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Individual differences in equity models

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In the present paper, we (1) study whether people differ in the equity models they use, and (2) test whether individual differences in equity models relate to individual differences in equity sensitivity. To achieve this goal, an Information Integration experiment was performed in which participants were given information on the performance of two employees and were asked to distribute a fixed amount of money. The results reveal that people indeed use different comparison structures. In the first one, first compare their relative share of the outputs and incomes, and then compare these interpersonal ratios. The second equity model is in essence a non-integrative model in that individuals who adopt it do not use the performance information to decide on the distribution of the money. Interestingly, individual differences in equity models relate to individual differences in equity sensitivity, as people who do not use the performance information appear to be more sensitive to equity.

Equity theory, as developed by Adams (1965), considers motivation and job satisfaction as the result of a comparison of a worker's perceived outcomes and inputs to the outcomes and inputs of a referent other (Vinchur & Koppes, 2011). Algebraically, this model can be written as follows:

$$\frac{O_A}{I_A} = \frac{O_B}{I_B} \tag{1}$$

where O_A and O_B are the outcomes and I_A and I_B are the inputs for Person A and B respectively. In an organizational context, outcomes may refer to salary, career opportunities, extra-legal benefits, and even to

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psychological rewards such as feedback and support from colleagues or a supervisor (De Gieter, De Cooman, Hofmans, Pepermans, & Jegers, 2012). Inputs, in turn, refer to work effort and commitment, but also to factors such as age and educational level (Anderson, 1976). According to Adams (1965), a feeling of equity is the result of (1) comparing the inputs and outcomes for the self and for the referent other, and (2) comparing both intra-individual ratios between individuals. When the ratios differ, inequity is experienced, which in turn causes a conflict situation that elicits stress. Moreover, Adams (1965) argues that the larger the inequity, the larger the stress is, and that with higher stress, the individual experiences a stronger need to reduce this stress by eliminating the experienced inequity.

Traditionally, equity theory has been tested by monitoring the reaction of individuals to experimentally induced situations of inequity by intentionally under- or overpaying them (Landy & Conte, 2010; p. 375). It was expected that underpaid participants would lower the quality or quantity of their output, whereas people who were overpaid would raise the quality or quantity. In general, results supported the underpayment predictions, but not the overpayment ones, which may be due to the fact that inequity due to overpayment is not as stressful as inequity because of underpayment (Landy & Conte, 2010; p. 375).

Most criticisms on equity theory concern the artificial laboratory conditions in which the theory has been tested. Yet, an even more pertinent issue is whether the theory as suggested by Adams (1965) really holds. Most studies are unable to answer this question as this requires the theory to be evaluated within each person's value system. In particular, equity theory predicts a decrease (increase) in work effort in a situation of underpayment (overpayment), with the exact decrease (increase) in work effort depending on the person's valuation of the effort and the underpayment (overpayment). However, traditional research on equity theory only measures whether the work effort increases or decreases, but fails to test whether the magnitudes of these increases or decreases are in line with what equity theory would predict. Hence, at best, these studies provide weak support for the model because a variety of alternative models are able to make exactly the same predictions. Because of this reason, Anderson and Farkas (1975), Anderson (1976), Farkas and Anderson (1979), and Singh (1985) tested whether people integrate input and outcome information in the way proposed by Adams (1965). They found that an alternative equity model operates. In particular, it turns out that people first compare their relative share of the outputs and incomes, and then compare these interpersonal ratios. This alternative equity model can be expressed as follows:

$$\frac{O_B}{(O_A+O_B)} = \frac{I_B}{(I_A+I_B)}. \tag{2}$$

In the present paper, we contribute to the study of equity by testing whether people differ in the models they use to make equity judgments. Moreover, we study whether these individual differences relate to individual differences in equity sensitivity, that is, the sensitivity towards equity. Equity sensitivity theory argues that individuals can be categorized on a continuum of equity sensitivity ranging from entitleds to equity sensitives to benevolents. Entitled individuals try to maximize their benefits and prefer extrinsic to intrinsic rewards (Miles, Huseman, & Hatfield, 1994). Equity sensitive individuals in turn prefer that their outcome/input ratios are equal to the ratios of their referent others and normally follow the norm of reciprocity in equity theory. Finally, benevolents are more willing to contribute to the organization, and they can be considered altruists or “givers” in social relationships (Huseman, Hatfield, & Miles, 1987). Equity sensitivity has been the topic of investigation in a wide range of studies during the last decades (e.g., Bing, Davison, Garner, Ammeter, & Novicevic, 2009) Surprisingly, however, research that links individual differences in equity theory to the individual differences in equity sensitivity is lacking. The present study aims to fill this particular research gap.

