.47
Preuntrained knowledge	0.45	0.00	0.48	0.00	0.44	0.00	0.44	0.00
Declarative knowledge test			0.40	0.00	0.41	0.00	0.42	0.00
Impression management					–0.03	0.74	–0.02	0.77
Self-deception					–0.02	0.81	–0.06	0.55
Need for approval					0.15	0.10	0.03	0.78
Need for power					0.16	0.08	0.02	0.82
nApproval × self-deception							0.23	0.01
nPower × impression management							0.18	0.03
ΔR^2	0.21		0.16		0.03		0.06	
p for ΔR^2	<0.001		<0.001		0.29		0.01	

GPA = grade point average.

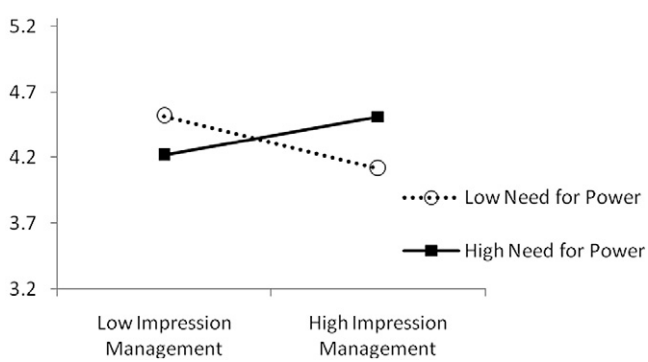

Figure 1: Impression management moderated by need for power in predicting inflation of untrained knowledge.

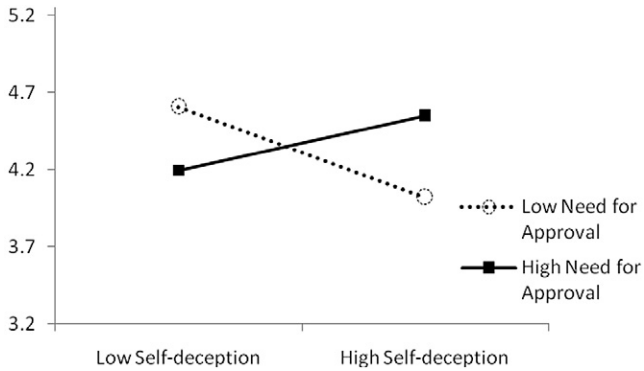

Figure 2: Self-deception moderated by need for approval in predicting inflation of untrained knowledge.

Figure 1 depicts the interactive effect between impression management and need for power on self-assessment of untrained knowledge. As hypothesized, impression management had a positive influence on unrelated self-assessment when the trainee also had a strong need for power. In contrast, impression management's effect was negative when the trainee had a low need for power. Figure 2 presents the moderating role of need for approval on the effect self-deception. A similar pattern emerged in that self-deception had a positive effect on unrelated knowledge assessment when the trainee also had a high need for approval, whereas the effect of self-deception was negative when the trainee had a low need for approval. As predicted, SDR interacts with motives to influence inflation of knowledge self-assessment.

Discussion

Consistent with prior studies using criteria other than respondents' reports of learning (i.e., Viswesvaran *et al*., 2001), we proposed that SDR is insufficient to produce biased estimates in respondents' perceptions and reports of knowledge gain in an untrained domain. In other words, respondents' 'superhero-like' (agentic, egotistic or impression management-related) and 'saint-like' (communal, moralistic or self-deception-based; Paulhus & John, 1998) tendencies would be *on their own* insufficient to bias reports of knowledge gain. However, building on trait activation theory (Tett & Burnett, 2003), we further theorized that respondents' predispositions can be enhanced by corresponding agentic (need for power) and communal (need for affiliation) motives, with the propositions largely confirmed by our data. We next discuss related theoretical and practical implications of our findings.

