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COWORKER EXCHANGE, LEADER-MEMBER EXCHANGE, AND WORK ATTITUDES
A Study of Coworker Dyads

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The purpose of this study is to examine how leader-member exchange (LMX) similarity might affect exchange quality between coworkers. This research also investigates the relationships of LMX and CWX (coworker exchange) to employees' organizational commitment and job satisfaction. Each respondent from 76 nurses at three hospitals in Semarang were asked to rate the quality of the relationship he/she had with his/her supervisor, resulting in 76 LMX ratings. They were also asked to rate the quality of their relationships with each of their coworkers. A dyad was created where we had complete information on two employees rating one another. Once paired, a total of 146 dyads with complete LMX, CWX, and work attitude data were acquired. The results of this research indicate that the interaction between two coworkers' LMX scores predicts CWX quality for the coworker dyad. After controlling for CWX, LMX quality is positively related to job satisfaction, but not to organizational commitment. Furthermore, after controlling for LMX, a greater diversity in a worker's CWX relationship is negatively associated to his/her organizational commitment, but not to his/her job satisfaction. The interaction of CWX quality and CWX diversity, however, does not predict work attitude.

Keywords: coworker exchange; CWX diversity; CWX quality; dyad; leader-member exchange; work attitude

bers with their organizations may result in a high turnover and absenteeism, low working quality, and disloyalty. The two factors are related, as indicated by Dienesch and Liden (Wayne et al. 1997). The relationship between leaders and members positively affects the work attitude.

Seers (1989) in Sherony and Green (2002) suggests that the quality of coworker exchange may alternatively affect working attitude and members' performance. A number of research findings concludes that strong interpersonal relationships tend to be characterized as reciprocal, mutual, and interdependent [Fletcher 1996, Jordan et al. 1991, and Miller 1996 in Higgins and Kram (2001)]. Reciprocal, mutual, and interdependent relationships are characterized as strong, and members in the group are encouraged to help and assist each other. This condition potentially leads to group cohesiveness, group satisfaction, and finally higher satisfaction of members with the job.

This research is aimed at broadening the understanding of CWX roles in leadership by examining whether the quality of LMX affects coworkers' CWX. The effects of LMX and CWX on employees' working attitude are also examined. The topic remains worthwhile to be investigated due to the small amount of research available and the increasing importance of improving group work effectiveness in corporations. Reciprocal relationships among coworkers and the feeling of interdependence will improve the performance process, which effectively leads to the achievement of organizational objectives.

Theories and Hypotheses

Leader-Member Exchange and Coworker Exchange

The research of Dansereau et al. (1975) observing 60 dyads of leader-member for more than 9 months finds that there are two groups of different exchanges. The first is in-group exchange, described as a partnership characterized by the effects of reciprocity, extra-contractual behavior, mutual trust, respect, affection, as well as solidarity. In the second group, which is out-group exchange, the leader acts as a supervisor and LMX is characterized as a one-way top-down effect and task-based relationship.

Each member of the group provides social support, and in the case of a cohesive, stable, and effective group, all members develop an exchange towards loyalty and trust. If CWX is related to LMX, the clearest effect may be seen if the assessment is done by using similar exchange dimensions. The aspects of respect, trust, and loyalty in relation to CWX may also be linked to similar issues of LMX. The research on LMX describes a leadership relationship as part of a wider relationship network, and suggests that the exchange on one side of the network may affect the relationship on the other side in the network (Graen and Uhl-Bien 1995). By adopting Sparrowe

reciprocity, balanced reciprocity, and negative reciprocity (Sparrowe and Liden 1997).

Sahlins' theory allows the development of LMX discussion by integrating reciprocal continuum and social network analysis. Greater leader-member exchange covers a wider relationship system around the dyads of leader-member, for example a horizontal relationship among subordinates. Sahlins' theory is discussed because this research does not discuss dyads but triads between leaders and members.

