

SHORT RESEARCH PAPER

A DAILY DIARY STUDY OF GOALS AND AFFECTIVE WELL-BEING AT WORK

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A DAILY DIARY STUDY OF GOALS AND AFFECTIVE WELL-BEING AT WORK

Abstract

We examine whether attainment of goals at work is associated with enhanced affective well-being and whether attainment of personally more important goals has a stronger association with affective well-being. Data were collected from call centre staff using a daily diary for two-weeks. Results indicate that daily attainment of work goals is associated with more activated mood measured at the end of the working day. The relationship between attainment of goals and pleasurable mood is stronger where goals are personally more important.

Although it has long been recognised that there is a relationship between work and psychological well-being (Jahoda, 1958; Warr, 1991), the processes by which work can become psychologically harmful are complex and not understood completely (Cooper, Dewe & O'Driscoll, 2001). One reason for this is because individuals exhibit different cognitive and emotional reactions to seemingly similar environments (Campbell, Chew & Scratchley, 1991). Factors that influence subjective reactions must be considered in order to understand more precisely how work influences well-being (Lazarus & Folkman, 1984). To address this gap, Lazarus (1999) has called for more micro-analytic approaches to the study of well-being at work, focusing in particular on personal goals. In this article, we present a daily diary study undertaken to examine the impact of the attainment of work goals on psychological well-being at work.

Goals and Well-being

Goals are internal representations of desired states such as outcomes, processes and events (Austin & Vancouver, 1996). Cross-sectional research outside the work domain indicates an association between goal-attainment and psychological well-being (e.g. Emmons 1986). Longitudinal evidence indicates the relationship may be causal. Brunstein (1993) showed that students who made good progress toward their goals at the end of school term reported enhanced mood compared to mood at the beginning of term. Sheldon & Kasser (1998), Elliot & Sheldon (1997) and Elliot, Sheldon & Church (1997) have reported similar findings. Whilst there is a distinction between goal progress and goal attainment, both progression towards and attainment of goals may influence well-being (Carver & Scheier, 1990; Diener, 1984).

Goal importance is a key element of the relationship between goal attainment and well-being (Austin & Vancouver, 1996), since attainment of important goals is more likely to satisfy needs and values which are central to the individual (Sheldon & Elliot, 1998). There is evidence that attainment of goals that satisfy important needs and values is associated with

higher levels of well-being than attainment of other goals (Sheldon & Elliot, 1999). In the work context, Maier & Brunstein (2001) found that increases in the work attitudes of job satisfaction and organisational commitment were greater for people who attained work goals to which they were more committed. This discussion suggests one approach to understanding why there are differences between people in their affective responses to the same work environments: If people differ in the importance they attach to attaining goals at work, then differences in well-being may be explained – at least partly - by differences in the extent to which work environments afford attainment of personally important goals.

However, despite evidence from other areas and Maier & Brunstein's finding with respect to job satisfaction, the extent to which attainment of personally important work goals influences affective well-being has yet to be investigated. Affective well-being comprises the frequent experience of positive affects and infrequent experience of negative affects (Diener & Larsen, 1993). This affective component of the experience of psychological well-being is distinct from attitudinal components such as job satisfaction that contain both affective and cognitive elements (Diener & Larsen, 1993; Warr, 1990). Affect is known to be multi-dimensional (Watson & Tellegen, 1985). In the work place, the major aspects of affective well-being can be explained by two superordinate dimensions (Warr, 1990). One dimension relates most closely to displeasure-pleasure and encompasses depression and the negative affects of anxiety and anger (Daniels, 2000). The other relates to activation and positive affect, and includes arousal as well as activated pleasant affects such as enthusiasm (Daniels, 2000). There may be a strong expectation from Maier & Brunstein's research that there is an interaction between goal attainment and goal importance that predicts pleasurable affect, because job satisfaction, by definition, is more closely aligned with pleasurable affect (Spector, 1997). However, it is less obvious whether such an interaction will predict those aspects of affective well-being more closely aligned with a state of motivated activation,

although attainment of important goals is critical for goal-based theories of motivation (e.g. Kanfer & Ackerman, 1989). Therefore, we also sought to investigate the following hypotheses.

