

A Re-examination of the Side-Bet Theory as Applied to Organizational Commitment: A Meta-Analysis¹

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Contradictory research findings make it almost impossible to arrive at generalized conclusions about the side-bet theory despite the amount of attention this theory has received. In an attempt to resolve the argument about the ability of the theory to explain the formation of organizational commitment, this study examines previous findings of relevant correlational data from 50 published studies, using the Hunter, Schmidt, and Jackson (1982) meta-analysis procedure. Results show that 11 side-bet variables have estimates of low population correlations with organizational commitment. For most of the side-bet variables, no meaningful or generalizable relationships with organizational commitment were found. The results indicate that there is very little empirical support for the side-bet theory. Three possible conclusions are proposed. Discussion of the implications of each conclusion and how they relate to future investigation of the side-bet theory concludes the paper.

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INTRODUCTION

The topic of organizational commitment has received considerable attention from both managers and behavioral scientists, mainly because it has been suggested to be a better predictor of turnover than job satisfaction and other work behavior variables (Mowday, Porter, & Steers, 1982; Porter, Steers, Mowday, & Boulian, 1974). The interest in organizational commitment has been demonstrated by efforts to empirically determine its primary antecedents and outcomes (Griffin & Bateman, 1986; Mowday et al., 1982; Reichers, 1985).

Two views regarding commitment have dominated the literature: the calculative and the moral or attitudinal approach (Amernic & Aranya, 1983; Ferris & Aranya, 1983; Griffin & Bateman, 1986; Kidron, 1978; McGee & Ford, 1987; Meyer & Allen, 1984; Wiener & Vardi, 1980). The present study examines the calculative approach exemplified by Becker's side-bet theory which, according to Griffin and Bateman (1986), has guided numerous studies from Alutto, Hrebiniak, and Alonso (1973) to Meyer and Allen (1984).

The term "side-bets" has been used by Becker (1960) to refer to the accumulation of investments valued by the individual which would be lost if he or she were to leave the organization. Becker (1960) argued that over a period of time certain costs accrue which make it more difficult for the person to disengage from a consistent line of activity, namely, maintaining membership in the organization. The threat of losing these investments along with a perceived lack of alternatives to replace or make up for the loss of them commits the person to the organization. Becker phrased his argument as follows "...The man who hesitates to take a new job may be deterred by a complex of side-bets: the financial costs connected with a pension fund he would lose if he moved; the loss of seniority and "connections" in his present firm, which promise quick advance if he stays; the loss of ease in doing his work because of his success in adjusting to the particular conditions of his present job; the loss of ease in domestic living consequent on having to move his household, and so on ..." (1960, pp. 38-39).

Because side-bets can be made in a variety of ways, it was necessary for researchers examining Becker's theory to establish a general index of the nature and/or number and/or size of the side-bets. Ritzer and Trice (1969) reasoned that side-bets should accumulate over time. Therefore, age and tenure were suggested by them and others (Alutto *et al.*, 1973; Sheldon, 1971) as the best indicators of actions taken which build up one's stake in the employing organization. Later researchers examining Becker's theory suggested other variables as indexes of side-bets; for example, education, pay, gender, mobility, organizational level, marital status, number of children, and perceived job alternatives (Alutto *et al.*, 1973; Amernic & Aranya, 1983; Aranya & Jacobson, 1975; Hrebiniak & Alutto, 1972; Ritzer & Trice, 1969; Shel-

don, 1971; Shoemaker, Snizek, & Bryant, 1977; Stevens, Beyer, & Trice, 1978). Studies have been interpreted either as supporting or not supporting the side-bet theory on the basis of the strength of the relationship between organizational commitment measures and the above side-bet indexes.

Ritzer and Trice (1969) were the first to test the side-bet theory. Finding no relationship between organizational commitment and most of the side-bet indexes, they rejected the side-bet hypothesis, but offered an alternative theory of commitment which emphasized social-psychological factors as affecting workers' identification. According to their explanation, organizational commitment is basically a psychological phenomenon and not a structural one. This alternative theory was described by Stebbins (1970) as a step toward a theory of value commitment.

Ritzer and Trice's findings and conclusions started an extensive and continuing examination of Becker's side-bet theory. For example, Stebbins (1970) argues that these findings are in part a product of Ritzer and Trice's failure to distinguish between continuance commitment, which is a theory of forced behavior, and value commitment, which is not. He claimed that Becker was concerned with continuance commitment while Ritzer and Trice operationalized it as value commitment. Testing Ritzer and Trice's claims, Alutto et al. (1973) found positive and significant relationships between organizational commitment and most of the side-bet indexes. They concluded that their data offered support for Becker's original hypothesis and explained the results in part as a function of their more refined measurement of commitment, along with differences in the sample. Shoemaker et al. (1977) extended the discussion by comparing Becker's structural theory to Ritzer and Trice's alternative social-psychology theory. In comparing the two sets of explanations, they found from their data that the social-psychological factors were stronger correlates of organizational commitment than the side-bet variables. They concluded, however, that both explanations or sets of variables have some influence on commitment, and neither should be considered to the exclusion of the other.

The research on Becker's theory continued without reaching any definite conclusion. Several studies have been interpreted as supportive of Becker's theory (Baba & Jamal, 1979; Hrebiniak, 1974; Hrebiniak & Alutto, 1972; Sheldon, 1971; Stevens et al., 1978). Others have been less supportive, or have provided evidence for Ritzer and Trice's alternative psychological theory (Amernic & Aranya, 1983; Angle & Perry, 1983; Aranya & Jacobson, 1975; Meyer & Allen, 1984).

