

Subjective Measures of Quality of Work in the Social Cooperatives

Maurizio Carpita
University of Brescia, Italy
carpita@eco.unibs.it

Silvia Golia
University of Brescia, Italy
golia@eco.unibs.it

June 2008

Preliminary version: please do not quote without authors permission

Quality of work has within a short time become a major subject of study and discussion in labour economy. Its quantification is a challenging task because it implies the translation of various subjective perceptions into a single objective measure (composite indicator). The method used to construct measures is the Rating Scale Model and the available data come from the Survey on Italian Social Cooperatives carried out in 2007. The validity of the obtained Rasch measures is tested with respect to some overall variables of the quality of work. Moreover, these measures are utilized to evaluate the differences in the perception of the quality of work due to worker (gender, age and education) and cooperative (type, dimension and geographic area) characteristics, work characteristics (service area, membership, time and type of contract) and work incentives (economic, professional and learning).

Introduction

The recent economic theory concerning the quality of work in the nonprofit sector assumes that there is a direct and positive link between worker effort (and productivity) and job satisfaction, with reference to economic (pay, job certainty and career) as well as non economic facets (personal and ideal achievement, relationship development). This explains why these workers are more satisfied with their job than workers employed in other sectors despite the lower mean wage. In order to attract and motivate their workers, the organizations operating in the nonprofit sector base their strategies on new relationship models (derived from the moral models) which make use of a complex and wide (economic as well as intrinsic) incentive mix able to improve the intrinsic and relational job satisfaction (Borzaga and Musella, 2003).

The statistical analysis of the subjective perceptions of the quality of work (motivations, fairness, job satisfaction) in the Italian nonprofit sector has been studied during the last years (Carpita, 2003; Carpita and Manisera, 2006; Manisera et al., 2007; Brentari and Golia, 2008). It has to face two aspects: the first refers to the calculus of convenient composite indicators to measure them, the second refers to description of the relationships between the measures making use of models that take into account the peculiarities of the organizations involved.

The Rating Scale Model (Andrich, 1978) is used in order to obtain linear and reproducible measures of the quality of work, whereas the data come from the Survey on Italian Social Cooperatives carried out in 2007 which involved 320 Italian social cooperatives of type A and B and 4,134 paid workers.

The obtained measures are utilized to evaluate the differences in the subjective quality of work due to worker (gender, age and education) and cooperative (type, dimension and geographic area) characteristics, work characteristics (service area, membership, time and type of contract) and work incentives (economic, professional and learning).

The Survey on the Italian Social Cooperatives (ICSI²⁰⁰⁷)

The social services sector has become an important topic because of some noteworthy recent changes: besides the traditional activities of the public bodies, new social and familiar models favoured the development of the so-called welfare mix. In such a model, nonprofit organizational forms are more and more important and are thought to promote particular relationships among the different stakeholders. In Italy, the increasing interest towards these forms of organization has been recently shown in a law regulating social enterprises passed in 2005 (D.L. 155/2006). Social cooperatives are enterprises in which ownership and governance rights are assigned to the workers or to a mix of workers and volunteers. They constitute the most recent evolution of the cooperative form and are characterized by the pursuit of community interest objectives. There are two types of social cooperative: the social cooperative of type A, which manages social-assistance and educational services, and the social cooperative of type B, which runs activities all focused on training and job finding for disadvantaged people.

The available data come from the Survey on the Italian Social Cooperatives carried out in 2007 (*Indagine sulle Cooperative Sociali Italiane*, ICSI²⁰⁰⁷; Carpita, 2007). The aim is twofold: first, to verify if and how these nonprofit organizations are able to address part of their activities to social purposes, second, to investigate the characteristics and the quality of the working relations. The questionnaire was written by academic experts in job satisfaction and in the social services sector field. The ICSI²⁰⁰⁷ was a paper-and-pencil survey; trained data collectors supervised data collection and contacted again those who did not initially respond to the survey. 320 social cooperatives of type A and B were sampled from the Census 2003 database¹ and 4,134 paid workers answered the survey.

Taking into account several sections of the ICSI²⁰⁰⁷ we were able to construct the following measures: (1) level of motivation, (2) fairness and (3) job satisfaction for each worker (Carpita and Manisera, 2007).

The items that constitute the motivation section of the survey allow one to discriminate between ex-ante and ex-post level of motivation. Table A.1 reports the items useful to measure the ex-ante level of motivation; the workers were asked to state how much each aspect had initially drawn them towards the cooperative, assigning a score from 1, *at all*, to 7, *a lot*. Table A.2 shows the items used in the evaluation of the ex-post level of motivation; respondents were asked to indicate how they thought their working

¹ The Census 2003 counts 5,093 operative social cooperatives with 153,284 paid workers.

experience in the cooperative had changed their interest toward the job, assigning a score from 1, *definitely less interested*, to 7, *definitely more interested* and central score 4, *unchanged interest*.

The items that constitute the fairness section of the survey allow one to discriminate between distributive, procedural and interactional perceived fairness. Tables A.3 reports the items which describe the distributive fairness; for each aspect respondents were asked to indicate how they considered fair their pay, assigning a score from 1, *much less than one's due*, to 7, *much more than one's due* and central score 4, *one's due*. Table A.4 shows the items used in the description of the procedural fairness; for each aspect the workers were asked to indicate their degree of agreement, assigning a score from 1, *complete disagreement*, to 7, *complete agreement*. The *don't know* answer was treated as nonresponse. Table A.5 reports those items useful to measure the interactional fairness; for each aspect respondents were asked to judge their superiors behaviour, assigning a score from 1, *definitely no*, to 7, *definitely yes* and central score 4, *neither yes nor no*.

The items that constitute the satisfaction section of the survey refer job satisfaction (JS) as a conglomeration of attitudes towards various aspects of a job which can be grouped into extrinsic, intrinsic and relational, in order to obtain a comprehensive picture of a person's JS. The items which identify these aspects were reported in tables A.6 and A.7 respectively. For each work aspect respondents were asked to indicate how satisfied they were with it, assigning a score from 1, *very dissatisfied*, to 7, *highly satisfied* and central score 4, *neither dissatisfied nor satisfied*.

The Rasch measures of motivation, fairness and job satisfaction

The *Rasch model* (RM) (Rasch, 1960), is a family of measurement models which converts raw scores into linear and reproducible measurement. Its distinguishing characteristics are: separable person and item parameters, sufficient statistics for the parameters and conjoint additivity. These features enable *specifically objective* comparisons of persons and items and allow each set of model parameters to be conditioned out of the estimation procedure for the others.