H1a Attainment of work goals is positively associated with pleasurable affective well-being at work.

H1b Attainment of work goals is positively associated with activated affective well-being at work.

H2a There is a stronger positive association between pleasurable affective well-being at work and attainment of personally more important work goals than between pleasurable affective well-being at work and attainment of personally less important work goals.

H2b There is a stronger positive association between activated affective well-being at work and attainment of personally more important work goals than between activated affective well-being at work and attainment of personally less important work goals.

Since people vary in the importance they place on goals, goal attainment and affective well-being, between each other and within themselves over time, a method that could account for inter- and intra-individual differences was required. Daily diary studies are ideal for tracking variable psychological phenomena over a number of occasions and therefore allow such inter- and intra-individual differences to be studied. Additionally, cross-sectional methods often require individuals to recall past experience, increasing the possibility of distorted recollection (Turner, Wheaton, & Lloyd, 1995). Diary studies can capture data closer to changes in well-being, goal importance and goal attainment and are therefore less likely to suffer from such distortion (Parkinson, Briner, Reynolds, Totterdell, 1995). In this way, diary studies enable more accurate assessment of relationships between variables. The diary method can also enable inferences about the causal direction of relationships between the variables to be made with greater confidence by controlling for previous levels of the dependent variables.

Methods

Participants

Participants were 22 workers at a call centre who volunteered for the study. The call centre was part of a larger telecommunications company. Eleven of 22 were male and two declined to state their gender. Participants' mean age was 33.5 years (SD=11.3) and had been working for the company in the same role for an average of 2.6 years (SD=2.4). Participants worked different shifts with the first starting at 8am and the last at 3pm. Most respondents worked shifts between Monday and Friday, although half the sample worked shifts on a Saturday, and eight worked shifts on a Sunday.

Procedure

Participants were given a diary booklet containing measures of well-being, goal attainment and goal importance. All participants were instructed to commence completing the diary on the same Monday and thereafter on every working day for a period of 12 days. Participants were emailed at work every day to remind them to complete the diary that day.

Participants were required to complete the diary twice a day, just before work and just after work. Collectively, the participants responded 228 times in total to the before-work section from a possible maximum of 264 times giving a compliance rate of 86.4%. The participants completed the after-work section on 137 occasions, from a possible maximum of 192 times (after taking into account absence and scheduled days off work) giving a compliance rate of 71.3%. Missing data of this order is not unusual for daily diary studies (Totterdell, Kellet, Teuchmann & Briner, 1998). A participant's daily data were excluded from analysis if a participant was not at work, for whatever reason, on that day.

Measures

In the before-work section, measures were taken of affective well-being. In the after work section, measures were again taken of affective well-being, along with measures of goal importance and attainment.

Affective well-being was measured by asking participants to rate 20 mood adjectives on a 5-point scale (1=Not at all, 5=Very much) describing how they felt at the time (before-work section) or how work had made them feel that day (after-work section). Participants were asked to rate how work had made them feel over the course of the day for two reasons. First, rating well-being over a period, rather than momentary mood, is consistent with measures of affective well-being taken over time frames as long as a few weeks (Warr, 1990). Second, the question was designed to minimise the influence of momentary fluctuation in mood, and so provide a more accurate assessment of well-being at work on that day. The 20 adjectives were selected from 30 mood adjectives found to be valid indicators of the major elements of affective well-being in the workplace (Daniels, 2000).¹ These elements of affective well-being can be explained by two major elements of affective well-being relating to displeasure-pleasure and activation (Warr, 1990). Accordingly, six positively valenced and six negatively valenced items were used to assess pleasure (e.g. happy, relaxed, angry, depressed, anxious). To assess activation, four positively valenced and four negatively valenced items were used (e.g. motivated, active, bored, tired). To create scale scores, negatively valenced items were first reverse scored, all items were then summed and this sum was divided by the number of items in the scale.