Side-bet indexes, along with other categories of variables (psychological, role, structural, and work experience), were also tested as part of multivariate models of relationships between antecedents and organizational commitment. The results of these studies shed no further light on previous

divergent findings. Some of the studies found that side-bet variables make a statistically significant contribution in explaining organizational commitment (Koch & Steers, 1978; Lee, 1971; Luthans, Baack, & Taylor, 1987; Steers, 1977). Others found that even if there were correlational relationships between side-bet variables and organizational commitment, their impact disappeared in multivariate analysis when variables from other categories (such as role-related characteristics and work experiences) were included in the models (Angle & Perry, 1983; Bhagat & Chassie, 1981; Brunning & Snyder, 1983; Ferris, 1981; Hunt, Chonkol & Wood, 1985).

In summary, Becker's theory was developed in 1960 and much research has been conducted concerning this theory during the 1970's and 1980's. Yet no one had systematically summarized all of this research. Some limited attempts were made by Griffin and Bateman (1986), Morrow (1983), Mowday et al. (1982), and Reichers (1985), but only as part of more general literature reviews of organizational commitment. They concluded that there are meaningful relationships between side-bet indexes and organizational commitment, thus providing support to the side-bet theory. However, their conclusions were based on the traditional narrative review procedure which according to Hunter et al. (1982) has three possible limitations: (1) the reviewer may not attempt to integrate findings across studies, (2) the reviewer may simplify the integration task by basing his or her conclusions on only a small subset of the studies, and (3) the reviewer may actually attempt the task of mentally integrating findings across all studies and fail to do an adequate job. Therefore, the conclusion to support Becker's theory based on these limited reviews must be treated with caution.

Recent developments in meta-analysis (Hunter et al., 1982) have made it possible to re-examine existing studies using quantitative review methods. Such methods permit the statistical aggregation of research findings and the systematic assessment of inter-study moderators. Quantitative effects and samples can be cumulated and, consequently, communalities beyond the scope of narrative reviews can be brought to light. Given the prevalence of contrasting views and contradictory research findings concerning Becker's theory, a meta-analysis review appeared to be conceptually and practically appropriate to an attempt to find answers for the following unresolved questions concerning this theory:

1. Are there meaningful relationships between side-bet variables and organizational commitment, and are they strong enough to support Becker's theory?
2. Are the aforementioned relationships generalizable across situations or are they influenced by variables such as gender, type of occupation, rank, type of industry, etc.?

The answers to these questions would help resolve the argument about the ability of the side-bet theory to explain the formation of organizational commitment.

METHOD

Meta-Analysis

Meta-analysis procedures proposed by Glass, McGaw, and Smith (1981) and Hunter et al. (1982) involve extracting information from relevant studies and then statistically cumulating their findings. The Glass et al. (1981) procedure involves generating a standard by which to measure the size of effects obtained in individual studies, i.e., mean difference or Pearson's r , creating a distribution of such findings and from the distribution computing an average effect size which would represent the best estimate of the expected population effect. Hunter et al. (1982) extended and improved Glass' method by: (1) introducing a more accurate estimate of effect-size through the use of sample weighted estimates, (2) removing the artifactual attenuating effects of instrument unreliability and range restriction to correct effect-size estimates, and (3) testing the hypothesis that the variance in observed effect-size is due solely to artifacts.

We used the Hunter et al. (1982) meta-analytic procedure which aggregates correlation coefficients across a collection of empirical studies and corrects for the presence of statistical artifacts in order to provide unbiased estimates of population relationships. The method consists of three basic steps: the estimation of population mean correlations and variance, the correction for statistical artifacts, and the analysis of moderating effect.

Research Description

An exhaustive search was undertaken to locate research reporting relationships between organizational commitment and side-bet variables. Published studies were identified by means of both manual and computer-assisted searches of social science, psychology, and management literature for the years 1969-1987. The goal was to find studies reporting Pearson product-moment correlations. For each study, the following information was recorded if available: (1) sample characteristics such as gender, occupational type, and education, (2) means, standard deviations, and reliability information concerning commitment and side-bet variables, (3) sample size, (4) type of organizational commitment measurement used, and (5) Pearson

product-moment correlations concerning the relations between organizational commitment and side-bet variables.

The total number of studies reviewed was over 250 of which 50 included correlational data dealing with side-bet variables and organizational commitment. These 50 studies included 58 independent samples and are referenced in Appendix A.

Several additional points need to be emphasized in order to understand more completely the meta-analysis presented.

1. We controlled for the statistical artifacts of sampling error and predictor and criterion unreliability. There were no corrections for range restriction because of insufficient data.

2. The analysis is based on published studies. An argument might be made that unpublished studies differ in results from published studies. However, the Rosenthal (1979) study appears to suggest that, generally, when the mean effect-size is moderated or is relatively weak, many studies with zero effect-size would be needed to invalidate the results and conclusions.

3. Following an argument in the recent literature (Lowenberg & Cohen, 1990; McDaniel, Hirsh, Schmidt, Raju, & Hunter, 1986; Schmitt, Gooding, Noe, & Kirsch, 1984; Schmitt & Noe, 1986) concerning the rules for rejecting the situational specificity hypothesis, we chose not to follow the Pearlman, Schmidt, and Hunter (1980) common rule of 75%. It was decided instead to adopt McDaniel et al.'s (1986) recommendation that the actual amount of variance remaining after accounting for sample size should be taken into account in determining generalizability. The chi-square test suggested by Hunter et al. (1982) was used only as supportive evidence.

4. Following Schmitt & Noe's (1986) recommendation, we adopted a view that the "... confidence interval should be used to interpret validity generalization results..." (p. 849). Accordingly, in the present meta-analysis, the confidence interval together with the size of the residual variance, was used to determine whether to search for moderators.

5. It was decided to estimate the reliability distributions using Cronbach's (1951) coefficient alpha, which is the most popular reliability estimation technique, and to ignore other techniques which tend to operate under different mathematical assumptions. To use all of them without differentiation, might have confounded the analysis.

6. We decided to have a minimum of three samples in a meta-analysis so we could obtain at least some tentative information about the relationships between organizational commitment and various independent variables.