It requires *unidimensionality*, which means that all items forming the questionnaire measure only a single construct, i.e. the latent trait under study, and *local independence*, which requires that, conditional to the latent trait, the response to a given item is independent from the responses to the other items in the questionnaire.

If the data fit the model, then the measures produced applying the RM to the sample data are objective and expressed in logits (logarithm of odds) which has the property of maintaining the same size over the entire continuum.

According to the RM, the probability that a person n answers in a given way, say x , to the item i depends on worker aptitude and how difficult the item is to endorse. For polytomously scored items as in the ICSI²⁰⁰⁷, that is when there are $m+1$ possible ordered response categories for each item (coded as $x = 0, 1, \dots, m$), following the *Rating Scale Model* (Andrich, 1978), this probability is given by:

$$P(X_{ni} = x) = \frac{\exp[x(\beta_n - \delta_i) - \sum_{j=0}^x \tau_j]}{\sum_{k=0}^m \exp[k(\beta_n - \delta_i) - \sum_{j=0}^k \tau_j]}, \quad x = 0, 1, \dots, m \quad (1)$$

where $\tau_0 \equiv 0$, β_n identifies the *ability* of person n , δ_i the *mean difficulty* of item i and τ_j , called *threshold*, is the point of equal probability of categories $j-1$ and j . Thresholds add up to zero, i.e. $\sum_{j=1}^m \tau_j = 0$. The RSM assume that the thresholds for all the items are the same, i.e. the set of items shares the same rating scale structure; if it is reasonable to assume that the thresholds are not the same for all the items, i.e. that each item has its own unique rating scale structure, then the *Partial Credit Model* by Masters (1982) can be a more suitable model. Following Brentari and Golia (2008), the RSM is the model that will be used to construct the measures of the level of motivation, fairness and JS for each worker.

If data fit the model, the categories and thresholds estimates are ordered, thus collapsing to a smaller number of categories will give a poorer fit of the model. If the categories and thresholds are disordered, merging categories may improve item fit and the overall scale and may reveal the effective number and ordering of categories (Andrich, de Jong and Sheridan, 1997).

In order to evaluate the measures constructed using the RSM, the person reliability index, the Infit Mean Square (*Infit MNSQ*) and Outfit Mean Square (*Outfit MNSQ*) statistics, the percentage of variance explained

by measures and the principal component analysis (PCA) performed on standardized residuals will be considered (Bond and Fox, 2007).

The person reliability index is an estimate of the replicability of people placement that can be expected if the sample of people was to be given another set of items measuring the same latent construct. It is bounded by 0 and 1 and can also be computed with missing values.

Infit Mean Square and Outfit Mean Square statistics test the success with which the data have been modelled by the Rasch analysis and allow one to identify aberrant single responses or aberrant response patterns within individual items. These patterns reflect directly on the measuring power of individual items. The expected value for these statistics is 1, which corresponds to the perfect fit of data to the model.

The variance explained by measures represents the variance explained by the item difficulties, person abilities and rating scale structures.

The purpose of the un-rotated PCA on standardized residuals used in the Rasch context is not to find shared factors. The underline hypothesis is that there is only one dimension, called the *Rasch dimension*, captured by the model so that the residuals do not contain other significant dimensions. Hence, the purpose is to verify the absence of other significant dimensions, that is the unidimensionality assumption.

In the calibration procedure the analysis was performed by setting the mean of item difficulty estimates to 0.0 logits and by using the (unconditional) maximum likelihood estimation method².

Few authors have examined the motivations that induce workers to choose one particular job rather than any other and they found that monetary motivations are not the only driving force behind workers' choices. The reasons for choosing a social cooperative can be due to intrinsic, such as the interest in the sector in which the cooperative operates or the approval of the way in which the organization works, or extrinsic motivations, such as the pay or the search of a job. From the ICSI²⁰⁰⁷ it is possible to find a measure of the level of motivation at the beginning of the work and after the working experience.

Ex-ante motivation

A preliminary analysis revealed that the order in the thresholds is not respected, so the second and third as well as the fifth and sixth response categories were merged together (Linacre, 2002), obtaining a 5-level response scale for each item. The items *Personal needs*, *Help*, *Fulfilment*, *Environment*, *Job*, *Pay* and *Projects* misfit, so they were deleted from the analysis. Table 1 presents the estimation of mean item difficulties and the *Infit MNSQ* and *Outfit MNSQ* statistics for the resulting scale. Item difficulties estimate how difficult it was, on average, for the group of workers to endorse each item.

Table 1

Ex-ante motivation – Item difficulty measures and fit statistics

<i>Items</i>	<i>Measure</i>	<i>Infit MNSQ</i>	<i>Outfit MNSQ</i>
<i>Growth</i>	0.34	1.03	1.06
<i>Visibility</i>	0.31	0.92	0.92
<i>Taking part</i>	0.23	0.99	1.02
<i>Community needs</i>	0.03	1.04	1.08
<i>Clearness</i>	-0.14	1.09	1.13
<i>Social relations</i>	-0.36	0.96	0.95
<i>Ideals</i>	-0.42	0.93	0.91

Ex-post motivation

A preliminary analysis revealed that the order in the thresholds is not respected, so the second and third as well as the fifth and sixth categories were merged together, obtaining a 5-level response scale for each item. The items *Source income* and *Necessary occupation* misfit, so they were deleted from the analysis. Table 2 presents the estimation of mean item difficulties and the *Infit MNSQ* and *Outfit MNSQ* statistics for the resulting scale.

² The analysis was performed using the Winsteps 3.64 software.

Table 2

Ex-post motivation – Item difficulty measures and fit statistics

<i>Items</i>	<i>Measure</i>	<i>Infit MNSQ</i>	<i>Outfit MNSQ</i>
<i>Moral duty</i>	1.18	1.15	1.17
<i>Self respect</i>	0.44	1.03	1.04
<i>Professional satisfaction</i>	-0.03	1.12	1.12
<i>Help others</i>	-0.14	1.00	0.99
<i>Develop relations</i>	-0.45	0.85	0.85
<i>Experience</i>	-1.01	0.84	0.80

Fairness can be observed in relation to diverse aspects of work; here the distributive, procedural and interactional fairness are considered.

Distributive fairness

The distributive fairness deals with the distributive processes within the organization. It can be defined as the relation between outputs and inputs in comparison to the same relation for a certain reference group. If outcomes are distributed fairly, the ratio of outputs to inputs (for example the ratio of the wage to effort) will tend to equalize across individuals. Distributive fairness can also be defined subjectively as the fairness of outputs to inputs perceived by an individual worker (Solari, 2003).