Goal attainment and goal importance were measured by asking participants to rate five goals for that day (getting on with people at work, being able to influence work, good performance, high status at work and having a sense of purpose at work). These items were chosen to represent major psychological needs (i.e. relationships, autonomy, competence,

status and sense of meaning, see e.g. Ryan, 1995; Warr, 1994). For rating goal attainment, participants were given four response options relating to the extent to which they had attained that goal (1=not at all, 2=some of the day, 3=most of the day, 4=all day). The items were summed and a scale score obtained by dividing by the number of items in the scale.² High scores indicate greater goal attainment. For goal importance, the goals were rated on a 9 point scale (1=not at all important, 9=essential). The items were summed and a scale score obtained by dividing by the number of items in the scale.

Analytical procedure

In diary studies, the unit of observation is the person's responses for a single day. Accordingly, we wished to predict well-being after work for each person on each day of the study. Therefore, the two scales to assess well-being after work were the dependent variables. The independent variables were daily goal attainment (to address the first hypothesis), daily goal importance and the interaction between daily goal importance and daily goal attainment (to address the second hypothesis). To counter problems of multicollinearity in tests of interactions, the goal importance and goal attainment scores were standardised before calculating the cross-product interaction term (Cohen & Cohen, 1983). The two scales assessing well-being before work were used as control variables. In supplementary analyses, controls were also included for the day of the week on which the measures were taken and the shift worked by each person on the day the measures were taken.

In more common research designs, it is usual to apply moderated multiple regression to examine hypotheses of the nature of those in this study (Cohen & Cohen, 1983). However, with diary data, there is non-independence of observations, insofar that multiple data points

¹ Only 20 out of the original 30 mood adjectives were used in this study to reduce the completion time of the diary.

² Since the focus of the current research was to assess the impact of goal attainment on affect the goal items were summed. Aggregating across goals does not lose any information concerning goals (Sheldon & Elliot, 2000).

are taken from the same people. Consequently, such data violate the assumptions of multiple regression. In the case of diary designs, the data can be thought of as hierarchies, where daily measures are nested within each person. Data were, then, analysed using hierarchical linear modelling with the HLM5 package (Raudenbush, Bryk, Cheong & Congdon, 2000), which is a suitable technique for analysing diary data where there is non-independence of data in hierarchical data structures (see Bryk & Raudenbush, 1992). The HLM5 package can also determine whether there is between-person variation in the relationships between the independent and dependent variables measured on a daily basis, or whether the strength of such relationships is constant across persons. Between-person variation in the daily data is evident if the slope of the independent variable varies between people, indicating that the strength of the relationship between the independent and dependent variable differs between people. If the slopes of the independent variables do not vary between people, this indicates that the strength of the relationship between the independent and dependent variables is constant across people. Between-person variation is assessed by centring the independent variable around the individual's mean and allowing the regression gradient to vary between people. If the gradient does not vary between people ($p > 0.20$), then the slope can be fixed (across all people) and the independent variable can be grand mean centred (centred according to the mean of the whole sample).

A staged approach was used to build equations for each dependent variable in the following way. First, the values of pleasure and activation before work were regressed separately. An assessment was made of the variation between people in the size of each regression slope. Where there was no significant variation in the slopes ($p > 0.20$), the slope was assumed constant across people, and its value fixed to be the same for each person. Both control variables were then entered in an equation together, with slopes fixed or varying across people as determined in the preceding analyses. To this equation, daily goal attainment