7. Based on Hunter et al. (1982) who found that the average correlation does not violate the independence assumption, it was decided that, if more than one correlation was reported for a single sample, the mean of the correlations would be used.

MEASURES OF COMMITMENT

Generally, two types of measures of organizational commitment have paralleled the distinction between the calculative or side-bet approach and the moral or attitudinal approach (Griffin & Bateman, 1986). Most of the empirical studies have used the affective measure of Porter et al. (1974) which has been called "the" approach to organizational commitment (Reichers, 1985). Moreover, Meyer and Allen (1984) and Stebbins (1970) provided empirical evidence that Ritzer and Trice's (1969) and Hrebiniak and Allutto's (1972) side-bet measures assess affective rather than continuance commitment, demonstrating that almost all the measures of organizational commitment are affective. Still, there is in the literature a long and continuing argument concerning the effects of the different measures on the results of studies. Morris and Sherman (1981) and Reichers (1985) stated that the inconsistency in results concerning the antecedents of organizational commitment may stem from the several different ways in which commitment has been defined and measured. Therefore, it was decided to control for the appropriate type of measure of organizational commitment by: (1) using the measure which was found to have sufficient data for a separate analysis, that is, the Porter et al. (1974) measure, and (2) comparing the studies using this measure with studies using other measures. As mentioned previously, all of these measures assess affective commitment. Results of this comparison are shown in the moderator analysis.

RESULTS

Results of the meta-analysis for the correlational data between side-bet variables and organizational commitment are presented in the first section. Results of the moderator analysis are presented in the second section.

Main Effect

The correlates of organizational commitment in Table I include 11 side-bet variables. These variables are: age, tenure, education, gender, marital status, number of children, level in the organization, number of jobs in the organization, skill level, perceived job alternatives, and pay.

In general, the meta-analysis results do not reveal a strong relationship between side-bet variables and organizational commitment. In terms of meaningful relationships, of the 11 side-bet variables, five of the corrected mean correlations (tenure, gender, number of children, skill level, and per-

Table I. Meta-Analysis Results for Side-Bet Correlates of Organizational Commitment

Correlates	Number of samples	Total sample size	Weighted \bar{r}	Observed variance of \bar{r}	Observed variance corrected for sampling error	Residual variance	Corrected weighted \bar{r}	Range of corrected \bar{r} (95% C.I.)	χ^2
Side-Bet variables									
Age	38	12,013	0.189	0.01138	0.00844	0.00839	0.204	0.010-0.098	147.08 ^a
Tenure	41	13,119	0.086	0.00873	0.00565	0.00564	0.092	-0.066-0.251	116.16 ^c
Education	28	7665	-0.102	0.01706	0.01348	0.01347	-0.110	-0.356-0.136	133.5 ^c
Gender (0 = male, 1 = female)	10	4298	-0.033	0.01211	0.00979	0.00978	-0.035	-0.245-0.174	52.15 ^c
Marital status (0 = not married, 1 = married)	6	1235	0.174	0.00262	-0.00195	-0.00199	0.188	—	3.44
Number of children	9	3427	0.089	0.00369	0.00110	0.00109	0.096	0.026-0.166	12.83
Level in the organization	9	3476	0.113	0.01715	0.01463	0.01461	0.123	-0.133-0.378	61.17 ^c
Number of jobs in the organization	4	916	0.096	0.00484	0.00055	0.00054	0.104	0.055-0.153	4.52
Skill level	4	1187	0.078	0.01885	0.00852	0.00851	0.084	-0.111-0.279	14.23 ^b
Perceived job alternatives	9	4984	-0.021	0.02195	0.02014	0.0214	-0.025	-0.369-0.318	109.48 ^c
Pay	11	2947	0.180	0.01647	0.01297	0.01293	0.194	-0.047-0.435	51.58 ^c

^a $p \leq .05$.^b $p \leq .01$.^c $p \leq .001$.

ceived job alternatives) are less than $\bar{r} = 0.1$. The strongest corrected mean correlation (that for age) is only $\bar{r} = 0.204$.

In terms of the situational specificity hypothesis, the residual variance for three side-bet variables (marital status, number of children, and number of jobs in the organization) is zero or close to zero. In all three of these cases, there is also enough difference between the observed variance and the residual variance, so that we can reject the situational specificity hypothesis. The non-significant chi-square results for these variables also support this conclusion. In the case of skill level, the difference between the observed variance and the residual variance is enough to reject the situational specificity hypothesis, although the chi-square test indicates significant variations among the correlations coefficient. The other seven side-bet variables have a significant remaining unexplained variance among sample correlations that cannot be attributed to the statistical artifacts. Therefore, the next step for these variables is a moderator analysis.

In terms of validity generalization, for seven side-bet variables (tenure, education, gender, level in the organization, skill level, perceived job alternatives, and pay), the 95% confidence interval includes zero and therefore rules out any conclusion of a significant population relationship between these variables and organizational commitment.

Mowday et al. (1982) quite convincingly argued that the determinants of commitment and the process through which commitment develops and is maintained are different at different stages in one's career. It might be argued that the variance in commitment due to demographic variables at the time of one's organizational entry needs to be statistically controlled if these demographic variables are to be used as part of the side-bet model. Therefore, we decided to control for the influence of the time factor in one's career by separating individuals who were at an early stage of their employment history from those who had had a chance for true investments in the organization. This separation was done for two variables, age and tenure, because they were considered to be "the best single indicators of investments" (Ritzer and Trice, 1969, p. 476). Based on our data, age was subdivided into two subgroups (24–35 years and 36 or more years) and tenure into three (1–4 years, 5–8 years, and 9 or more years). Following the side-bet model, we would expect a stronger relationship with organizational commitment in subgroups representing older and more tenured employees.