Theoretical and practical implications

Our results suggest several theoretical and practical implications for HRD concerning the role of SDR in learner overestimation of knowledge gain. First, our findings expand the conceptual understanding of social desirability and response bias by examining their joint influence with respondents' motives. As previously examined in the literature, learners' oft inaccurate beliefs about their own competence are influenced by personality traits, dispositional factors and situational cues from others concerning acceptance or approval of that performance (Berry *et al*., 2007; Critcher & Dunning, 2009; Dunning *et al*., 2004; Steenkamp *et al*., 2010). By examining motives as a boundary condition, we extend current findings on predictors of response bias and establish the extent to which overestimation can vary based on learners seeking to fulfill certain inner needs (e.g., for power, approval). Our findings also extend Paulhus and John's (1998) important work on the conditions under which SDR (impression management,

self-deception) operates. Specifically, impression management tendencies do not lead to overreporting of knowledge gain for all learners or trainees irrespective of their motives. This is clear as revealed by the corresponding nonsignificant zero-order correlation between impression management and respondents' reports of untrained knowledge. Yet for individuals with high need for power, impression management tendencies will more readily translate into reports of untrained knowledge due to their need to demonstrate dominance, status and mastery. Interestingly, a parallel pattern was uncovered for self-deception, a response style not associated in the current literature with participants' reports of unrelated knowledge gain. When individuals are highly motivated to seek approval or affiliation, their self-deceptive tendencies are more likely to lead to increases in unrelated knowledge gain reporting. This is due to their inclination to seek approval, which (per our study results) operated in conjunction with self-deception. Because need for power and for approval have been connected with agentic and communal tendencies (Paulhus & John, 1998), further research should examine the extent to which situational constraints reflecting agency and communion result in the same response pattern, an issue on which we elaborate hereafter.

It is also noteworthy that the context of the current study is analogous to a weak situation (Meyer *et al*., 2010; Mischel, 1977) with no actual constraints on how one should report or estimate his or her knowledge gain and, more importantly, with no explicit consequences of one's report. In organizational settings, however, the role of contextual demands cannot be ignored. For example, it is likely that SDR by motive interactions can be influenced by a competitive organizational training context, where most trainees perceive the pressure (e.g., loss of status, rewards, promotion opportunities) to overreport learning to avoid possible repercussions for failing to master the training content. More importantly, the extent to which organizational or specific training contexts emphasize agentic or communal characteristics may also affect how trainees engage in impression management and self-deception.

Future HRD research should examine these same relationships in applied settings, especially on the moderating influence of organizational culture on individual motives. Competitive or relational-oriented cultures, such as sales or customer-service industries, would be a fertile ground to examine SDR by motive interactions on response bias. Likewise, individual cultural predispositions may also influence SDR. For example, Lalwani *et al*. (2009) found that individuals prescribing to an individualistic culture were more likely to engage in self-deceptive practices by maximizing positive outcomes, whereas the use of impression management was more likely from individuals in collectivist cultures in attempts to prevent or manage negative outcomes. Although Lalwani *et al*. (2009) used a student sample, their results offer preliminary support for the pivotal role culture (organizational, social, group) can have in the development of individual motives and, in turn, subsequent behaviors seeking to fulfill those needs.

A practical implication of explicating the relationship between SDR and motives is in organizational selection and recruitment processes (interviewing) and, closer to the issues examined in this study, in HRD programs that include training. Although prior work has found that individuals' attempts at creating a favorable image do result in more positive performance appraisals, post-training reviews, increased job offers and successful interviewing performance (Bolino *et al*., 2008), failure to live up to that image at a subsequent point in time may result in wasted expenditures on job selection and any subsequent career development investments (i.e., training, leadership development, coaching). In terms of selection (job or training/development), organizations could minimize the risk of individuals portraying a less than authentic image by using structured interviews (to lessen the opportunity for interviewer/interviewees to veer from job-related questions), triangulating impressions using multiple rating sources and collecting performance data over time to correspond initial interview ratings with actual job performance (Barrick *et al*., 2009). Organizations can train managers on how to recognize individual motives (power, approval) and how these may result in inflated self-reports of ability so to reduce the effects of impression management attempts in assessments (Treadway *et al*., 2007). As suggested by Chiaburu *et al*. (2010) in their

study on personality traits and response bias, 'functional deficiencies' (p. 389) such as excessive motives toward not appearing inadequate for fear of losing influence or approval by others are likely to prove useful contexts for distorted ratings of acquired knowledge and skills across assessment settings (interview, job performance, training outcomes). Thus, organizations, and particularly HRD professionals, managers, and coworkers responsible for assessing and observing performance should be vigilant about validating self-reports of learning with actual and varied evidence of knowledge gain.