and goal importance were then entered separately, and an assessment made as to whether slopes were fixed ($p > .20$) or variable ($p < .20$) across members of the sample. Both main effects were then entered together in an equation with the control variables, with slopes fixed or varying according to the results of previous analyses. The interaction term was added to this equation, an assessment made of whether the strength of the interaction term was constant ($p > .20$) or variable ($p < .20$) across people and the slope fixed to be constant across people if appropriate. Seven dummy variables representing the eight shift starting times and six dummy variables representing the seven days of the week were then added to this equation. These variables were added to control for temporal variation in well-being and goal attainment. Given their number, analyses were possible only if the slope for each dummy variable was assumed constant across members of the sample. At every stage in these analyses, checks were made on the extent of between-person variation in slopes judged to be varying in previous steps. Where variation in a slope was no longer significant ($p > .20$), then the slope was then fixed to be constant across members of the sample in subsequent equations. Continuous variables were centred at the mean for each person where slopes were variable, but centred at the mean for the entire sample where slopes were fixed across people (Bryk & Raudenbush, 1992; Hofmann & Gavin, 1998). Dummy variables were preserved in their natural metric (i.e. 0, 1, see Bryk & Raudenbush, 1992).

Results

INSERT TABLES 1 AND 2 HERE

Table 1 shows the means, standard deviations, reliabilities and correlations amongst the measures. Table 2 shows the final equations derived through hierarchical linear modelling. These results do include equations with controls for shift-time and day, although these coefficients have been omitted from Table 2 for clarity. Table 2 shows that there is a significant and positive main effect of goal attainment for both pleasurable and activated

affect, even after controlling for shift-time and day. In no equation is the main effect of goal importance significant. There is a significant interaction between goal attainment and goal importance only for pleasurable affect after work. This interaction remains significant after controlling for shift-time and day. Figure 1 shows the form of the interaction, after controls for morning affect, shift-time and day. Figure 1 indicates that although goal attainment is generally associated with more pleasurable affect, the relationship is stronger for personally important goals.³

INSERT FIGURE 1 HERE

Discussion

Two major findings emerged from this study. First, goal attainment was associated with pleasurable affect and activated affect. Second, the interaction between goal attainment and goal importance uniquely accounted for variation in pleasurable affect. This was stronger for attainment of personally more important goals.

This latter finding reflects a distinction of emergent importance. Whilst the non-significant interaction on activated affect may have resulted from the relatively small number of daily observations (n=137), the significant positive interaction on pleasurable affect is clearly stronger than the non-significant negative interaction on activated affect. Even if studies with greater numbers of daily observations were to find a significant interaction between goal attainment and goal importance on activated affect, we may expect a differential to be maintained in the strength of the interactions. There are substantive reasons for this,

³ An alternative way of examining the interaction between goal attainment and goal importance is to calculate the cross-product of goal attainment and goal importance for each goal, and then sum these cross-products over the five goals. The summed cross-products formed a reliable scale ($\alpha=0.73$). In equations controlling for the sum of goal attainment and goal importance, as well pleasurable and activated affect before work, the summed cross-products had a significant positive association with pleasurable affect after work ($p<.05$, one tailed, in equations both with and without time controls for day and shift). The summed cross-products did not have any association with activated affect after work after controls for affect before work and the sum of goal attainment and goal importance ($p>.10$ in equations both with and without time controls for day and shift). Further details are available from the authors.

related to differences between processing of information concerning goal progress and goal attainment (Austin & Vancouver, 1996). Happiness or pleasurable affect may be dependent on goal attainment, whilst positive affect (i.e. enthusiasm, motivation or other indices of high activation) may be dependent on goal progress (Oatley & Johnson-Laird, 1987; Parkinson, 1995). It may be then that there is an interaction between goal progress, rather than goal attainment, that predicts activated affect, with progress acting to motivate efforts toward further progress. Nevertheless, as the results indicate, goal attainment is associated with increases in activated affect. Indeed, table 1. indicates that this association is very strong. However, table 2. indicates that the linear association between goal attainment and activated affect is roughly the same as for pleasurable affect, after controlling for day and shift.