The results in Table II show that differences among the mean corrected correlations of the three tenured subgroups are in the expected direction. The mean corrected correlation for the subgroup with tenure of 9 years or more is higher ($\bar{r} = 0.208$) than the mean corrected correlation for the subgroup which has only 1–4 years of employment ($\bar{r} = -0.004$). The results concerning age are quite the opposite from what is predicted by the side-bet theory. The corrected correlation is stronger for younger employees ($\bar{r} =$

Table II. Meta-Analysis Results for Age and Tenure Controlled for Different Careers Stages

	Number of samples	Total sample size	Weighted \bar{r}	Observed variance of \bar{r}	Observed variance corrected for sampling error	Residual variance	Corrected weighted \bar{r}	Range of corrected \bar{r} (95% C.I.)	χ^2
Age	38	12,013	0.189	0.01138	0.00844	0.00839	0.204	0.010-0.398	147.08 ^c
24-35 years	7	1219	0.286	0.00960	0.00476	0.00466	0.307	0.164-0.451	13.82 ^a
36+ years	14	5884	0.191	0.00972	0.00751	0.00743	0.208	0.018-0.424	61.57 ^c
Tenure	41	13,119	0.086	0.00873	0.00565	0.00564	0.092	-0.066-0.251	116.16 ^c
1-4 years	3	372	-0.004	0.01075	0.00269	0.00269	-0.004	-0.113-0.105	4.00
5-8 years	9	1909	0.084	0.01223	0.00758	0.00758	0.090	-0.099-0.273	23.68 ^b
9+ years	5	628	0.186	0.01669	0.00927	0.00920	0.208	-0.003-0.418	11.24 ^b

^a $p \leq .05$.^b $p \leq .01$.^c $p \leq .001$.

0.307) than for older employees ($\bar{r} = 0.208$). Possible interpretations of these results are presented in the discussion.

MODERATOR ANALYSIS

The moderator analysis was based on variables previously examined or suggested in the literature on organizational commitment. One variable, type of occupation, was suggested by Angle and Perry (1983) who also stated that some of the findings concerning commitment "...may be largely a function of the type of employees who have typically participated in the studies of satisfaction vis-à-vis commitment or related concepts" (pp. 129-130). This variable was also suggested and examined by Mowday et al. (1982). Another variable, rank, was suggested as a moderator by Brunning and Snyder (1983), Grusky (1966), and Sheldon (1971) who claimed that managers were found to be more committed than non-managers because of their responsibilities and benefits.

Some findings in the literature indicate the potential of two structural variables being moderators. Buchanan (1974) found higher levels of organizational commitment among managers in the private sector than among those in the public sector, thus indicating sector to be a moderator (see also Mannheim, 1984). Size of the organization is another moderator. According to Hodson and Sullivan's (1985) findings, levels of commitment among workers in small organizations are higher than in large organizations. Size of organization was also suggested and used as a moderator by Mannheim (1984) and by Stevens et al. (1978). In the present meta-analysis, another variable determined to be a moderator is type of industry. This is based on Romzek's (1985a, b) studies of commitment among public service workers.

Besides the sample moderators mentioned, two methodological variables were also used as moderators in the present study. The importance of type of measure of organizational commitment has already been discussed. An additional moderator is the number of organizations studied. This is in consideration of the notion that the samples based upon several organizations have more potential for producing a variety of findings than samples based on one organization (Hunter et al., 1982).

We used all the variables which were proposed as potential moderators and treated them as moderators for the purpose of our analysis. However, several additional points need to be emphasized in order to understand more completely the moderator analysis.

1. In the moderator analysis, a moderating effect would be indicated if the average correlation varies from subgroup to subgroup, and the corrected variance average is lower in the subgroups than for the data set as a whole (Hunter et al., 1982). Whenever one of the subgroup's corrected mean

was missing because of lack of data, the moderator analysis results were compared to the total corrected mean.

2. To enable subgrouping, it was decided that the search for moderators would take place only if there were a minimum of six samples in total.

3. In a few cases, due to the subgroupings, correction for error of measurement could not take place because there were no reports of the reliabilities in one or both of the subgroups. In these cases, the observed variance was corrected only for sampling error.

Moderator analysis was conducted for seven side-bet variables. Table III summarizes the major results for the moderator analysis. The complete results are presented in Appendix B.

Table III shows the corrected weighted mean correlations for each subgroup, the total observed variance for each side-bet variable, and the subgroup's average observed variances. Results indicate that all the potential moderators have only weak moderating effects on age and tenure. Although the corrected mean variances in the subgroups are lower than the total variances for most of the moderators concerning age, there are only small differences in the correlations between the subgroups. In the case of tenure, the corrected variances in the subgroups for most potential moderators do not average much lower than the total variance. The only variable that seems to have some effect on both age and tenure is rank. There is a stronger relationship between age and commitment for employers who are not managers than for managers. However, the relationship between tenure and commitment is weaker for non-managers than for managers. Education is moderated mainly by type of occupation, type of industry, and rank; the negative relationship between education and commitment is stronger for blue-collar workers, non-managers, and public service workers. Pay is moderated mainly by type of occupation; the relationship between pay and commitment is stronger among white-collar workers than it is for the total sample and there is also a reduction in the corrected variance in this subgroup in comparison to this total. Gender was found to be moderated by type of occupation. There is a negative relationship between commitment and gender for white-collar workers suggesting a stronger relationship for males and a positive relationship for females.

It is difficult to draw definite conclusions concerning moderator effects for the side-bet variables of perceived job alternatives and level in the organization because of insufficient data.

Analysis concerning the effect of the methodological moderators, namely, number of organizations studied and different measures of commitment, did not show consistent results. Using the Porter et al. (1974) measure the correlations with commitment are age, education, pay, and level in the organization. However, the corrected variances do not average much lower in the subgroups than for the data set as a whole.