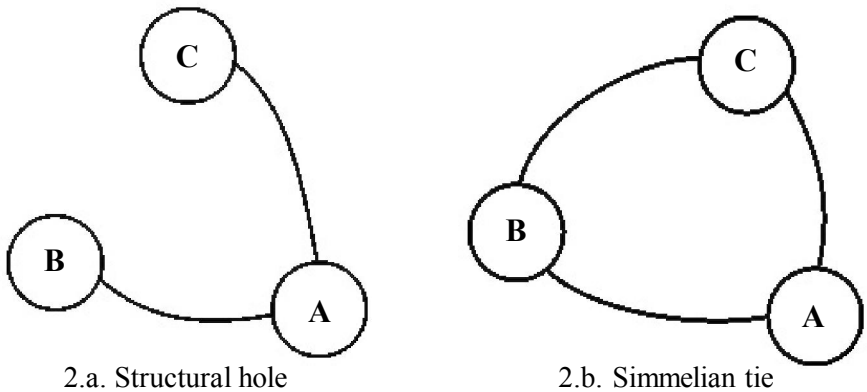
The Network Structure

If LMX research explains members' outcomes concerning the relationship quality between members and leaders, the social network analysis emphasizes the relational structure in explaining outcomes. According to Sparrowe and Liden (1997), the network structure associated with the three types of exchanges of Sahlins are structural hole and Simmelian tie which become a strong network structure (Burt 1992; Krachardt 1995).

Burt states that structural hole is a social network structure consisting of three individuals in which two of them do not interact. As Figure 2a displays, both B and C are related to A, but B does not have any relation with C. This kind of structure is competition conducive, but not conducive for developing trust and cooperation. However, Higgins and Kram (2201) postulate that the individuals involved in the structural hole uniquely function as mediators of unconnected parties. Therefore, A, who has a relationship with B and C, will become the mediator for B and C. In this way, B and C can establish their relationship.

Structural Simmelian Tie (Krackhardt 1995) is a strong social structure between 2 dyads or 3 interacting individuals (triad). As Figure 2a shows, A, B, and C are interrelated and interact with each other. Compared to

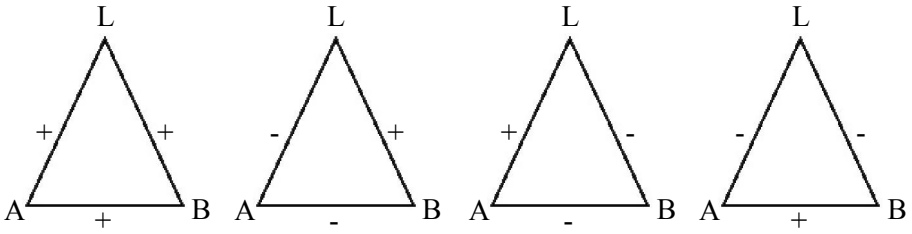
Figure 2. **Network Structures**



2.a. Structural hole 2.b. Simmelian tie

Source: Burt (1992), and Kracckhart (1995)

Figure 3. **Triad LMX-CWX**



L= Leader; A and B are two different coworkers; (+) shows positive relationship, while (-) shows negative relationship

Source: Sherony and Green (2002

relationship with the leader as well as with the subordinate B will possibly convince and encourage the leader to form a better LMX with B. This idea is conceptually described by the balance theory of Heider. An imbalanced situation is a situation in which the relationship among the elements is harmonious with no pressure for situational changing (Heider 1858 in Sherony and Green 2002). If the relationship of the elements is not balanced, there will be a force leading to balance. If a leader has a high quality LMX with a subordinate –just say A and B, balance theory of Heider suggests that A will develop a high quality CWX relationship with B. The same case happens to a leader with a low quality LMX with two subordinates, A and B, who would probably develop a high quality CWX. If the high quality LMX is experienced by the leader with only a selected subordinate, then the balance dynamics predicts a weak CWX between A and B. This is displayed in Figure 3.

In a triad relationship, a positive CWX relationship between A and B can be predicted if they have a similar LMX relationship. Therefore, the hypothesis is:

H1: The similarity of a LMX relationship positively influences the CWX relationship. The more similar the LMX relationship between two coworkers, the higher the CWX relationship between them.