The goals researched in this study were selected on the basis of important psychological needs that represent higher order goals for the majority of people (Ryan, 1995). For example, good performance may be related to competence goals (Bandura, 1977). By selecting such goals, we were able to standardise the daily diary, form reliable scales to assess goal attainment and goal importance, and analyse the data with relatively few observations for each case. However, the number and choice of the goals may not reflect specific and well-defined goals people strive to attain on a daily basis. Future work may then consider the possibility of using multi-item scales to assess attainment of specific goals (e.g. performance goals). Alternatively, future research could allow participants to generate their own list of goals. However, in this case, diaries and analysis would have to be specific to each individual depending on the goals selected. The relative salience (rather than importance) of goals at any given time; the time frames for goal attainment; and the relation of attainment of sub-goals in respect of progress toward higher order goals (e.g. Carver & Scheier, 1990) may also be an important aspects of work-related goals related to affective well-being.

The use of cross-sectional survey designs to answer questions about day to day associations among events, moods and behaviour has come under increasing criticism (Stone & Shiffman, 1992; Affleck & Tennen, 1996), and daily diary methods can overcome many of these criticisms. The current research enabled us to monitor daily changes in affect, goal importance and attainment over a two week period. Since affect changes on a daily basis (Parkinson *et al*, 1995), this is long enough to examine the extent to which goal attainment and goal importance contribute to affect. Because these measures were taken in close proximity to when they occur, problems with retrospective recall are minimised. The diaries also allowed us to control for temporal variation in affect to some extent. By taking measures of affect before work, we were also able to examine changes in affect over the working day. Further, the analytic method enabled us to control for stable differences between individuals, yet without needing *a priori* knowledge of these differences in order to measure those stable differences (see Bryk & Raudenbush, 1992). Nevertheless, although diary studies enable control for many extraneous factors and capture phenomena close to their occurrence, measures of goal attainment were taken contemporaneously with measures of affective well-being after work. In order to establish temporal priority for causality, narrower time frames, where people provide measures several times in one day, may be needed (cf. Totterdell *et al*, 1998, study 2).

Neither can this research indicate the extent to which sustained goal attainment, or goals pursued over longer periods than a day, are linked to longer term and more substantial shifts in well-being, nor whether the findings are applicable to other samples. Nevertheless, theories of stress (e.g. Lazarus, 1999) emphasise the importance of goals for affect, and the goals assessed in this study were chosen to correspond to major psychological needs and so can reasonably be expected to apply to most people. Further, Maier & Brunstein (2001) investigated goal attainment over a longer period with respect to job satisfaction and found

similar results to those reported here with respect to pleasurable affect. Consequently, sustained attainment of work goals might influence changes in well-being over differing time periods and across different aspects of well-being. In this respect, the current research adds to understanding of the impact of goal attainment on well-being at work, and underlines the importance of giving greater emphasis to individuals' goals in the study of affective experience at work.

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Table 1. Means, standard deviations, reliabilities and correlations.

Variable	Mean	SD	1.	2.	3.	4.	5.	6.
1. Pleasurable affect before work	3.90	.61	.88					
2. Activated affect before work	3.54	.87	.53	.89				
3. Pleasurable affect after work	3.33	.82	.35	.09	.92			
4. Activated affect after work	3.08	.91	.32	.58	.42	.88		
5. Daily goal attainment	1.47	.56	.24	.45	.49	.65	.74	
6. Daily goal importance	6.26	1.51	.07	.52	.13	.53	.55	.83

α coefficients shown on the primary diagonal.

NB. Significance of correlations not shown, since standard significant tests of correlations are inappropriate for these data.

Table 2. Hierarchical linear models for pleasurable and activated affect after work.

Without control for day & shift	Pleasurable affect	Activated affect
	B	B
Pleasurable affect before work	.22	.02
Activated affect before work	-.18	.07
Daily goal attainment	.41***	.55***
Daily goal importance	.05	-.01
Goal attainment * importance	.12**	-.10
Variance component for intercept	.17	.23
χ^2 of variance component	76.78***	131.38***
With control for day & shift		
Pleasurable affect before work	.22	-.05
Activated affect before work	-.15	.10
Daily goal attainment	.42***	.41***
Daily goal importance	.07	.00
Goal attainment * importance	.12*	-.06
Variance component for intercept	.18	.32
χ^2 of variance component	70.03***	164.93***

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

Slopes did not vary across persons ($p > .20$), except interaction on activated affect without controls for shift times and days ($p < .15$). This slope did not vary once shift and day controls added ($p > .50$).