A preliminary analysis revealed that the order in the thresholds is not respected, so the fifth and sixth categories were merged together, obtaining a 6-level response scale for each item. The items *Pay similar workers* and *Degree* misfit, moreover a sub-dimension composed by the items *Resources*, *Pay superior* and *Pay co-workers* shows up. Therefore the two misfitting items plus the *Pay co-workers* item were deleted from the analysis. Table 3 presents the estimation of mean item difficulties and the *Infit MNSQ* and *Outfit MNSQ* statistics for the resulting scale.

Table 3

Distributive fairness – Item difficulty measures and fit statistics

<i>Items</i>	<i>Measure</i>	<i>Infit MNSQ</i>	<i>Outfit MNSQ</i>
<i>Stress</i>	0.65	0.99	1.04
<i>Responsibility</i>	0.43	0.75	0.78
<i>Effort</i>	0.40	0.67	0.68
<i>Training</i>	0.16	0.96	0.98
<i>Loyalty</i>	-0.22	1.13	1.09
<i>Pay superior</i>	-0.65	1.27	1.18
<i>Resources</i>	-0.78	1.22	1.18

Procedural fairness

The procedural fairness perception focuses on workers' fairness judgments of the procedures used in determining outcomes (Solari, 2003). Procedures can be implemented in the organization in two ways: the formal procedures vs. the informal interactions between the supervisors and the subordinates.

A preliminary analysis revealed that the order in the thresholds is not respected, so the second and third categories were merged together, obtaining a 6-level response scale for each item. The items *Pay* and *Effort* misfit, therefore they were deleted from the analysis. Table 4 presents the estimation of mean item difficulties and the *Infit MNSQ* and *Outfit MNSQ* statistics for the resulting scale.

Table 4

Procedural fairness – Item difficulty measures and fit statistics

<i>Items</i>	<i>Measure</i>	<i>Infit MNSQ</i>	<i>Outfit MNSQ</i>
<i>Share criteria</i>	0.49	0.94	0.91
<i>Know criteria</i>	0.39	1.10	1.11
<i>Results</i>	0.21	1.05	1.04
<i>Info job</i>	- 0.02	0.93	1.00
<i>Equality</i>	- 0.06	1.16	1.16
<i>Targets</i>	- 0.15	0.88	0.94
<i>Guidelines</i>	- 0.21	0.95	0.99
<i>Reliability</i>	- 0.65	1.04	1.03

Interactional fairness

Compared with distributive and procedural fairness, interactional fairness is believed to play a more critical role in predicting the worker reactions to both his/her supervisors and the immediate work environment. In contrast to procedural fairness perception, which emphasizes the fairness judgments of the formal procedures, interactional fairness perception focuses on workers' fairness judgments related to the quality of informal interpersonal treatment during the execution of a procedure (Solari, 2003).

A preliminary analysis revealed that the order in the thresholds is not respected, so the second and third categories were merged together, obtaining a 6-level response scale for each item. Table 5 presents the estimation of mean item difficulties and the *Infit MNSQ* and *Outfit MNSQ* statistics for the resulting scale.

Table 5

Interactional fairness – Item difficulty measures and fit statistics

<i>Items</i>	<i>Measure</i>	<i>Infit MNSQ</i>	<i>Outfit MNSQ</i>
<i>Listening</i>	0.42	1.02	1.06
<i>Advices</i>	0.39	1.08	1.09
<i>Working needs</i>	0.18	0.75	0.79
<i>Attention</i>	0.01	1.09	1.08
<i>Personal needs</i>	- 0.30	1.01	0.99
<i>Availability</i>	- 0.70	1.08	1.01

The worker JS is often used as a proxy of the quality of work and represents one of its facets. It allows one to evaluate the subjective level of benefit gained from the working activity regarding intrinsic and relational as well as extrinsic aspects. In the followings, the JS will be measured as regards these aspects considered separately as well as jointly.

Extrinsic job satisfaction

The JS with extrinsic aspects is measured taking into account items referring to monetary (for example, pay or career advancement) and non-monetary (for example, working hours or professional development) aspects of the work.

A preliminary analysis revealed that the order in the thresholds is not respected, so the second and third as well as the fifth and sixth categories were merged together, obtaining a 5-level response scale for each item. The items *Stab* and *Consist* misfit, therefore they were deleted from the analysis. Table 6 presents the estimation of mean item difficulties and the *Infit MNSQ* and *Outfit MNSQ* statistics for the resulting scale.

Table 6

Extrinsic job satisfaction – Item difficulty measures and fit statistics

<i>Items</i>	<i>Measure</i>	<i>Infit MNSQ</i>	<i>Outfit MNSQ</i>
<i>Career</i>	0.89	0.94	0.98
<i>Pay</i>	0.87	1.13	1.21
<i>Involv</i>	0.50	0.81	0.83
<i>Growth</i>	0.19	0.84	0.84
<i>Transp</i>	– 0.04	0.94	0.91
<i>Indep</i>	– 0.21	0.90	0.88
<i>Envir</i>	– 0.45	1.15	1.13
<i>Hours</i>	– 0.50	1.12	1.07
<i>Flex</i>	– 0.58	1.12	1.06
<i>Welfare</i>	– 0.67	1.26	1.20

Intrinsic job satisfaction

The JS with intrinsic and relational aspects is measured taking into account items referring to non-monetary (for example, the social usefulness of work or the recognition of one's work) and relational (for example, the relations with the co-workers, superiors or end users) aspects of the work.

A preliminary analysis revealed that the order in the thresholds is not respected, so the second and third as well as the fifth and sixth categories were merged together, obtaining a 5-level response scale for each item. No items misfit, nevertheless the PCA highlighted two sub-dimensions in the residuals. The items *Colleag* and *Usefulness* were deleted from the analysis in order to weaken these two sub-dimensions and increase the variance explained by the measures. Table 7 presents the estimation of mean item difficulties and the *Infit MNSQ* and *Outfit MNSQ* statistics for the resulting scale.

