

The Association between Sensitivity, Group Size and Satisfaction

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ABSTRACT

Previous research have looked at the relationship between sensitivity and satisfaction, and between group size and satisfaction. However there appears to be no reported studies that have investigated the interacting effects of group size on the relationship between sensitivity and satisfaction. Data from 257 shop floor workers in a light manufacturing plant in the UK were collected and analysed. Group size was significantly negatively related to satisfaction with co-workers. Statistical tests of hierarchical multiple regression were used to determine the significance of the interaction terms (sensitivity x group size) on pay and co-worker satisfaction. Support for both hypotheses were obtained. Results suggested that group size significantly moderated the relationship between sensitivity and pay satisfaction, and the relationship between sensitivity and co-worker satisfaction. Linear regression plots showed that the relationship between sensitivity and satisfaction (pay and co-worker) were negative in large groups but positive in small groups.

ABSTRAK

Kajian terdahulu telah melihat tentang perhubungan di antara sensitiviti dengan kepuasan, dan di antara saiz kumpulan dengan kepuasan. Walaubagaimanapun, tidak ada sebarang kajian yang telah dijalankan untuk melihat kesan interaksi berdasarkan saiz kumpulan ke atas perhubungan di antara sensitiviti dan kepuasan gaji, dan perhubungan di antara sensitiviti dan kepuasan dengan rakan sekerja. Data dari 257 pekerja kilang di UK telah di kumpul dan di analisis. Saiz kumpulan didapati mempunyai perhubungan yang signifikan dan negatif dengan kepuasan kerja secara keseluruhannya. Ujian statistik regresi berhierarki, di gunakan untuk memastikan sama ada terma interaksi (sensitiviti x saiz kumpulan) adalah signifikan ke atas kepuasan terhadap gaji dan rakan sekerja. Sokongan untuk kedua-dua hipotesis telah diperolehi. Hasil kajian mendapati bahawa saiz kumpulan bertindak selaku pembolehubah pengubah (moderator) dalam hubungan antara sensitiviti dan kepuasan terhadap gaji dan hubungan antara sensitiviti dan kepuasan terhadap rakan sekerja. Ujian korelasi dan "linear regression plots" menunjukkan bahawa perhubungan sensitiviti dengan kepuasan gaji dan rakan sekerja, adalah negatif di dalam kumpulan yang besar tetapi positif di dalam kumpulan bersaiz kecil.

INTRODUCTION

"Since Parsons' (1909) seminal work, the person environment perspective on vocational choice has been central to career psychology and counseling" (Gati, Garty, & Fassa, 1996, p. 196). P-E fit embodies the premise that attitudes, behaviour and

other individual level outcomes result not from the person or environment separately, but rather from the relationship between the two, and that a "match" or "best-fit" of the individual to the environment will manifest itself in high performance, satisfaction and little stress whereas lack of fit has opposite consequences (Edwards, 1996;

Lewin, 1951; Murray, 1938; Pervin, 1989). The environmental demands and person abilities fit underlies most models of personnel selection, in which the generally accepted paradigm is to analyse job demands, define abilities required to meet these demands and hire individuals with the requisite abilities (Schneider, 1978).

The inspiration for this research came from the person-environment fit theory put forward by Moskowitz & Cote (1995) that people experience pleasant affects when they engage in behaviours concordant with their traits and unpleasant affect when they engage in behaviours discordant with them. The theoretical contribution of the current research is that it aims to examine the equity theory from the P-E fit model abovementioned. Equity theory is based on the relatively simple premise that people in organisations want to be treated fairly. People form perceptions of equity or inequity by comparing what they give to the organisation (inputs) relative to what they get back (outcomes) and how this ratio compares with those of others (Stacey, 1965). Pay inequity is likely to occur where every worker is paid the same regardless of output, such as working in large groups. Furthermore, not all people react equally to inequity. Sensitivity (a personality trait) can magnify the perceptions of inequity. However, there appears to be no reported study on the interaction effects between sensitivity and group size on pay satisfaction. This study aims to investigate whether sensitive people are more satisfied working in small groups (where pay is more equitable) and less satisfied working in large groups (where pay is more inequitable).