Our finding is also particularly important not only for future research examining the multiple influences on response bias but also for HRD academics and practitioner efforts to teach learners how to accurately self-assess their own performance. In a study on faking job experience during interviews, Levashina and Campion (2007) found over 90 per cent of undergraduates surveyed reported misrepresenting information in an effort to convey a more positive image. Clearly, holding accurate beliefs about one's knowledge and performance is an important indicator of an individual's moral judgment and ability to self-regulate behavior in varying contexts, especially those situations where holding distorted perceptions or overconfidence in ability could result in adverse outcomes (i.e., ethical violations, job errors and behavioral misconduct). For example, there is a growing need to develop global leaders who can successfully build relationships and broker agreements with international counterparts. Although leaders may participate in multiple developmental opportunities to enhance their cross-cultural knowledge and behaviors, they will likely experience moments of uncertainty about regional practices and customs. Rather than 'fake it' and risk offending their host country colleagues, leaders need to honestly assess their knowledge gap and seek out additional resources to avoid unintentionally sabotaging business relationships. Thus, individuals' ability to hold an accurate view of knowledge and ability and to effectively remedy cognitive gaps is a core competency of developing professional acumen.

By extension, these findings have implications for training transfer, as an increasing number of post-training reports of performance are based on self-assessments (Burke & Hutchins, 2008; Grossman & Salas, 2011). As noted by Ford *et al*. (2011) 'meaningful measures of performance' (pp. 15–18) need to be created to estimate training transfer especially in training programs addressing critical competency areas and/or programs on sensitive topics. Self-reports seem to be poorly equipped for such self-evaluations of knowledge – as shown in this study – or of transfer as previously suggested and empirically demonstrated (i.e., Taylor *et al*., 2009). Although self-reports were found to explain a larger effect on training outcomes when training included opportunities for practice, when content was a derived primarily task or skill-based analysis and when a transfer outcome measure was used rather than judging transfer based on general job performance (Taylor *et al*., 2009), their use as the sole indicator of training transfer is still suspect. Thus, our research also sheds light on the utility of using an untrained constructs measure to assess training participants' response bias. Instead of using a control group, a design with potential problems and difficulties with implementation in most situations (i.e., field settings), the untrained measure represents a parsimonious and efficient method for assessing potential validity issues associated with using same source data. Similar to previous suggestions, HRD future research should continue to examine the utility of the untrained measure on different samples and in applied settings.

Finally, our findings are relevant from an HRD assessment and selection standpoint (Gadeceau, 2012). A typical precondition for well-designed training is a comprehensive needs assessment, including person analysis, which complements task and organization analyses (Goldstein & Gilliam, 1990; Tziner *et al*., 2007). Learning is relevant in all organizational settings, yet employees' *assessment of learning* is oftentimes – or at least in some organizations or training contexts – limited to learners' self-report. In such settings, a comprehensive needs assessment capturing information on both learners' predispositions to impression manage or engage in self-deception and their motives in the form of need for power and need for affiliation can offer valuable information on trainees who are most likely to engage in information distortion.