Table 7

Intrinsic job satisfaction – Item difficulty measures and fit statistics

<i>Items</i>	<i>Measure</i>	<i>Infit MNSQ</i>	<i>Outfit MNSQ</i>
<i>Coop-Recog</i>	0.51	1.12	1.17
<i>Fulfil</i>	0.39	1.00	1.03
<i>Social-Recog</i>	0.37	0.96	0.97
<i>Volunt</i>	0.34	1.10	1.19
<i>Coll-Recog</i>	0.17	0.77	0.80
<i>Variety</i>	0.10	0.91	0.93
<i>Super</i>	– 0.36	0.98	0.93
<i>Team</i>	– 0.42	0.92	0.91
<i>User-Recog</i>	– 0.48	1.16	1.11
<i>Users</i>	– 0.62	1.15	1.19

Job satisfaction

The items useful to measure the JS without separating the intrinsic and relational from the extrinsic aspects, were reported in tables A.6 and A.7. A preliminary analysis revealed that the order in the thresholds is not respected, so the second and third as well as the fifth and sixth response categories were merged together, obtaining a 5-level response scale for each item. The items *Stab*, *Consist*, *Pay*, *Envir*, *Hours*, *Flex*, *Welfare*, *Colleag*, *Social-Recog*, *Volunt*, *User-Recog*, *Users* and *Usefulness* misfit, therefore they were deleted from the analysis. Table 8 presents the estimation of mean item difficulties and the *Infit MNSQ* and *Outfit MNSQ* statistics for the resulting scale.

Table 8

Job satisfaction – Item difficulty measures and fit statistics

<i>Items</i>	<i>Measure</i>	<i>Infit MNSQ</i>	<i>Outfit MNSQ</i>
<i>Career</i>	1.14	1.03	1.08
<i>Involv</i>	0.69	0.86	0.90
<i>Growth</i>	0.33	0.86	0.86
<i>Coop-Recog</i>	0.15	0.88	0.86
<i>Transp</i>	0.06	0.98	0.96
<i>Fulfil</i>	0.01	0.97	0.93
<i>Indep</i>	-0.15	0.96	0.94
<i>Coll-Recog</i>	-0.23	1.05	1.07
<i>Variety</i>	-0.31	1.22	1.20
<i>Super</i>	-0.81	1.05	1.01
<i>Team</i>	-0.87	1.21	1.24

Table 9 reports the person reliability index, the percentage of variance explained by measures, the percentage of unexplained variance in the first contrast and the first PCA eigenvalue related to all the latent traits considered, obtained using the final scales.

Table 9

Diagnostic indices based on the residuals

<i>Latent Trait</i>	<i>Reliability Index</i>	<i>Variance explained by measures (%)</i>	<i>Unexplained variance in I contrast (%)</i>	<i>I eigenvalue PCA</i>	<i># of items</i>
<i>Ex-ante motivation</i>	0.81	66.3	7.8	1.6	7
<i>Ex-post motivation</i>	0.75	59.0	14.0	2.1	6
<i>Distributive fairness</i>	0.85	70.3	8.1	1.9	7
<i>Procedural fairness</i>	0.84	76.8	8.7	3.0	8
<i>Interactional fairness</i>	0.79	72.0	8.8	1.9	6
<i>Extrinsic job satisfaction</i>	0.81	60.1	8.8	2.2	10
<i>Intrinsic job satisfaction</i>	0.75	50.8	8.6	1.7	10
<i>Job satisfaction</i>	0.85	61.2	7.8	2.2	11

The reliability index value related to all the latent trait under study lent a good level of confidence that the worker placement would be reproducible with a different instrument measuring the same construct. The percentage of variance explained by measure is high in the case of the perceived fairness, sufficiently high in the case of the level of motivation and extrinsic and total JS, sufficient for the intrinsic JS. The first dimension found in the residuals applying PCA is not strong except for the level of ex-post motivation and procedural fairness. Nevertheless it does not affect the quality of the measures.

Table 10

Average workers' latent trait measure

<i>Latent Trait</i>	<i>Mean</i>	<i>Std</i>
<i>Ex-ante motivation</i>	0.20	1.60
<i>Ex-post motivation</i>	1.84	1.95
<i>Distributive fairness</i>	-0.62	1.85
<i>Procedural fairness</i>	0.90	1.64
<i>Interactional fairness</i>	2.17	2.10
<i>Extrinsic job satisfaction</i>	0.70	1.13
<i>Intrinsic job satisfaction</i>	1.16	1.27
<i>Job satisfaction</i>	0.89	1.38

Table 10 reports the average measures related to all the considered latent traits obtained using the final scales.

The mean ex-post motivation (1.84) is significantly higher than the mean ex-ante motivation (0.20), and this suggests that the working experience in the social cooperatives increases the workers' level of motivation. The mean distributive fairness is negative (-0.62), nevertheless the positive means of the procedural (0.90) and interaction fairness (2.17) substantially growth the perception of the workers' organizational justice. The mean JS is positive (0.89), moreover the mean intrinsic JS (1.16) is significantly higher than the extrinsic JS (0.70); workers are more satisfied with their relations than their remuneration.

Figures 1, 2 and 3 show the item-person map (IPM) related to all the considered latent traits. This map simultaneously shows the distribution of workers measures (on the left side of the vertical line) and item difficulties (on the right side of the vertical line). "M" marks the person and item mean, "S" is one sample standard deviation away from the mean and "T" is two sample standard deviations away from the mean.

The workers located at the upper end of the scale have higher levels of latent trait (more motivation, perceived fairness, satisfaction), on the contrary those located at the lower end have lower levels of latent trait. Items close to the bottom are frequently endorsed, so most workers consider them "easy to endorse", while items higher on the construct are endorsed less frequently, so fewer workers consider them "easy to endorse".

Figure 1 reports the IPM referred to the level of motivation ex-ante (Fig. 1.a) and ex-post (Fig. 1.b). The workers are initially induced to choose a social cooperative by the sharing of ideals and values and the opportunity to improve social relations. After the working experience in the cooperatives, the opportunity to develop new and deep human relations and the enrichment as a human being are the reasons that motivate the workers most.