Dummy variables representing shift times and days omitted. Tests for daily goal attainment and interaction are one-tailed since a positive sign was expected. All other tests are two-tailed.

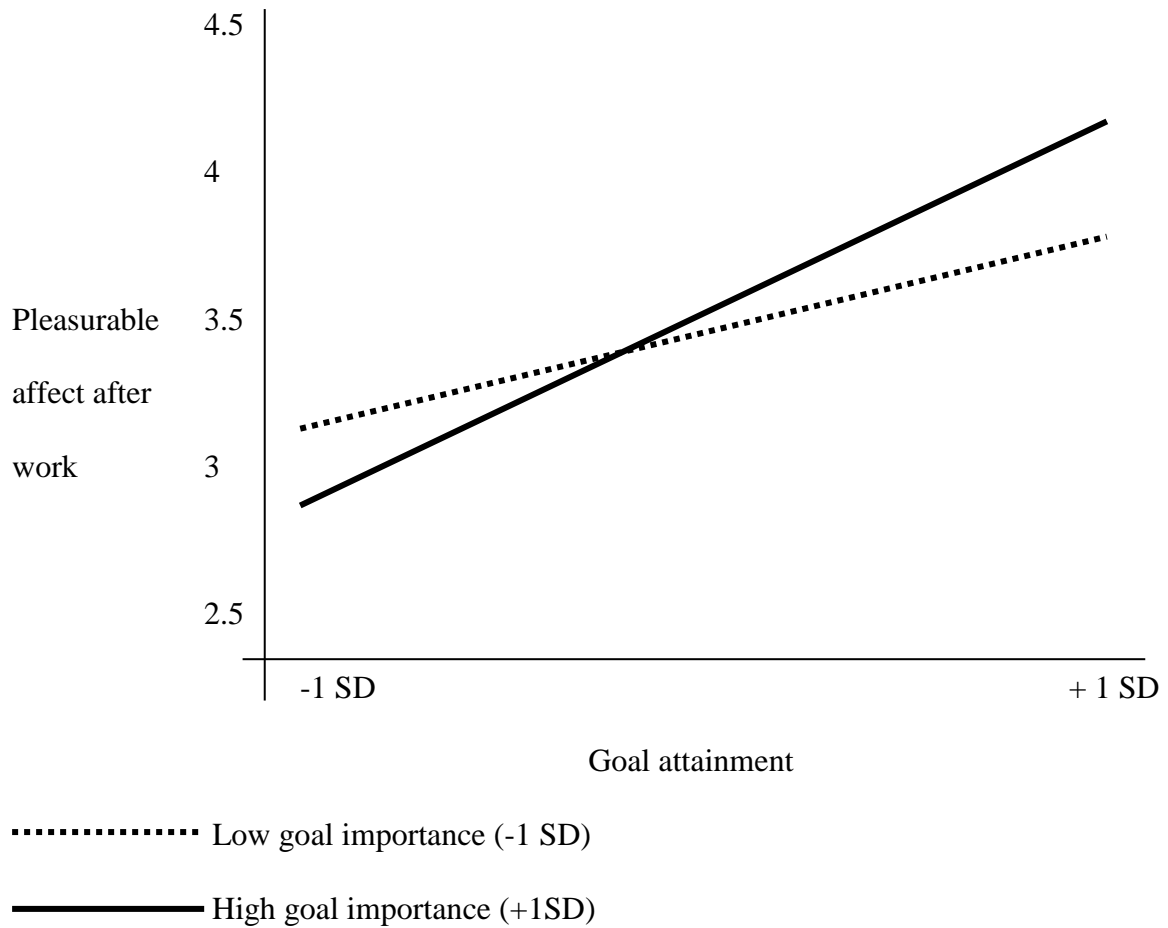


Figure1: Interaction between goal importance and achievement for pleasurable affect.