Limitations

These implications need to be seen in the light of the study limitations. First, our study was conducted in a laboratory setting and needs to be replicated in the field before making confident claims related to the findings' generalizability. However, having control over the material trainees were trained on, in a shorter time, is also an advantage, which is more difficult to obtain using longer courses. Such variations in design (i.e., field study) can nevertheless be attempted in the future to determine the extent to which our findings generalize. Second, trainees were exposed to only one program (related to how to build a business plan). As noted above, we anticipated varying degrees of interest on the trainees' part, given that our respondents were business students. Yet, using a variety of training programs may be necessary in the future to generalize the current findings. Finally, even though our unrelated knowledge items were designed based on prior studies (unrelated transfer, Chiaburu *et al*., 2010; internal referencing strategy, Haccoun & Hamtiaux, 1994) and in line with calls to include '*untrained constructs* (e.g., behaviors not addressed in training content) in evaluation measures' (Taylor *et al*., 2009, p. 118, italics added), it is possible for such unrelated knowledge to vary on its extent of 'unrelatedness'. The significant, yet small, positive correlation between participants' actual and perceived post-training assessment suggests that items may have been (perceived as) more related than we expected.

Despite these limitations, our study also presents a number of advantages. Specifically, a laboratory setting allows controlling for extraneous influences, such as trainees' post-training situational aspects (i.e., variations in organization related to supervisor or coworker support, transfer climate) which can alter their assessment of learning. Likewise, our laboratory setting also afforded a precise focus, on only one training program, taken in identical format by all trainees. This is not always possible in field settings, where even though training programs may be standardized, they can present apparently minor yet influential variations (i.e., different trainers, variation in emphasizing specific content across sessions, etc.). We also measured and controlled for a number of confounding factors (i.e., trainees' declarative knowledge, as assessed by an objective test). Notwithstanding these advantages, there are a number of future research directions that can offer more insight in the unrelated learning area, as outlined hereafter.

Future research

Additional research on the use of unrelated constructs would provide HRD and training researchers a more efficient way to assess response bias. Simply using self-report data without considering common method bias challenges the validity of conclusions derived from the investigation. When controlling for common method bias in their meta-analysis of training transfer studies, Blume *et al*. (2010) found that studies using the same source data consistently inflated predictors' effect on transfer outcomes. In total, when the studies (13) having the same SS/SMC were included in the analysis, the effect size increased from 0.23 to 0.36. The inflated effect is smaller than a similar study conducted by Podsakoff *et al*. (2003), yet such results offer compelling evidence for why response bias is important to control in empirical studies and in field settings. As self-report data are a popular approach to explore dispositional and behavioral factors, including a measure for response bias would improve the rigor of studies using these sources. Thus, additional testing of an unrelated constructs measure in field settings could increase the validity of self-report data with a less invasive or complicated research approach.

In addition, Bolino *et al*. (2008) identified 31 different tactics that an individual can use to manage their impressions, many with different antecedents and in unique situations. Although our study included a student sample completing a performance task, extending the study to situations where impression management has been more common (i.e., job interviews, performance appraisals) would provide additional support for the role in motives in explaining response bias. Along the same lines, other

motives can be examined as moderators, including trainees' goal orientation, a predictor of interest for training transfer; goal orientation can, for example, be conceptualized based on its component dimensions: mastery/learning versus performance orientation and approach versus avoidance.

Specific impression management and self-deception tendencies can influence outcomes not due to respondents' inner motives but as a function of different *situations* with agentic and communal demand characteristics. Rather than relying on individuals' motives to interpret an ambiguous situation, social and task cues that activate SDR may come directly from the training context. It is likely that in a training context emphasizing power and achievement, trainees' impression management may have a great effect on the overestimation of knowledge gain, whereas in a training context focused on belonging and affiliation, self-deception can directly translate into overestimation. As a first step, future laboratory studies can provide stimuli used to externally trigger respondents' agentic (i.e., power-seeking) and communal (affiliation-seeking) responses and determine the extent to which our findings extend to contextual manipulations. Further, it is possible to examine an SDR × motive × situation three-way interaction, where SDR × motive interaction would have a stronger effect in weaker, ambiguous situations.

To conclude, respondents' estimation of their learning may be inaccurate because of both individual factors and demand characteristics originating from the context. We theorize and provide support for the *joint influence* of social desirability (impression management, self-deception) and motives (need for power and affiliation) in influencing their reporting unrelated knowledge gains. Future research can continue refining models investigating the extent to which other individual motives or goals may distort employees' perceptions of self-reported knowledge gain and, more importantly, the influence of contextual factors.

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