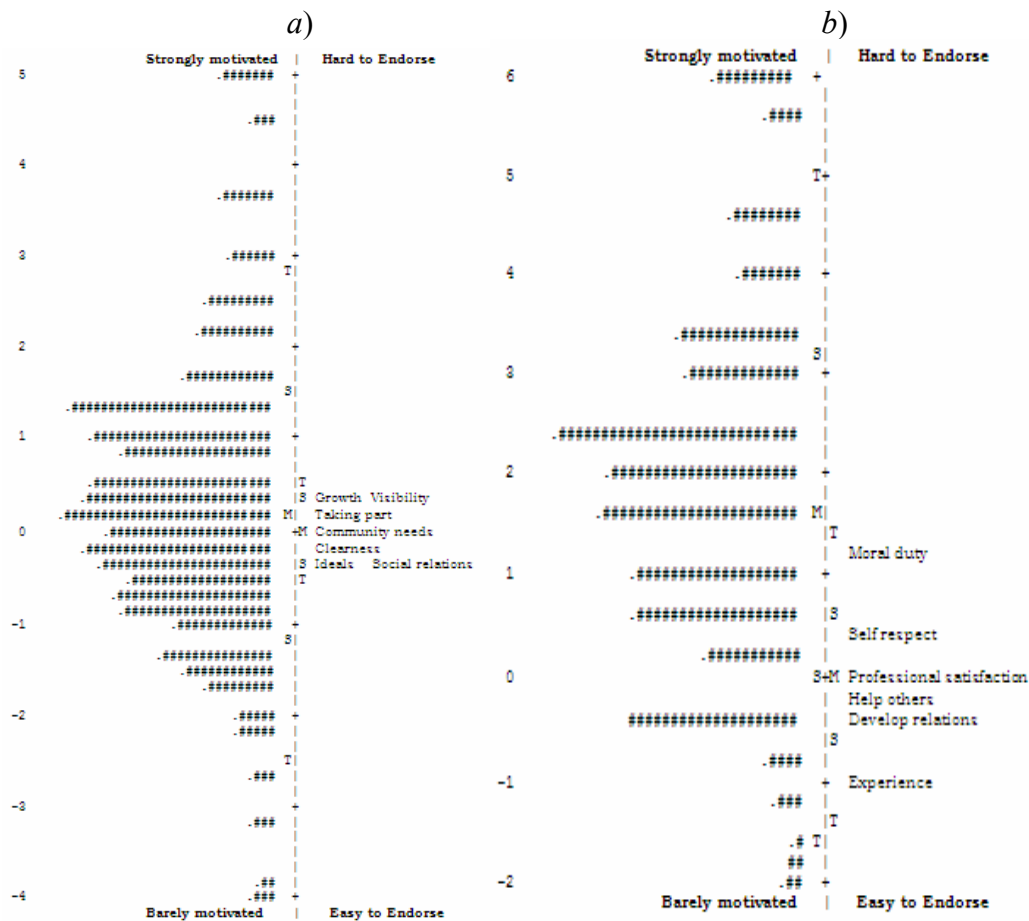


Figure 1. Item Person Map related to a) the ex-ante motivation (each # corresponds to 10 workers) b) the ex-post motivation (each # corresponds to 19 workers)

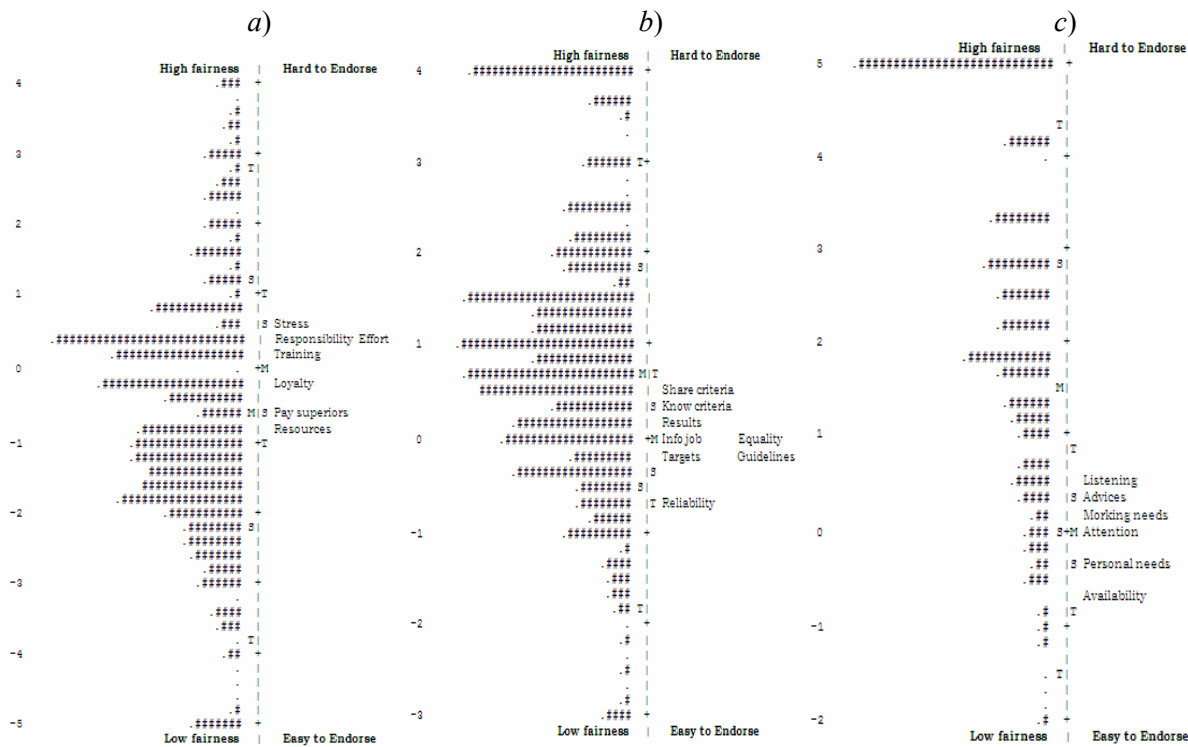


Figure 2. Item Person Map related to a) distributive fairness (each # corresponds to 13 workers) b) procedural fairness (each # corresponds to 11 workers) c) interactional fairness (each # corresponds to 28 workers)

Figure 2 reports the IPM referred to distributive (Fig. 2.a), procedural (Fig. 2.b) and interactional (Fig. 2.c) fairness.

The average distributive fairness is significantly less than 0, the workers have a low perception of distributive equity; the items *Stress*, *Responsibility* and *Effort* are the most difficult to endorse. An increase of pay, adjusted to the level of stress and tension, the responsibility and effort required by the work could improve the level of distributive fairness perceived.

The average procedural fairness shows a high level of perceived fairness; a greater knowledge and sharing of the criteria used by the cooperative to judge the work done could further on improve the level of procedural fairness perceived.

The average interactional fairness shows a high level of perceived fairness; a greater attention to the interaction between workers and superiors (*Listening* and *Advices*) could further on improve the level of interactional fairness perceived.

Figure 3 reports the IPM referred to JS with intrinsic and relational (Fig. 3.a), and extrinsic (Fig. 3.b) aspects and JS without separating the intrinsic and relational from the extrinsic aspects (Fig. 3.c).

The average JS with intrinsic and relational aspects is high and could be further on improved increasing the satisfaction with the personal fulfilment recognition by the cooperative and the society of the work done; in fact the items *Coop-Recog*, *Fulfil* and *Social-Recog* were the most difficult aspects to satisfy with a job. The relations with the end users and their families, the team and the superiors and the end users recognition were the easiest aspect to satisfy with a job.

The average JS with extrinsic aspects is high and could be further on improved increasing the satisfaction with pay and career; in fact the items *Career* and *Pay* were the most difficult aspects to satisfy with a job. The working hours schedule, the workplace environment and the social security protection and benefits were the easiest aspect to satisfy with a job.