There is an abundance of research on P-E fit. Buboltz, Ebberwein, Watkins, & Savickas (1995) discovered that in the last 20 years preceding their article, a total of 229 articles on P-E fit appeared in the *Journal of Vocational Behavior* and 75 articles on it appeared in the *Career Development Quarterly*. This constitutes evidence that the subject matter of P-E fit has not only been well established and extensively researched, but also remains a current area of interest.

LITERATURE REVIEW

There are basically two forms of fit, complementary and supplementary fit (Muchinsky &

Monahan, 1987). The essential difference between the two is that the work environment in the supplementary fit model is described according to the people who inhabit it, whereas in the complementary model, it is described according to some aspect of the job environment itself other than its inhabitants (Muchinsky & Monahan, 1987; Kristof, 1996). Caplan (1987) and Kristof (1996) have advocated that the measures of the person and the environment must be independent of each other. However, previous studies of complementary fit generally failed to achieve this. This research proposes that the use of objective measures of the work environment such as the group size (represented by the number of members in a group) on the one hand, and individual personalities of the group members on the other, can ensure the independence of measures of person and environment. One such personality trait is sensitivity (Cattell, Eber, & Tatsuoka, (1992).

Many studies have investigated the relationship between equity sensitivity and outcome variables (Bing & Burroughs, 2001). According to Cattell et al (1992), people whose traits are high on sensitivity, crave affection and attention are also fussy, insecure, anxious, theatrical, easily affected and have been often associated with mental breakdown. It would seem that sensitive people are more easily affected by inequity. This affect or dissatisfaction can be directed towards their pay and/or their co-workers.

Group size is one aspect of the work environment that can be measured objectively and is pervasive in organisations. Research has shown that larger groups have reported lower satisfaction (Frank, & Anderson, 1971; Shaw, 1981; Slater, 1958). Worthy (1950) stated that mere size is unquestionably one of the most important factors in determining the satisfaction of employees: the smaller the unit the higher the morale and vice versa. This dissatisfaction can have serious consequences for the company. Dissatisfaction with large groups is also reflected by greater absenteeism and personnel turnover (Shaw, 1981).

Job satisfaction represents a constellation of a person's attitude toward or about a job as a whole. According to Smith, Kendall & Hulin (1969) it is a function of satisfaction with different aspects of the job of which pay is one aspect.

According to Roberts and Foti (1998) recent research on the determinants of job satisfaction has shifted from debating the effectiveness of either situational models or dispositional models to a consideration of the person-situation interactional perspective. There appears to be no reported study on the moderating effects of sensitivity on the group size- satisfaction relationship. Future studies should investigate whether the nature of the relationship between sensitivity and satisfaction can vary with group size. Although increased job satisfaction probably will not result in higher performance, it does affect attendance and tenure. These two variables are important enough to justify a concern for employee satisfaction. (Aamodt, 1991).

OBJECTIVE AND HYPOTHESES

The main objective of this study is to determine whether the relationship between sensitivity and satisfaction will be moderated by the group size. It has also been explained in the literature review that, highly sensitive people are more dissatisfied with pay inequity than less sensitive people. Where all group members are paid the same, regardless of individual performance, pay in large groups tend to be inequitable, whereas pay in small groups tend to be more equitable. Therefore, it would be reasonable to propose that in large groups, highly sensitive people will be more dissatisfied with their pay than less sensitive ones. In small groups the relationship would be opposite because the match between pay and output would be better i.e. more equitable. Accordingly, the hypothesis is:

H1: The association between sensitivity scores and pay satisfaction scores will be moderated by group size such that the association will be negative for large groups and positive for small groups.