LMX and Work Attitude

According to Graen and Cashman (in Sparrowe and Liden 1997) quoted by Rosse and Kraut (1988), LMX involves transactions between two parties in which a leader provides more satisfying and conducive working environment as input and extrawork from members/subordinates. A subordinate with a high quality of exchange receives and offers a variety of beneficial outcomes, including attention from their leader, more ideas to contribute, fewer problems, and more job satisfaction (Rosse and Kraut 1988). Related to the explanation above, leaders develop different relationship quality with their subordinates. These differences

job satisfaction are positively interrelated (Sherony and Green 2002). From the findings, two hypotheses are proposed:

H2a: LMX will positively affect organizational commitment.

H2b: LMX will positively affect job satisfaction.

CWX and Work Attitude

Some researchers [Cummings et al. 1993, Jackson et al. 1995, Maznevski, 1994, Tsui et al. 1992 in Milliken and Martins (1996)] proposed two categories of diversities, namely: observable diversities, such as race, ethnic, age, and gender; and non-observable diversities, such as personality, values, education, and socio-economic status.

Research on heterogeneity in groups indicates that the more diverse the organization, the more the opportunity of the organization to provide solutions. However, on the other side, the more diverse the organization, the more likely it will be less integrated (O'Reilly et al. 1989), and the higher the level of dissatisfaction (Jackson et al. 1991).

Observable diversities are consistently found to negatively affect affective outcomes such as job satisfaction and commitment at both individual and group levels. The more similar the members' background, such as similarities in demographic condition, the more interested the members in the group to form a relationship [Kanter 1997, Pfeffer 1983 in Milliken and Martins (1996)]. One of the reasons is that people with similar backgrounds usually have similar values and experiences, and therefore they can interact with each other positively. Heterogeneity in a group may negatively affect individual perceptions on working satisfaction realized in the decrease of identification or social integration within the group (Ancona and Caldwell 1992; O'Reilly et al. 1989; Smith et al. 1994).

The diversity variable hypothesized in the research is not the one mentioned previously. The diversity concept employed in the research is neither non-observable nor observable among group members. Diversity in this research is network diversity which emphasizes the characteristics of relationships occurring among group members, in which the relationship quality among them is affected by the differences in the two characteristics. Higgins and Kram (2001) and Krackhardt (1992) suggest that network diversity be defined as the level at which people in the network or group are familiar and relate to each other. They did not focus their attention on individual attributes in the group; rather, they emphasized the relationship characteristics among the group members. The diversity of relationship quality among the members in a group is the concept of CWX relationship diversity employed in this research.

With respect to the relationship diversity, Sherony and Green (2002) suggest that the existence of in-group and out-group in a team produces dif-

Method

Population and Sample

The population of this research consists of all nurses working in hospitals in Semarang, Central Java. The nurses were chosen to be subjects since the profession requires mutual interactions and resource exchanges among members in the organizations to maintain and improve services for patients. On the other hand, nurses are morally under pressure because of their work characteristics that involve people's lives; hence, supports both from coworkers and their direct supervisors are necessary.

Ninety questionnaires were distributed to nurses previously determined by their Room Heads. As many as 78 questionnaires (86.7%) were returned by the respondents, but there were two incomplete questionnaires; so there were only 76 in total. Based on the work group, there were 146 dyads for further analysis.

Measurements

LMX. LMX variables were measured by LMX7 developed by Graen and Uhl-Bien (1995), comprising seven items of questions with five-point Likert scale, from strongly disagree to strongly agree. Respondents were asked to answer the seven items related to their appraisal on their working relationships with supervisors (Room Heads).

CWX. CWX variables were measured by CWX7 on five-point Likert scale, except for one item of "How well does your leader recognize your potential?" This item was dropped since it was not able to appropriately measure coworker relationship. The respondents were asked to answer the six items evaluating their working relationships with each of their coworkers under the same supervisor.

Job Satisfaction. Job satisfaction was measured by 20 questions from the Minnesota Satisfaction Questionnaire (MSQ) developed by Weiss, Dawis, England, and Lofquist (1976), covering the dimensions of salary, supervisors, coworkers, promotion, and the job itself on five-point Likert scale from very unsatisfied to very satisfied.

Organizational Commitment. This variable was measured by nine items of questions developed by Mowday, Steers, and Porter (1979) with five-point scale, from strongly disagree to strongly agree.

CWX Diversity. CWX Diversity was measured by calculating variances from CWX scores provided by each coworker. The higher variances indicated the higher diversity in scoring of CWX relationship.