The average JS is high and could be further on improved increasing the satisfaction with the career and the involvement in the cooperative decisions; in fact the items *Career* and *Involv* were the most difficult aspects to satisfy with a job. The relations with the team and the superiors were the easiest aspect to satisfy with a job.

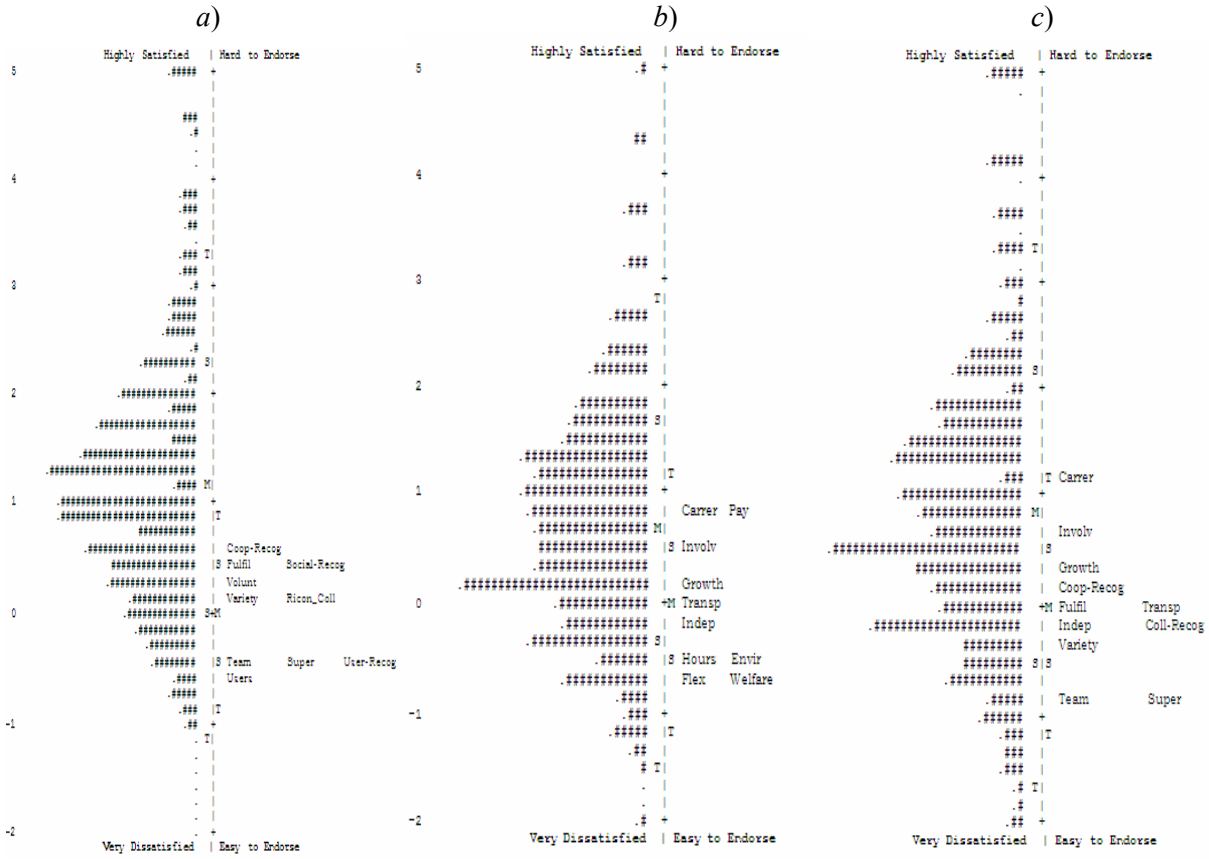


Figure 3. Item Person Map related to a) intrinsic job satisfaction (each # corresponds to 12 workers) b) extrinsic job satisfaction (each # corresponds to 14 workers) c) job satisfaction (each # corresponds to 13 workers)

Using the Rasch measures to analyze the quality of work

The Rasch measures previously obtained can be used to evaluate the differences in the subjective quality of work due to worker (gender, age and education) and cooperative (type, dimension and geographic area) characteristics. The tool used in the analysis is a graphical pairwise comparison based on the *inferential confidence intervals* (ICIs) for two independent sample means to assess if these significantly differs. The ICIs are obtained making use of the procedure that reduces the length of the usual CIs such that nonoverlapping ICIs are algebraically equivalent to the usual null hypothesis significance test for two independent means at the stated $\alpha\%$ significance level (Tryon, 2001; Carpita, 2006).

In the simple case where only two groups i and j with unknown means μ_i and μ_j and variances δ_i^2 and δ_j^2 have to be compared, two independent random samples with sample sizes n_i and n_j are considered and the two sample means m_i and m_j , with standard errors $\sigma_i = \sqrt{\delta_i^2/n_i}$ and $\sigma_j = \sqrt{\delta_j^2/n_j}$ respectively, are computed. Under the normality assumption and δ_i^2 , δ_j^2 known, the two ICIs at level α for the two means are

$$CI_i = [m_i \pm z\sigma_i] \quad \text{and} \quad CI_j = [m_j \pm z\sigma_j] \quad (2)$$

where z is the appropriate positive quantity that makes the probability of nonoverlapping when $\mu_i = \mu_j$ exactly equal to α , the stated significance level. In other terms, one wants to know what size of CI is needed for each sample in order to have the desired level α of significance.

In order to obtain z , it has to be considered the case in which the two CIs do not overlap, that is they do not intersect. Obviously, CI_i and CI_j do not overlap when

$$a) m_i + z\sigma_i < m_j - z\sigma_j \quad \text{or} \quad b) m_i - z\sigma_i > m_j + z\sigma_j \quad \text{that is when} \quad |m_i - m_j| > z(\sigma_i + \sigma_j).$$

It is easy to show that in this case the *exact* nonoverlapping probability is

$$\alpha = Pr[CI_i \cap CI_j = \emptyset] = Pr[|M_i - M_j| > z(\sigma_i + \sigma_j)] = 2[1 - \Phi(z/\varepsilon_{ij})] \quad (3)$$

with $\varepsilon_{ij} = \sigma_{ij} = \sqrt{\sigma_i^2 + \sigma_j^2} = \sigma_{ij}/(\sigma_i + \sigma_j)$, $1/\sqrt{2} \leq \varepsilon_{ij} \leq 1$, and $\Phi(x)$ the cumulative standard normal distribution. If $z_{\alpha/2}$ is the $(1 - \alpha/2)$ quantile of the standard normal distribution, from the equality

$$z_{\alpha/2} = z/\varepsilon_{ij} \quad \text{we easily obtain that} \quad z = z_{\alpha/2}\varepsilon_{ij} = z_{\alpha/2}\sigma_{ij}/(\sigma_i + \sigma_j).$$