Table III. Summary of Moderator Analysis

Side-by-side variables	Type of occupation			Rank		Type of industry		Sector		Size of organization		Measure of commitment		Number of organizations	
	Blue collar	White collar	Managers	Managers	Non-managers	Service	Industry	Public	Private	Small + medium	Large	Porter et al.	Others	1	2-9 18 +
Age (total weighted $r = 0.204$)	0.194	0.172	0.107	0.107	0.215	0.235	0.220	0.207	0.312	0.253	0.241	0.215	0.188	0.251	0.289
Subgroups weighted \bar{r}	0.01138	0.00783	0.00428	0.00428	0.00873	0.01138	0.00758	0.01235	0.01138	0.01138	0.01138	0.01138	0.01138	0.01138	0.01138
Total observed variance	0.00783	0.00783	0.00428	0.00428	0.00873	0.01138	0.00758	0.01235	0.01138	0.01138	0.01138	0.01138	0.01138	0.01138	0.01138
Average subsets variance	0.00783	0.00783	0.00428	0.00428	0.00873	0.01138	0.00758	0.01235	0.01138	0.01138	0.01138	0.01138	0.01138	0.01138	0.01138
Tenure (total weighted $r = 0.092$)	0.067	0.083	0.170	0.170	0.103	0.120	0.100	0.094	0.188	0.089	0.117	0.064	0.134	0.105	0.153
Subgroups weighted \bar{r}	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873
Total observed variance	0.01037	0.01037	0.00734	0.00734	0.00734	0.01209	0.01209	0.00895	0.00895	0.01011	0.01011	0.00836	0.00836	0.00836	0.00836
Average subsets variance	0.01037	0.01037	0.00734	0.00734	0.00734	0.01209	0.01209	0.00895	0.00895	0.01011	0.01011	0.00836	0.00836	0.00836	0.00836
Education (total weighted $r = -0.110$)	-0.158	-0.027	0.020	0.020	-0.114	-0.153	-0.025	-0.157	-0.027	-0.148	-0.136	-0.163	-0.056	-0.133	-0.202
Subgroups weighted \bar{r}	0.01706	0.01706	0.00833	0.00833	0.00833	0.01706	0.01014	0.01706	0.01706	0.01706	0.01706	0.01706	0.01706	0.01706	0.01706
Total observed variance	0.00634	0.00634	0.00833	0.00833	0.00833	0.01014	0.01014	0.02293	0.02293	0.01745	0.01745	0.01443	0.01443	0.01745	0.01745
Average subsets variance	0.00634	0.00634	0.00833	0.00833	0.00833	0.01014	0.01014	0.02293	0.02293	0.01745	0.01745	0.01443	0.01443	0.01745	0.01745
Pay (total weighted $r = 0.194$)	0.010	0.249	0.109	0.109	0.060	0.108	0.010	0.179	0.090	0.028	0.065	0.242	0.118	0.084	0.261
Subgroups weighted \bar{r}	0.01647	0.01647	0.01647	0.01647	0.00274	0.01647	0.01647	0.01647	0.01647	0.01647	0.01647	0.01647	0.01647	0.01647	0.01647
Total observed variance	0.01647	0.01647	0.00274	0.00274	0.00274	0.01647	0.01647	0.01647	0.01647	0.0025	0.0025	0.01224	0.01224	0.00829	0.00829
Average subsets variance	0.01647	0.01647	0.00274	0.00274	0.00274	0.01647	0.01647	0.01647	0.01647	0.0025	0.0025	0.01224	0.01224	0.00829	0.00829
Gender (total weighted $r = -0.035$)	0.079	-0.143	0.01211	0.01211	0.063	0.051	0.062	0.075	0.016	0.006	0.050	-0.062	0.024	0.079	-0.036
Subgroups weighted \bar{r}	0.01211	0.01211	0.01211	0.01211	0.01211	0.01211	0.01211	0.01211	0.01211	0.01211	0.01211	0.01211	0.01211	0.01211	0.01211
Total observed variance	0.00167	0.00167	0.00167	0.00167	0.00167	0.00427	0.00427	0.00219	0.00219	0.00553	0.00553	0.00949	0.00949	0.00553	0.00553
Average subsets variance	0.00167	0.00167	0.00167	0.00167	0.00167	0.00427	0.00427	0.00219	0.00219	0.00553	0.00553	0.00949	0.00949	0.00553	0.00553
Perceived job alternatives (total weighted $r = -0.025$)	-0.163	0.043	0.02195	0.02195	-0.211	-0.137	0.02195	-0.063	0.02195	0.010	-0.300	-0.017	-0.045	-0.183	-0.010
Subgroups weighted \bar{r}	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195
Total observed variance	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195
Average subsets variance	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195	0.02195
Level (total weighted $r = 0.123$)	0.150	0.209	0.061	0.061	0.147	0.030	0.151	0.026	0.090	-0.063	0.173	0.156	0.092	0.053	0.199
Subgroups weighted \bar{r}	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715
Total observed variance	0.01715	0.01715	0.01715	0.01715	0.01715	0.00406	0.00406	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715
Average subsets variance	0.01715	0.01715	0.01715	0.01715	0.01715	0.00406	0.00406	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715	0.01715

^aThere are not enough samples for moderator analysis.

^b0 = Male, 1 = Female.

DISCUSSION

"The goal of research in any area is the production of an integrated statement of the findings of the many pieces of research done in that area..." (Hunter et al., 1982, p. 162). In the case of side-bet theory, the need today is not necessarily for additional empirical data, but for some means of making sense out of the vast amounts of data that have been gathered. Meta-analysis procedure has been used in the present study to try to rectify the contradicting findings and conclusions regarding Becker's side-bet theory of organizational commitment.