In sum, although equity theory was invented several decades ago, it is still important in a lot of recent research. For example, the concept of equity is central to marketing and consumer psychology (e.g., Ashley, Noble, Donthu, & Lemon, 2011), forgiveness research (e.g., Paleari, Regalia, & Fincham, 2011), management research (e.g., Greenberg, 2010), and social psychological research (e.g., Lively, Steelman, & Powell, 2010). In the present study, we further develop the study of equity models by testing whether individual differences in equity models exist. This will be done by performing an information integration (IIT) study in which inputs of two individuals are manipulated, and the outcomes are to be distributed by the participant. If individual differences in equity models are found, we will relate these differences to individual differences in equity sensitivity. This allows us to test whether people who use different equity models also differ in their sensitivity towards equity.

METHOD

Participants. The participants were 58 employees from a wide range of companies. Because it is our goal to study individual differences in equity models, sample heterogeneity is a desirable feature of our data. The mean age of the participants was 34 years (SD = 11.4) and 57 percent of the participants were men. Most participants (i.e., 69%) were clerks, 12% were workman, and 19% were executives. Participation in the study was completely voluntary.

Materials and Procedure. Participants were invited to take part in the study by email. When clicking on the link in the email they were first asked to provide some demographical data. Second, participants filled in the equity sensitivity instrument measuring individual differences in equity sensitivity (Huseman, et al., 1987).

Finally, the participants took part an experiment in which they were provided with information on the performance of two employees (i.e., A and B) working on similar jobs in the same team. Performance for both A and B was manipulated by indicating whether it was seriously below average, below average, average, above average, or seriously above average. Both factors (i.e., performance of A and B) were combined according to a full-factorial design, thereby yielding 5×5=25 stimulus combinations. For each stimulus combination, participants were asked to distribute a fixed amount of money between both persons. This was done by manipulating a graphical rating scale with 100 intervals on which the left anchor corresponded to "no salary for B" and the right anchor to "everything for B". Before the start of the actual experiment, all participants were familiarized with the response scale by going through two practice trials.

RESULTS

Analysis of the complete sample. In the experiment, respondents were asked to divide a fixed sum, S, between persons A and B given their respective performances. Because $S = O_A + O_B$, formula 2 can be written as follows:

$$O_B = \left(\frac{I_B}{I_A + I_B}\right)S. \tag{3}$$

Formula 3 predicts a barrel-shaped family of curves, and statistically, this implies that the interaction is concentrated in the linear-by-quadratic interaction components (Anderson & Farkas, 1975).

As can be seen in Figure 1, the data indeed show this barrel-shaped form. In line with the graphical interpretation, a factorial ANOVA confirms that the effects of the performance of Person A ($F(4,228)=118.06$; $p<.001$) and Person B ($F(4,228)=107.39$; $p<.001$) as well as their interaction ($F(16,912)=10.02$; $p<.001$) are significantly different from zero. Moreover, the interaction is entirely located in the linear-by-quadratic components ($F(1,57)=7.17$; $p=.010$ and $F(1,57)=59.69$; $p<.001$ respectively).