This dissatisfaction with the pay could be because, several group members are not "pulling their weight". This happens where certain group members realise that their individual efforts will not be noticed and they think that there is little chance of individual reward (Harkins, 1987) and begin

to slack. Furthermore, if things are going well, a group member realises that his effort is not necessary and also begins to slack. Particularly in larger groups, individuals feel that they are dispensable, like a small cog in a large machine that will continue to function even if they do not. This is the 'free-rider theory' (Kerr & Bruun, 1983). Consequently, there should be a corresponding dissatisfaction with co-workers who are not working as hard as the rest of the group. Hence, the overall satisfaction with the co-worker would also decline as a result. Accordingly, the next hypothesis is:

H2: The association between sensitivity scores and co-worker satisfaction scores will be moderated by group size such that the association will be negative for large groups and positive for small groups.

METHOD

Data on 257 shopfloor workers who worked in groups were collected from a light manufacturing assembly plant in Wales, UK. Thirty-three work groups of varying sizes were investigated. The 257 participants had almost no influence on the selection of their group members. Groups investigated range from 2 to as many as 20. Group size was identified as the number of people in the group. In this study, the entire sample was divided into approximately three equal categories according to their sizes. Groups comprising between 2 and 7 members were deemed small, between 8 and 14 were deemed moderate, and between 15 and 20 were deemed large.

Test administration took place at various intervals between January 1999 and May 1999, in the factory. Collection of data took place in sessions at which, three to fifteen employees were present. Subjects were asked to supply their names to identify their work groups. Every attempt was made to reduce the respondents' worries and anxieties about participating in the research. The researcher did his best to convince the respondents that this research was mainly for academic purposes and that the results would not be used in promotion or transfer decisions.

THE MEASURES

Group size was measured by the number of workers in the work team. Sensitivity was measured by items in the 16 PF (Cattell et al, 1992) that measures Factor I. Satisfaction were measured by numerical scales adapted from Meir, Hadas & Noyfeld (1997). There were two scales, one measured satisfaction with the co-worker and the other measured satisfaction with the pay. Both scales were identical in that they range from 1 to 20 (1 being lowest and 20 being the highest level of satisfaction).

ANALYSIS

The statistical technique used in this study to detect the significance of the interaction effects of group size on the sensitivity-satisfaction relationship was hierarchical multiple regression. "Two variables, u and v , are said to interact in their accounting for variance in Y when *over and above* any additive combination of their separate effects, they have a joint effect" (Cohen & Cohen, 1983, p. 302). The moderator term is a compound variable formed by multiplying u by the moderator v that is entered in the regression equation (Hair, Anderson, Tatham & Black, 1998). However, an important distinction has to be borne in mind - the $u \times v$ interaction "is carried by," rather than "being" the uv product. The product of u and v (uv) only becomes the interaction term after its constituent elements have been partialled out. The equation is as follows:

$$u \times v = uv - u.v$$

One method of doing this is hierarchical regression - the product " uv " is introduced into the regression equation in step 2 only after the separate independent variables of u and v have been introduced in step 1. It is thus the partialled uv results that is interpreted as the " $u \times v$ interaction" (Cohen & Cohen, 1983, p. 305).

The independent variables (group size and sensitivity) were entered in block 1 of the analyses using the command "Enter". The interaction

term (group size \times sensitivity) was then introduced into the equation in block two. The term "introduced" rather than "entered" is used because, in block two, the interaction term is accepted into the equation only if, together with the individual component variables, it explains a variance in the dependent variable significantly more ($p < .05$) than the individual component variables alone. If the interaction term can significantly ($p < .05$) improve the predictive power of the equation, then it will form part of the regression equation. If it fails to significantly improve the R^2 (squared semi-partial correlation), then the SPSS programme will not include the interaction term from the regression equation. The command used in block 2 was "Stepwise". The criterion for entry was .05 and the criterion for removal was .10. This was the default specified by the SPSS.

RESULTS

Table 1 shows the results of the correlation analyses when all cases were taken into account. As expected, there was a significant negative correlation between overall satisfaction and group size. However, contrary to expectation, the relationship between i) sensitivity scores and pay satisfaction and ii) sensitivity scores and overall satisfaction were not statistically significant.

Figures 1 and 2 plot out the graphs for large groups, small groups and all cases. Notice that the relationship between sensitivity and pay satisfaction, and between sensitivity and co-worker satisfaction were negative in large groups and positive in small groups.