In general, our meta-analysis results do not support the side-bet theory. The low mean corrected correlations for all of the 11 side-bet variables and, for most of these variables, the large confidence intervals which include zero indicate no meaningful relationships with organizational commitment. Moreover, the results do not support the literature's assumption that age and tenure be considered as the best indicators of side-bets (Meyer & Allen, 1984; Ritzer & Trice, 1969). Tenure has a low corrected correlation and a confidence interval which includes zero. When tenure was controlled for three career stages, the strongest correlation among the subgroups was in the latest career stage, as expected according to the side-bet theory. However, the corrected correlation in this subgroup (more than 9 years tenure) is still low ($\bar{r} = 0.208$) and has a large confidence interval which includes zero. Therefore, we cannot conclude of any meaningful relationship between tenure and organizational commitment. Age has a somewhat stronger corrected correlation in the main effect and its confidence interval does not include zero, but when age was controlled for two career stages, the relationships with commitment were stronger among younger employees than among older ones. This finding supports the Meyer and Allen (1984) argument that younger employees might have more commitment, because they are aware of the fact that with less work experience, they often have fewer job opportunities elsewhere. As they get more experience, however, alternate employment opportunities may increase, thus decreasing the magnitude of one important cost of leaving—that of having no job. This explanation, which is supported by our results, is quite the opposite of Becker's sidebet theory.

For four of the 11 side-bet variables examined in this meta-analysis (marital status, number of children, number of jobs in the organization, and skill level), the specificity hypothesis was rejected, thus indicating generalizable relationships with organizational commitment. However, the corrected mean correlations of these variables are low and the relationships between each of them and commitment are not meaningful. For the other seven variables where moderator analyses were conducted, results show, in general, that the correlations between these variables and organizational commitment do not differ

substantially in the subgroups. Moreover, the corrected correlations in the subgroups are still low, thus indicating the limited effect of side-bet variables on organizational commitment.

It is worth noting, however, that two moderators (type of occupation and rank) have effects on the relationships between most of the side-bet variables and organizational commitment which are somewhat stronger than those of the other moderators. This finding, although it has no effect on the overall results concerning Becker's theory, does support the Shoemaker et al. (1977) statement that "... a fruitful avenue for further research had best take into account differences in the types and levels of employee studies..." (pp. 602-603).

A question can be raised concerning the usefulness of combining studies using different measures of commitment. Controlling the measures of commitment in our meta-analysis showed that there is no meaningful and consistent difference between the results based on Porter et al.'s (1974) measure and the results based on the other affective measures. Moreover, results based only on the most common affective measure of Porter et al. do not contradict the results based on combining all the affective measures: the magnitude of the correlations between side-bet variables and organizational commitment is still weak, and for most of the variables these correlations have large confidence intervals which include zero.

The results of our meta-analysis contradict conclusions reached by researchers using narrative methods (Griffin & Bateman, 1986; Morrow, 1983; Mowday et al., 1982; Reichers, 1985), most of whom tend to support the side-bet theory. The likelihood of obtaining contradictory results from traditional vs. statistical procedures was examined by Cooper and Rosenthal (1980), who have shown that reviewers who use narrative methods and reviewers who use quantitative methods sometimes reach different conclusions. In accordance with these findings, this meta-analysis supports the view that it is useful to re-examine empirical studies by quantitative review methods even though they have already been reviewed by traditional methods.

We suggest three possible conclusions, each of which has potential implications for future research regarding the side-bet theory.

The first conclusion would be to accept one of the arguments of Meyer and Allen (1984) which states that "the instrument used in tests of the side-bet theory may not be measuring commitment as Becker conceptualized it" (p. 377). The implication of this conclusion is that "in order to test the validity of the side-bet theory, however, a commitment measure must be used that is congruent with Becker's conceptualization" (Meyer & Allen, 1984, p. 377). Meyer and Allen had constructed a continuance commitment scale which they claimed measured more accurately what Becker had intended than did the affective measures which other researchers had used for testing his the-

ory. McGee and Ford (1987) re-examined the scales of Meyer and Allen and concluded that one of the subscales of the continuance commitment measure "appears to more closely parallel the side-bet view of commitment, as described originally by Becker" (p. 640). To agree with the Meyer and Allen and McGee and Ford conclusions would be to agree that future research needs to examine the side-bet theory using the same strategy as before, i.e., evaluating the relationships between side-bet indexes and organizational commitment measure, but with a more appropriate "Becker-type" measure of continuance commitment.

A second possible conclusion would be to accept the other Meyer and Allen (1984) argument that perhaps the strategy used to examine the side-bet theory was inappropriate. "Using age and tenure as indexes seems less appropriate than directly obtaining employees' perceptions of the size and importance of investments they have made. This type of strategy would be consistent with Becker's theory" (pp. 337-338). Along this line of thought, one could go further and conclude that the strategy of examining Becker's theory based on the relationships between side-bet indexes and organizational commitment measures was inappropriate no matter what measures of commitment were used. It is not side-bet indexes such as age and tenure which are meaningful but rather the "individuals' perceptions regarding the number and the magnitude of the side bets that they made" (Meyer & Allen, 1984, p. 378). Based on this argument, we are in need of a different strategy for examining the theory. Meyer and Allen themselves suggested the works of Farrell & Rusbult (1981) and Rusbult (1980) as containing a more appropriate strategy for examining the side-bet theory in the future.

The practical implication of either of the above conclusions is that we would need a new body of empirical research before we could reach any conclusions regarding the side-bet theory.

A third conclusion is to accept the argument of Ritzer and Trice (1969) that the "...side-bet theory of commitment should be rejected" (p. 477). The conclusion of Ritzer and Trice is supported by the results of the present meta-analysis which are based on a large body of empirical research examining side-bet variables. To accept this conclusion means that attention should be transferred from the side-bet variables to the psychological and situational variables which have a strong potential for explaining the formation of organizational commitment (Mowday et al., 1982; Reichers, 1985). The organizational commitment literature contains evidence of the limited influence of side-bet variables on other commitments in the work environment such as union commitment (Fucami & Larson, 1984; Fullagar, 1986; Gordon, Philpot, Burt, Thompson, & Spiller, 1980; Gordon, Beauvais, & Ladd, 1984), job involvement (Saal, 1978; Sekaran & Mowday, 1981), and professional commitment (Aranya & Jacobson, 1975; Vrendenburgh & Trinkaus, 1983).