With δ_i^2 and δ_j^2 known, from (1) the two inferential CIs at the level α become

$$CI_i = [m_i \pm z_{\alpha/2} \varepsilon_{ij} \sigma_i] \quad \text{and} \quad CI_j = [m_j \pm z_{\alpha/2} \varepsilon_{ij} \sigma_j]. \quad (4)$$

The two ICIs depends on the unknown population variances: in practical situations δ_i^2 and δ_j^2 are usually estimated with the corrected sample variances d_i^2 and d_j^2 , and the standard errors σ_i , σ_j , σ_{ij} and the ratio ε_{ij} are estimated with

$$s_i = \sqrt{d_i^2 / n_i}, \quad s_j = \sqrt{d_j^2 / n_j} \quad \text{and} \quad s_{ij} = \sqrt{s_i^2 + s_j^2}, \quad e_{ij} = s_{ij} / (s_i + s_j).$$

So, in the context of a large-sample Z test, the ICIs at the approximate level α becomes

$$CI_i = [m_i \pm z_{\alpha/2} e_{ij} s_i] \quad \text{and} \quad CI_j = [m_j \pm z_{\alpha/2} e_{ij} s_j]. \quad (5)$$

These intervals were proposed by Goldstein and Healy (1995).

When $k > 2$ sample means have to be compared on the same graph, the ICIs in (5) must be approximated using the *mean estimated variance ratio* e , with

$$e = 2 \sum_{i < j} e_{ij} / [k \cdot (k - 1)], \quad \text{instead of } e_{ij}.$$

The *validity* of the Rasch measures of the quality of work is tested with respect to some overall variables derived from questions assumed logically related to the latent constructs. For example, the procedural fairness measure is connected to the answer to the items *On the whole, the cooperative behaves properly towards me* (Procedural fairness 1) and *On the whole, the cooperative behaves properly towards its workers* (Procedural fairness 2), and the extrinsic JS measure is related to the answer to the item *How satisfied are you with your pay?* The ICIs are used to study the statistical mean dependence of a measure from its corresponding overall variable. In order to assess the strength of the relation between the Rasch measure means of the quality of work and the overall variables, the *correlation ratio* (CR), the square root of the proportion of the variance between the means and its total variance, is computed. Values of CR close to 0 indicate low mean dependence (big within groups variance) whereas values close to 1 indicate high mean dependence (small within groups variance).

The item *On the whole, do you think that your pay is fair?* (Distributive fairness) corresponds to the overall distributive fairness, while the questionnaire does not contain a specific item for the overall interaction fairness, so the item *How satisfied are you with the relations with your superiors?* is used as the corresponding overall variable. Table 11 reports the frequency distributions of the responses to the overall fairness items.

Figure 4 shows the ICIs, at the 95% nominal level of significance, computed on the workers who answered each response category of the overall fairness items. The workers who got extreme Rasch measure were dropped from the analysis³.

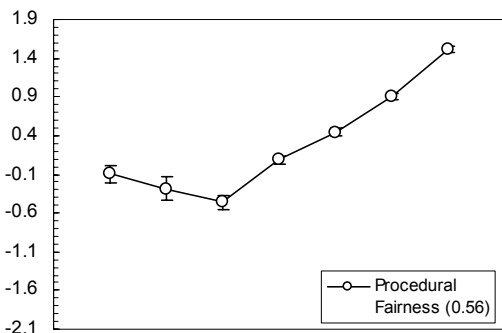
The means computed using the Rasch fairness measures are positively correlated with the overall variables: increasing the overall fairness, the average values of the corresponding measures increase. Moreover the ICIs are small and the CR values are high (range from 56% to 80%). With reference to the first two response categories of the two overall procedural fairness variables, it can be noted that the two means are not significantly different.

³ Persons with extreme measures are subject who got zero or perfect (minimum possible or maximum possible) score for all the items.

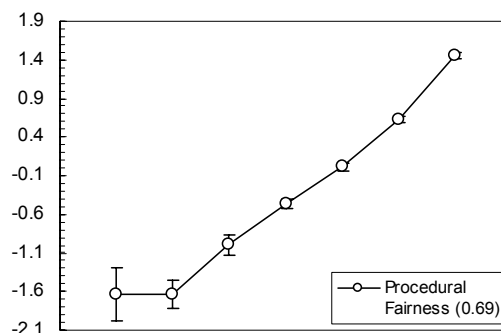
Table 11

Frequency distributions of the responses to the overall fairness items

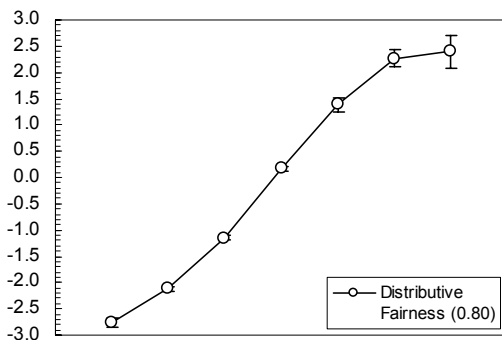
Overall variables	Number	Percentage	Overall variables	Number	Percentage
Procedural fairness 1 (oneself)			Procedural fairness 2 (other workers)		
1 Much less than fair	390	10.2	1 Much less than fair	49	1.3
2	165	4.3	2	72	1.9
3	243	6.3	3	124	3.3
4 Fair	612	16.0	4 Fair	358	9.6
5	495	12.9	5	479	12.8
6	829	21.6	6	1,078	28.9
7 Much more than fair	1,101	28.7	7 Much more than fair	1,569	42.2
Missing	299	7.2	Missing	405	9.8
Distributive fairness			Job satisfaction with superiors		
1 Much less than fair	303	7.9	1 Very dissatisfied	52	1.7
2	497	13.0	2	66	2.2
3	1,120	29.4	3	122	4.0
4 Fair	1,424	37.3	4 Neither dissat./sat.	536	17.7
5	253	6.6	5	551	18.2
6	164	4.3	6	1,024	33.9
7 Much more than fair	58	1.5	7 Highly satisfied	674	22.3
Missing	315	7.6	Missing	1,109	26.8