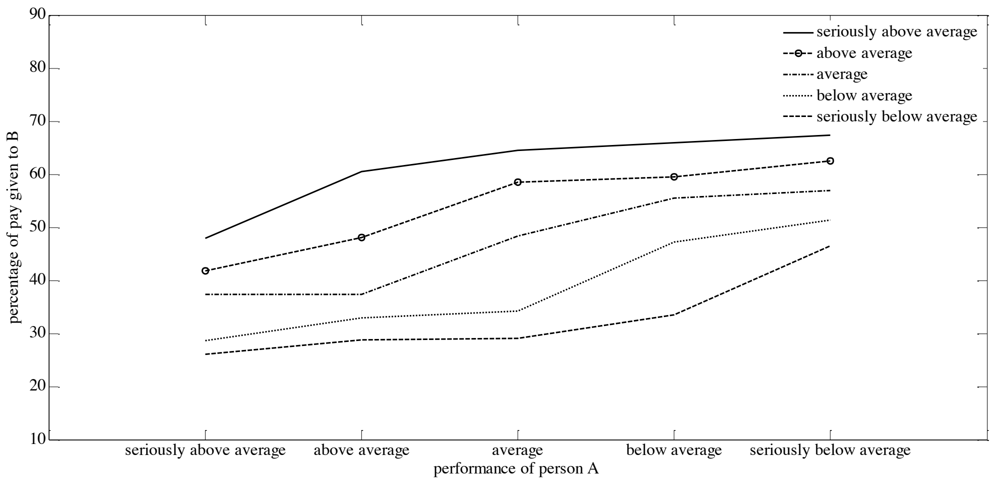

Figure 1: Mean percentage of pay given to Person B, as a function of the performance of Person A (on the X-axis) and the performance of Person B (different lines). Data from the full sample.

Individual differences analysis. Next, we evaluate whether individuals differ in the integration rule they use. This is done by applying the clustering procedure proposed by Hofmans and Mullet (in press). In particular, in a first step, individual differences in the Valuation Function are accounted for by clustering individuals on the basis of their scale values.

In a second step, individual differences in the integration function are revealed by clustering individuals within each scale value cluster on the basis of their standardized responses. For both steps, we made use of K-means clustering and we relied on the convex-hull method to decide on the number of clusters (Schepers & Hofmans, 2008). By applying this procedure, we found two different integration rules in our data.

First, there is a large group of individuals (n=53) for which the integration rule equals the equity rule suggested by Anderson and Farkas (1975). In particular, when their judgments are plotted in a factorial graph, the curves display the predicted barrel-shaped family of curves (see Figure 2). Moreover, a factorial ANOVA confirms this graphical interpretation by showing significant main effects for performance of Person A ($F(4,208)=145.65$; $p<.001$) and Person B ($F(4,208)=118.52$; $p<.001$), as well as a significant interaction effect ($F(16,832)=10.02$; $p<.001$) which is entirely located in the linear-by-quadratic components ($F(1,57)=7.63$; $p=.008$ and $F(1,57)=61.43$; $p<.001$ respectively).

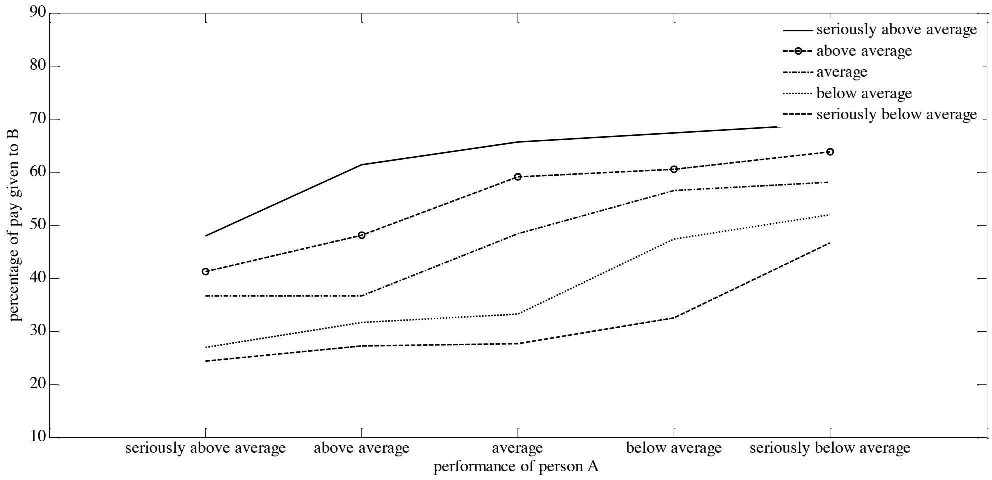

Figure 2: Mean percentage of pay given to Person B, as a function of the performance of Person A (on the X-axis) and the performance of Person B (different lines). Data from Cluster 1.

In contrast, participants belonging to the second group (n=5), do not use the performance information to decide on how to distribute the money. This can be seen in the ANOVA, which shows non-significant main effects for performance of Person A ($F(4,12)<1$; $p=.368$) and Person B ($F(4,12)<1$; $p=.853$), together with a non-significant interaction effect ($F(16,48)<1$; $p=.898$). In fact, this group always assigns about the same share of money to both persons, regardless of the performance of both persons in the experiment.