Such evidence, along with the findings of this meta-analysis, demonstrate the limitations of the calculative approach. Such limitations have been exemplified by difficulties with the side-bet theory in attempting to explain the formation of commitment in the work environment.

Because the first two conclusions require a new body of empirical research, only future studies will prove whether they are valid. Similarly, it would only be new research which focuses on psychological and situational variables or a meta-analysis review of the relationships between these variables and organizational commitment, which could prove whether it is correct to abandon the side-bet theory.

APPENDIX A. LIST OF THE PUBLISHED STUDIES USED IN THE META ANALYSIS

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APPENDIX B. RESULTS OF MODERATOR ANALYSIS FOR SEVEN SIDE-BET VARIABLES
I. Moderator Analysis for Age

Moderators	Number of samples	Total sample size	Weighted \bar{r}	Observed variance of \bar{r}	Observed variance corrected for sampling error	Residual variance	Corrected weighted \bar{r}	Range of corrected \bar{r} (95% C.I.)	χ^2
Total	38	12013	0.189	0.01138	0.00844	0.00839	0.204	0.010-0.398	147.08 ^c
Type of occupation									
Blue collar	8	2737	0.178	0.00399	0.00125	0.00123	0.194	0.119-0.269	11.66
White collar	19	6835	0.160	0.01166	0.00902	0.00898	0.172	-0.028-0.372	83.90 ^c
Rank									
Managers	4	1187	0.099	0.00211	-0.00120	-0.00121	0.107		2.55
Non managers	20	4500	0.199	0.00645	0.00235	0.00230	0.215	0.114-0.317	31.49 ^a
Type of industry									
Service	24	5182	0.218	0.01086	0.00666	0.00661	0.235	0.063-0.406	62.05 ^b
Industry	7	1666	0.198	0.00430	0.00043	0.00036	0.220	0.179-0.261	7.77

Sector									
Public	11	3610	0.192	0.00998	0.00715	0.00710	0.207	0.029-0.385	38.82°
Private	6	788	0.286	0.01472	0.00830	0.00813	0.312	0.119-0.505	13.76 ^a
Size of organization									
Small and medium	5	1286	0.235	0.00277	-0.00071	-0.00078	0.253		3.98
Large	3	2112	0.222	0.00641	0.00085	0.00079	0.241	0.181-0.301	14.98
Commitment measures									
Porter et al. (1974)	20	7269	0.202	0.00776	0.00523	0.00521	0.215	0.064-0.366	61.29°
Other measures	18	4744	0.170	0.01632	0.01274	0.01267	0.188	-0.057-0.434	82.05°
Number of organizations									
1	22	3452	0.231	0.00975	0.00403	0.00396	0.251	0.117-0.384	37.54°
2-9	5	1298	0.265	0.00984	0.00651	0.00637	0.289	0.118-0.459	14.78 ^b
18+	11	7263	0.155	0.00943	0.00799	0.00797	0.166	-0.021-0.352	71.93°

^a $p \leq .05$.
^b $p \leq .01$.
^c $p \leq .001$.

 $\alpha p \leq .05.$ $p \leq .01.$ $p \leq .001.$

2. Moderator Analysis for Tenure

Moderators	Number of samples	Total sample size	Weighted \bar{r}	Observed variance of \bar{r}	Observed variance corrected for sampling error	Residual variance	Corrected weighted \bar{r}	Range of corrected \bar{r} (95% C.I.)	χ^2
Total	41	13119	0.086	0.00873	0.00565	0.00564	0.092	-0.066-0.231	116.16 ^c
Type of occupation									
Blue collar	9	2804	0.062	0.01386	0.01068	0.01067	0.067	-0.153-0.288	39.16 ^c
White collar	21	7493	0.077	0.00689	0.00412	0.00411	0.083	-0.052-0.218	52.26 ^c
White collar									
Professionals	13	5951	0.054	0.00386	0.00169	0.00168	0.058	-0.028-0.144	23.11 ^a
Clerical and mixed samples	8	1542	0.167	0.00852	0.00362	0.00359	0.180	-0.053-0.306	13.91
Rank									
Managers	4	835	0.157	0.00581	0.00125	0.00123	0.170	0.096-0.244	5.10
Non managers	21	6108	0.095	0.00888	0.00551	0.00550	0.103	-0.054-0.261	55.27 ^b
Type of industry									
Service	25	4942	0.112	0.01237	0.00744	0.00743	0.120	-0.062-0.302	62.71 ^c
Industry	8	2455	0.091	0.01181	0.00860	0.00859	0.100	-0.101-0.301	29.46 ^c

Sector									
Public	14	4489	0.087	0.00935	0.00628	0.00627	0.094	-0.073-0.261	42.62 ^a
Private	5	648	0.173	0.00855	0.00128	0.00122	0.188	0.114-0.263	5.88
Size of organization									
Small and medium	5	1298	0.082	0.00784	0.00404	0.00403	0.089	-0.045-0.223	10.32 ^a
Large	16	3201	0.108	0.01239	0.00751	0.00749	0.117	-0.067-0.302	40.60 ^c
Commitment measures									
Porter et al. (1974)	21	7578	0.060	0.00503	0.00228	0.00228	0.064	-0.036-0.164	38.39 ^b
Other measures	20	5541	0.120	0.01169	0.00818	0.00815	0.134	-0.063-0.330	66.70 ^c
Number of organizations									
1	23	3601	0.093	0.01423	0.00796	0.00795	0.101	-0.089-0.291	52.15 ^c
2-9	6	1716	0.140	0.00541	0.00205	0.00201	0.153	0.057-0.248	9.66
18 +	11	7730	0.066	0.00454	0.00313	0.00313	0.071	-0.046-0.187	35.41 ^c

^a $p \leq .05$.
^b $p \leq .01$.
^c $p \leq .001$.