CWX Quality. CWX Quality was measured by averaging CWX scores provided by each respondent.

Control Variable. Control variables in this research are age, sex, organizational tenure, and the length of relationship with the supervisor (supervisor tenure). The use of these variables as control variables is based on previous research. The research on coworker exchange by Sherony and Green (2002)

larities from two members of a dyad. The r_{WG} score was regressed with CWX score for every dyad.

Hypothesis 2. Hypothesis 2 was examined by regression analysis, in which the LMX score of every respondent was regressed on organizational commitment and job satisfaction as dependent variables.

Hypothesis 3. This hypothesis was examined by the Ordinary Least Squares (OLS) regression. Variances of CWX scores of each respondent were calculated. Higher variances indicate a higher diversity in the scoring of CWX relationship. Two separate tests were conducted, one for organizational commitment and the other for job satisfaction for the dependent variables. In each case, the control variable was inserted into the formula, and then followed by CWX variance.

Hypothesis 4. Hypothesis 4 was examined using moderated regression analysis. This analysis is utilized to test whether the independent variable affects the dependent one as well as to test whether the relationship of the dependent and independent variables is influenced by other independent variables. This is known as an interaction effect, which occurs when a moderated variable changes the type of relationship between independent and dependent variables (Hair et al. 1998). This kind of analytical procedure (Cohen and Cohen 1983) can be explained as follows: control variables are inputted into regression formula, followed by the independent variables (CWX diversity and CWX quality) to test the main effect, and finally the interaction between the two independent variables is inputted. The three steps were conducted for the dependent variables of organizational commitment and job satisfaction. A moderating effect can be seen from the interactive regression coefficient yielded by the next step of the analysis. If the interactive regression coefficient is positive and significant, it means that the two independent variables interactively affect dependent variables.

Results

In this research, the raters were the two members of dyads. If the single target was a leader, the score resulted was the similarity measurement between two members of dyad about LMX relationship with the Room Head. If the single target was a coworker, the score obtained was the similarity measurement between the two members of dyad about the CWX relationship among them. After 146 of the r_{WG} scores were obtained, the median was calculated. The score of >0.7 indicates that two members of dyad perceive their relationship quality as similar to each other. The median of r_{WG} scores for the LMX rating was 0.980, meaning that the analysis could proceed further. The median of r_{WG} scores for the CWX ratings was 0.989. This suggests that the members of dyads think that their relationship quality is similar. The calculation of the average score of CWX for every dyad was conducted so that a

single CWX score for each dyad was obtained.

Respondents' answers on organizational commitment and job satisfaction resulted in an average score of 3.78 and 3.44, respectively. It can be concluded that respondents have high commitment to the organization, and although the score is slightly lower, their job satisfaction is also relatively high. The average score of exchange relationship quality was 3.24. This shows that the subjects of the research in the three sample hospitals perceive that their relationship quality with their direct supervisors is good. In other words, respondents feel that they have become in-group subordinates of their leaders. The same case applies to LMX similarity resulting from the calculation of r_{WG} of 0.97. The score indicates that each member of the coworker dyads perceive themselves as experiencing similar LMX relationships.

The average score of dyads was 3.25, and the average score of CWX relationship was 3.24. These scores indicate that respondents perceive themselves as having a good quality relationship exchange with both their individual coworkers and group under the same Room Head. Compared to the average score of CWX, the LMX score provided by respondents had a higher mean. This was possibly because the selection of nurses who became respondents was decided by the respondents' direct supervisors, considering high interaction relationships with the supervisors or with coworkers participating in the research. The supervisors' ability to assess the closeness of their relationships with subordinates more accurately than the interaction among members means that the assessment of LMX relationship is higher than the assessment of CWX. The detailed results are presented in Table 1.

There were two steps in the regression analysis to test the effect of LMX relationship quality on the CWX. *Firstly*, the obtained scores of LMX ratings were used as an index to indicate the degree to which LMX ratings from two members of dyad were similar. *Secondly*, the r_{WG} score was regressed by the CWX score for every dyad.