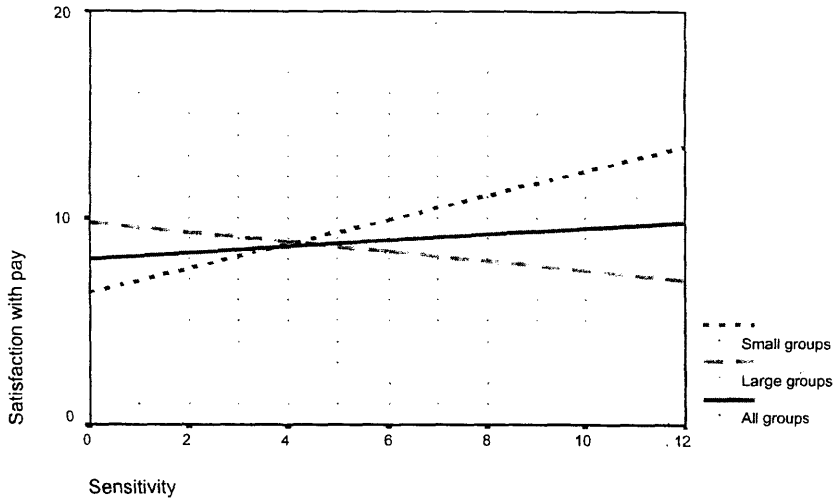
Table 2 shows the values of b and the correlation coefficients in three scenarios: all cases, large groups only and small groups only. Correlation between sensitivity and pay satisfaction in small groups was positive as expected. Tests of hierarchical regression were used to determine the significance of the interaction term (sensitivity \times group size) on pay and overall satisfaction. The interaction term was successfully accepted into the regression equation after the individual components have been entered into the equation. This shows that the interaction effects

Table 1
Table of Correlation Coefficients

	Sensitivity	Group Size	Satisfaction with pay
Group size	.018	-	-
Satisfaction with pay	.075	-.056	-
Satisfaction with coworkers	.025	-.257**	.300**

** $p < .01$, * $p < .05$, $N = 257$

Figure 1
Interactional Effects of Group Size on the Relationship between Sensitivity and Pay Satisfaction



between sensitivity and group size were statistically significant. Full details of the values of R^2 were set out in Table 3. For instance, Table 3 Column 3, shows the R^2 values when only the sensitivity variable and the group size were entered into the regression equation. Column 4 of the same table shows the R^2 values when the sensitivity variable and group size as well as the interaction term of P*E were all in the equation. Column 5 of the same table shows the change in R^2 as a result

of introducing the interaction term P*E.

Thus, the results of this research showed support for the hypotheses 1 and 2 in that the relationship between sensitivity and pay satisfaction, and between sensitivity and co-worker satisfaction were moderated by group size. In other words, the relationship between sensitivity and satisfaction (with pay and overall) was negative in large groups and positive in small groups.

Figure 2
 Interactional Effects of Group Size on the Relationship between Sensitivity and Co-worker Satisfaction

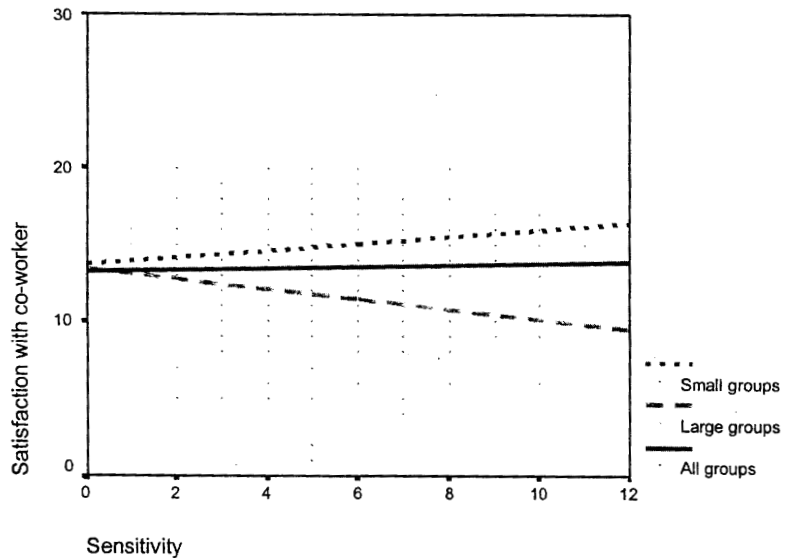


Table 2
 Shows the Values of *b* and the Correlation Coefficients.