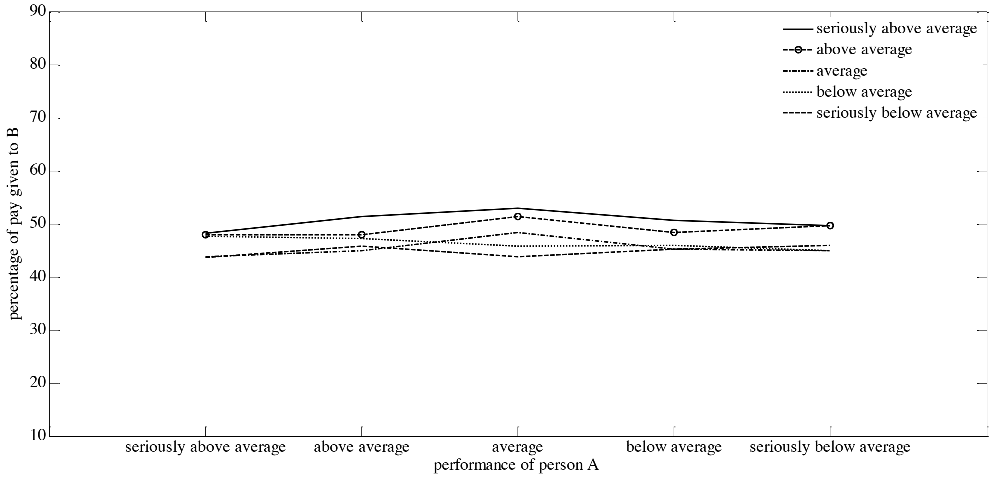

Figure 3: Mean percentage of pay given to Person B, as a function of the performance of Person A (on the X-axis) and the performance of Person B (different lines). Data from Cluster 3.

Covariates. Finally, we tested whether individual differences in equity models relate to individual differences in equity sensitivity. This turns out to be the case, with people from the second group (i.e., the people who do not take performances into account when deciding on the distribution of the money) scoring higher on equity sensitivity than people from the first group (i.e., the people who do take performance into account) ($t(56)=-2.74$; $p=.008$).

DISCUSSION

In the present paper, we have demonstrated the existence of individual differences in equity models. This finding is of major importance as it suggests that people may obey different comparison structures when judging the equity of a certain situation. Moreover, individual differences in these comparison structures seem to relate to individual differences in equity sensitivity. This finding is an important one as it implies that quantitative differences in the degree to which people value equity relate to qualitative differences in the conceptualization of equity.

Regarding these qualitative differences in comparison structures, we found that people use one of two different equity models. The first model corresponds to a model in which feelings of equity result from (1) first comparing the relative share of the outputs and incomes, and (2) then comparing these interpersonal ratios (see Formula 2). It should be noted that, in the case of equity, this model is mathematically equivalent to the one of Adams (1965; see Formula 1). However, for the case of inequity, the predictions of both models markedly differ and in studies of inequity the model of Anderson and Farkas (1975) received empirical support whereas the one of Adams (1965) did not. The second equity model is remarkably different from the first one, as people adhering it do not seem to take the performance information into account. For these people, equity implies the equal distribution of recourses among the employees that are involved.

Concerning the link between individual differences in equity models and individual differences in equity sensitivity, we found that people who do not take performance into account when deciding on the distribution of recourses have a higher equity sensitivity than people who do take performance into account. This is not surprising as these people are characterized by a heightened sensitivity to the needs of others and a more altruistic state-of-mind (Huseman et al., 1987; Miles et al., 1994). For this reason, it is difficult or stressful for these people to unequally distribute the resources as this implies that one of the individuals involved is disadvantaged.

While we have demonstrated the existence of individual differences in equity models, an important remark has to be made. One of the major contributions of Adams (1965) was to attract the attention to the many variables that could influence the inputs and outcomes in an organizational setting. In our study, however, we have equaled input with performance and output with pay. This is an important simplification of the model that might possibly impact on the equity models that were found. However, studies of Anderson (1976), Anderson and Farkas (1975), and Farkas and Anderson

(1979) have used multidimensional input and have found that this does not influence the equity model. Consequently, we expect that the individual differences that we found will generalize to situations with other inputs and outcomes as well.

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