Testing the effect of CWX relationship diversity to organizational commitment and job satisfaction could not be conducted by using CWX rating scores that had already been obtained. Variances in CWX ratings for each coworker had to be firstly calculated. The higher the variances, the higher the diversity in the rating of CWX relationship provided by respondents for all of their coworkers. This could mean that the score of variance indicates the degree of relationship exchange diversity possessed by respondents with their coworkers. The next regression analysis was conducted for each dependent variable.

Testing the interactional diversity and CWX relationship quality to organizational commitment and job satisfaction involved the three-stage analysis. *Firstly*, control variables were inputted into regression analysis. *Secondly*, diversity and CWX relational

Table 3. **Regressions of LMX and CWX Diversity on Organizational Commitment**

Variable	β	t	Sig.
Control Variable:			
Sex	0.114	0.981	0.330
Age	0.242	1.162	0.249
SPV tenure	-0.030	-0.232	0.817
Org. tenure	-0.030	-0.232	0.817
CWX	0.191	1.670	0.099
R^2	0.087		
F	1.342		
***Independent Variable*:**			
LMX	0.222	1.853	0.068
R^2	0.131		
F	1,730		
Control Variable:			
Sex	0.096	0.835	0.406
Age	0.276	1.341	0.184
SPV tenure	0-0.057	-0.440	0.662
Org. tenure	-0.058	-0.306	0.760
LMX	0.260	2.273	0.026*
R^2	0.116		
F	1.844		
***Indpendent Variabel*:**			
CWX	-0.279	-2.516	0.014*
R^2	0.191		
F	2,708*		

* $p < .05$

into the regression analysis, there were only 10.4 percent of dependent variable variances which could be explained by control variables (R^2= 0.104; F= 1.623; p= 0.165). The addition of LMX provided more explanations for variance in job satisfaction, with a rating of 0.297 (F = 4.851; p = 0.000). From the test results, it can be concluded that LMX positively and significantly affects the job satisfaction variable (b = 0.469; t = 4.349; p = 0.000). Hence, hypothesis 2a is proved to be correct. The detailed results are presented in Table 4.

Hypothesis 3a reveals that CWX diversity negatively affects organizational commitment. Before the CWX

not negatively affect job satisfaction, is proved incorrect (see Table 4). Individual CWX diversity is not a significant explanation for job satisfaction (b = -0.200; t = -1.979; p = 0.052). On the contrary, all variables of both CWX diversity and control variables (age, sex, work length under the same supervisor, organizational tenure, and LMX) inputted into the model simultaneously affect job satisfaction (F = 5.644; p = 0.000). The control variable of LMX significantly affects job satisfaction (p = 0.000), both before and after the independent variables were inputted into the regression formula. Therefore, those control variables are considered to be able to affect the dependent variables.

Table 5. **Regressions of CWX Diversity and Quality Interactively on Organizational Commitment**

Variable	β	t	Sig.
Step 1:			
Sex	0.096	0.835	0.406
Age	0.276	1.341	0.184
SPV tenure	-0.057	-0.440	0.662
Org. tenure	-0.058	-0.306	0.760
LMX	0.260*	2.273	0.026
R^2	0.116		
ΔR^2			
F	1.844		
F *Change*			
Step 2:			
CWX Diversity	-0.268*	-2.391	0.020
CWX	0.092	0.801	0.426
R^2	0.198		
ΔR^2	0.082		
F	2.401*		
F *Change*			
Step 3:			
Diversity x Quality	0.735	0.869	0.388
R^2	0.207		
ΔR^2	0.009		
F	2.188*		
F *Change*	0,755		

* $p < .05$

Table 6. **Regressions of CWX Diversity and CWX Quality Interactively on Job Satisfaction**

Variable	β	t	Sig.
Step 1:			
Sex	-0.047	-0.461	0.646
Age	0.392*	2.130	0.037
SPV tenure	-0.028	-0.239	0.812
Org. tenure	-0.126	-0.748	0.457
LMX	0.493*	4.803	0.000
R^2	0.291		
ΔR^2			
F	5.750*		
F *Change*			
Step 2:			
CWX Diversity	-0.193	-1.890	0.063
CWX	0.054	0.512	0.610
R^2	0.332		
ΔR^2	0.041		
F	4.823*		
F *Change*	2.068		
Step 3:			
Diversity x Quality	0.094	1.296	0.200
R^2	0.348		
ΔR^2	0.016		
F	4.472*		
F *Change*	1,679		