HYPOTHESIS	STATISTICAL ANALYSIS	ALL CASES (N = 257)	LARGE GROUPS (N = 90)	SMALL GROUPS (N = 97)
H1 Sensitivity & pay satisfaction	Values of <i>b</i>	.149	-.233	.589
	Correlation coefficient	.075	-.126	.273***
H2 Sensitivity & co-worker satisfaction	Values of <i>b</i>	.051	-.333	.222
	Correlation coefficient	.025	-.174	.114

** $p < .01$, * $p < .05$, N = 257

Table 3
Sensitivity & Satisfaction Moderated by Group Size

Person Variables	Satisfaction	Hierarchical Multiple Regression		
		R ² with P, E but excluding interaction term P*E	R ² including interaction term	fR ²
Sensitivity	H1 Pay	.009	.038	.029
	H2 Co-worker	.067	.084	.017

DISCUSSION

The result of this study lends support to the P-E fit theory in that people who fit into their environment tend to be more satisfied than those who do not. Sensitive people fit in working environments where pay is equitable. Where all group members are paid the same regardless of individual performance, pay in large groups tend to be inequitable, whereas, pay in small groups tend to be more equitable. This is because, social loafing is more likely to occur in larger as opposed to smaller groups. Results seem to suggest that, people whose traits are high on sensitivity have a tendency to be dissatisfied with their pay if they are made to work in large groups. They are more satisfied with their pay if they work in small groups where the pay rates come much closer to matching the individual output.

This dissatisfaction with pay inequity can also be transferred to dissatisfaction with colleagues such that sensitive people are less satisfied with colleagues when they are made to work in large groups. However, when made to work in smaller groups where pay is more equitable, they have no resentment towards their colleagues.

The results of this study also support the criticisms of the equity theory in that not all people are equally affected by inequity. Results suggest that highly sensitive people are easily affected by inequity compared with less sensitive ones.

From the managerial perspective, the results seemed to suggest that sensitive people should be made to work in smaller groups where they will be more satisfied, and not in larger groups where they will be less satisfied. However to be able to do so, management would have to find out which workers are more sensitive and which are less sensitive. This would necessitate personality tests to be conducted on all the workers, a decision which may or may not be popular with the management or the workers. From the person-environment perspective, managers have two choices. Change the person or change the environment. Managers could either select only those people whose traits are low on sensitivity, or they could limit the group sizes so as not to exceed ten in number. The second alternative seems simpler, and this action would probably reduce the occurrence of social loafing hence resulting in increased productivity of the average worker. In addition, management can make individual contributions more visible.

LIMITATIONS

Since this study is cross sectional, a conclusion cannot be drawn about the direction of causality in these findings. However, it is reasonable to hold that the interaction between sensitivity and group size was for the most part responsible for changes

in satisfaction rather than the reverse as the view taken in this research is that personality traits are relatively stable over long periods of time. Another weakness is that the moderator analyses were conducted in a single company. Results cannot be generalized to other companies. However, the findings of this study can benefit from replication studies conducted in other companies. It is also important to stress here that group size per se may not moderate the relationships found in this study. Rather, it is the inherent differences in characteristics of large and small groups that may be the cause of the moderating effect. For instance, if pay is tied to individual performance and not to group performance, there may be no moderating effect of group size on the sensitivity-pay satisfaction relationship. It is important that future replication studies fully replicate all the different characteristics of large and small groups. In defence, it can be argued that the differences that exist between small and large groups in the company are by no means unique and are equally likely to exist in other companies.

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