3. Moderator Analysis for Education

Moderators	Number of samples	Total sample size	Weighted \bar{r}	Observed variance of \bar{r}	Observed variance corrected for sampling error	Residual variance	Corrected weighted \bar{r}	Range of corrected \bar{r} (95% C.I.)	χ^2
Total	28	7665	-0.102	0.01706	0.01348	0.01347	-0.110	-0.356-0.136	133.5 ^c
Type of occupation									
Blue collar	5	1835	-0.145	0.00465	0.00204	0.00202	-0.158	-0.254-0.062	8.90
White collar	11	3096	-0.025	0.00802	0.00447	0.00447	-0.027	-0.168-0.114	24.85 ^b
Rank									
Managers	4	1187	0.019	0.00604	0.00268	0.00268	0.020	-0.089-0.129	7.18
Non managers	14	3224	-0.105	0.01061	0.00636	0.00635	-0.114	-0.283-0.055	34.98 ^c
Type of industry									
Service	20	4852	-0.142	0.02048	0.01652	0.01650	-0.153	-0.424-0.118	103.50 ^c
Industry	4	764	-0.022	0.00929	0.00406	0.00406	-0.025	-0.163-0.114	7.11

4. Moderator Analysis for Gender

Moderators	Number of samples	Total sample size	Weighted \bar{r}	Observed variance of \bar{r}	Observed variance corrected for sampling error	Residual variance	Corrected weighted \bar{r}	Range of corrected \bar{r} (95% C.I.)	χ^2
Total	10	4298	-0.033	0.01211	0.00979	0.00978	-0.035	-0.245-0.174	52.15 ^c
Type of occupation									
Blue collar	4	1994	0.073	0.00192	-0.00006	-0.00007	0.079	--	3.88
White collar	3	1916	-0.134	0.00141	-0.00010	-0.00012	-0.143	--	2.81
Rank									
Managers	0	--	--	--	--	--	--	--	--
Non managers	6	2395	0.058	0.00281	0.00032	0.00032	0.063	0.025-0.101	6.77
Type of industry									
Service	4	1577	0.048	0.00480	0.00228	0.00227	0.051	-0.049-0.152	7.60
Industry	3	895	0.056	0.00374	0.00041	0.00041	0.062	0.018-0.105	3.37

^a0 = Male, 1 = Female.
^b $p \leq .05$.
^c $p \leq .001$.

5. Moderator Analysis for Pay Level in the Organization

Moderators	Number of samples	Total sample size	Weighted \bar{r}	Observed variance of \bar{r}	Observed variance corrected for sampling error	Residual variance	Corrected weighted \bar{r}	Range of corrected \bar{r} (95% C.I.)	χ^2
Total	9	3476	0.113	0.01715	0.01463	0.01461	0.123	-0.133-0.378	61.17 ^c
Type of occupation									
Blue collar	1	372	0.150	—	—	—	—	—	—
White collar	4	1842	0.194	0.00954	0.00753	0.00748	0.209	0.027-0.391	18.98 ^c
Rank									
Managers	1	608	0.061	—	—	—	—	—	—
Non managers	2	484	0.136	0.00064	-0.00334	-0.00337	0.147	—	0.32
Type of industry									
Service	6	1939	0.028	0.01153	0.00844	0.00844	0.030	-0.163-0.224	22.39 ^c
Industry	2	484	0.136	0.00064	-0.00334	-0.00337	0.151	—	0.32

[illegible]

6. Moderator Analysis for Perceived Job Alternatives

Moderators	Number of samples	Total sample size	Weighted r	Observed variance of r	Observed variance corrected for sampling error	Residual variance	Corrected weighted r	Range of corrected r (95% C.I.)	χ^2
Total	9	4984	-0.021	0.02195	0.02014	0.02014	-0.025	-0.369-0.318	109.48 ^b
Type of occupation									
Blue collar	1	1099	-0.163	—	—	—	—	—	—
White collar	5	3391	0.038	0.01051	0.00904	0.00904	0.043	-0.165-0.250	35.74 ^b
Rank									
Managers	0	—	—	—	—	—	—	—	—
Non managers	4	1622	-0.170	0.02258	0.02026	0.01991	-0.211	-0.554-0.132	38.85 ^b
Type of industry									
Service	6	2019	-0.110	0.03331	0.03041	0.03027	-0.137	-0.557-0.282	68.96 ^b
Industry	0	—	—	—	—	—	—	—	—

	$\alpha p = .05$	$\alpha p = .001$
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7. Moderator Analysis for Pay

Moderators	Number of samples	Total sample size	Weighted \bar{r}	Observed variance of \bar{r}	Observed variance corrected for sampling error	Residual variance	Corrected weighted \bar{r}	Range of corrected \bar{r} (95% C.I.)	χ^2
Total	11	2947	0.180	0.01647	0.01297	0.01293	0.194	-0.047-0.435	51.81 ^b
Type of occupation									
Blue collar	1	377	0.010	—	—	—	—	—	—
White collar	6	2070	0.231	0.01163	0.00903	0.00896	0.249	0.049-0.448	26.86 ^b
Rank									
Managers	2	464	0.102	0.00281	-0.00142	-0.00143	0.109	—	1.33
Non managers	4	868	0.055	0.00266	-0.00192	-0.00192	0.060	—	2.31
Type of industry									
Service	6	725	0.100	0.00687	-0.00124	-0.00125	0.108	—	5.08
Industry	1	377	0.010	—	—	—	—	—	—

$a_p \leq .05$,
 $b_p \leq .001$.

BIOGRAPHICAL NOTES

AARON COHEN is now an Assistant Professor in the Faculty of Management at the University of Lethbridge, Alberta. When the study was performed, he was at the Technion-Israel Institute of Technology.

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