* $p < .05$

ers, the higher the quality of exchange relationship between them. The findings of this research also support Byrne (1971), who states that two persons perceiving themselves as similar have more opportunities to relate well. Therefore, subordinates whose relationships with the leader are similar tend to interact more because similarity leads to the feeling of content and interpersonal attraction. The higher the opportunity to interact and the higher the perceived similarity, the higher the expectation to reciprocate. According to Weick (1979) in Klein et al. (2001), interaction occurring among group members will form similarities in perceptions and beliefs among them. This finally leads to better relationship quality.

satisfaction examined in this research is proved incorrect. This is probably because of the content factor at work; diverse coworker relationships do not affect an individual's satisfaction with their work. As Sherony and Green (2002) suggest, exchange diversity measuring variation in trust, respect, and duties does not affect the happiness that an employee will experience during their work. This suggestion is also supported by Bateman and Strasser (1984) in Lum, et al. (1998), who studied the same sample, and report that nurses' and their coworkers' satisfaction is a strong measure of commitment but not of satisfaction. It is possible that a nurse who is not satisfied with her exchange relationship with her coworkers decreases her desire to remain in the organization, and tends to move to another organization although the profession is the same.

Individually, CWX diversity significantly affects organizational commitment. Similar to previous research, however, its interaction with CWX diversity and CWX quality is not significant. The same case is apparent with the interaction effect of CWX diversity and CWX quality on job satisfaction. The result is not significant. Therefore, both hypotheses 4a and 4b are rejected. These findings support previous research which finds the same conclusions for these hypotheses. According to Sherony and Green (2002), there is only one interpretation for this result, which is that coworker exchange relationship is not an important thing to an employee's life. CWX probably becomes a stronger measure for work attitude if it can be identified by an employee's coworker who is dependent upon that employee. For instance, the relationship quality of employee A with his coworkers is good, but there is one person from that group of coworkers who has a bad relationship quality of exchange with A. This may result in a negative work attitude of A, although their average score of CWX is high and CWX variance is low.

The findings of this research are consistent with the argument that in dyadic relationship triads, there is a tendency to balance out. The more similar the quality of leader–member exchange between two coworkers, the higher the quality of CWX between them. The similar relationship quality perceived increases the opportunity for interactions, and interaction among the group members will produce a similarity in perceptions, attitudes, and beliefs among them, which finally leads to an increase in the relationship quality of coworker exchange. For instance, it can be said that subordinates A and B possess high quality LMX relationships with their direct supervisor, or if they both have a low quality LMX relationship, then they will have a high quality CWX relationship. This raises the idea that CWX can act as a LMX multiplier, in which the quality of the CWX relationship between two subordinates will affect the LMX similarity occurring between the two. Reciprocity occurs between the two exchanges.

eficial to obtain knowledge of how people feel and react to their work and the relationship of various feelings and perceptions (Spector 1994 in Bishop and Scott 2000). It is also clearly stated that the reason for using the self-reporting method is crucial to the purpose of the study. The purpose of the study is related to the measurement of individual perceptions on the work, leaders, coworkers, and the organization. Therefore, common method biases are not the focus of this research.

The findings of this study increase leaders' understanding of the importance of forming high quality relationships (in-group). With high LMX quality, it is expected that positive CWX among the subordinates will occur. High quality LMX, characterized by the degree of support, respect, and leaders' obligations to their subordinates, is more effective for the achievement of subordinates' job satisfaction. This means that leaders hold important roles in the network of exchange, since inter-member exchange quality is not the only factor affecting behavior and attitude. The effect of LMX among members may also affect the increase in organizational commitment, team development, and group cohesiveness.

For research on social exchange theory which uses organizational commitment as one of the aspects to be examined, it is necessary to consider the perceived organizational support variable in the research model, since various research, including this study, shows that LMX is not a significant measure of organizational commitment.

Validity tests conducted in previous research and in this study show that there is no cross-loading on LMX variables with CWX loading. This indicates that CWX as a new concept can be measured by harnessing exchange dimensions similar to LMX, as is done in this study.

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