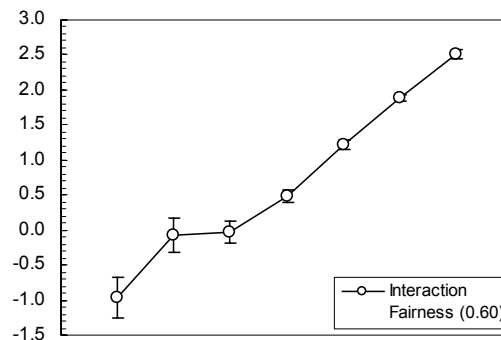
1 2 3 4 5 6 7
Overall Procedural Fairness 1



1 2 3 4 5 6 7
Overall Procedural Fairness 2



1 2 3 4 5 6 7
Overall Distributive Fairness



1 2 3 4 5 6 7
Overall Superiors Job Satisfaction

Figure 4. The ICIs for the average Rasch measures of fairness vs the overall fairness variables (correlation ratio in parenthesis)

Figure 5 shows the relationship between JS and the four overall fairness variables. In all the cases the average JS with intrinsic and relational aspects is significantly higher than the JS with extrinsic aspects. Considering the interaction between JS and the two overall procedural fairness variables (Figure 5, first row), a non linear relationship shows up; the average JS measures related to the first response categories decrease. Moreover, the average JS is close to the average extrinsic JS if the first response categories are taken into account, and to the average intrinsic-relational JS otherwise. A worker less satisfied with the economic aspects of the job is less satisfied as a whole even if she/he is highly satisfied with the relational aspects of her/his job, while if the satisfaction with the economic aspects is high, the JS is driven more by the JS with the relational aspects. The CR values are high, around 50%.

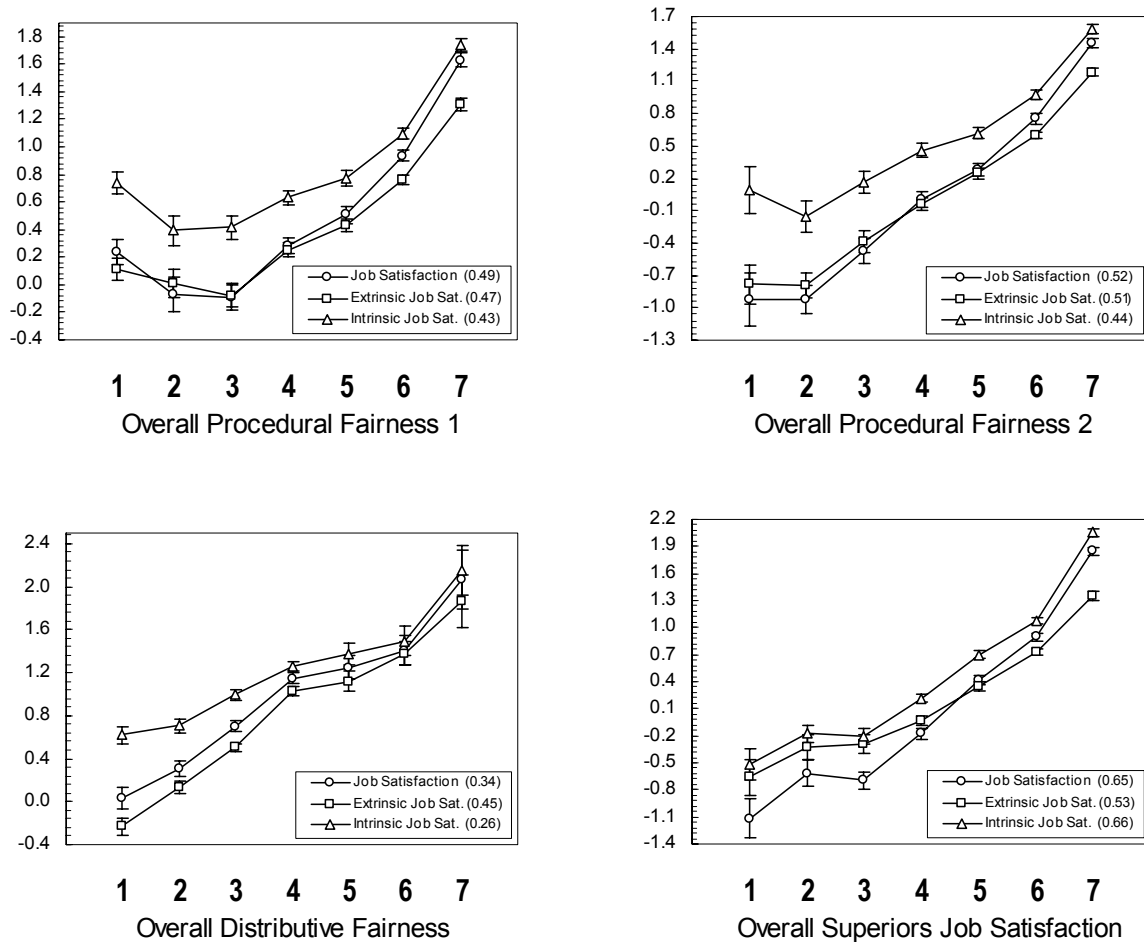


Figure 5. The ICIs for the average Rasch measures of job satisfaction vs the overall fairness variables (correlation ratio in parenthesis)

The item *How satisfied are you with your job?* corresponds to the overall JS, the item *How satisfied are you with your pay?* (Wage satisfaction) is related to the extrinsic JS, the item *How much do you usually commit yourself to do your job?* represents an index for the effort while the item *How satisfied are you with your life?* corresponds to the happiness.

Table 12 reports the frequency distributions of the responses to the overall satisfaction and effort items.

Table 12

Frequency distributions of the responses to the overall satisfaction and effort items
(Missing: num. 89; perc. 2.2)

Overall variables	Number	Percentage	Overall variables	Number	Percentage
Overall job satisfaction			Wage satisfaction		
1 Very dissatisfied	65	1.6	1 Very dissatisfied	486	12.0
2	89	2.2	2	508	12.6
3	127	3.1	3	534	13.2
4 Neither dissat./sat.	550	13.6	4 Neither dissat./sat.	1130	27.9
5	917	22.7	5	646	16.0
6	1,438	35.6	6	532	13.2
7 Highly satisfied	859	21.2	7 Highly satisfied	209	5.2
Effort (commitment)			Happiness (life satisfaction)		
1 not at all	0	0.0	1 Very dissatisfied	47	1.2
2	0	0.0	2	43	1.1
3	8	0.2	3	89	2.2
4	82	2.0	4 Neither dissat./sat.	455	11.2
5	304	7.5	5	712	17.6
6	1,145	28.3	6	1,634	40.4
7 a lot	2,506	62.0	7 Highly satisfied	1,065	26.3

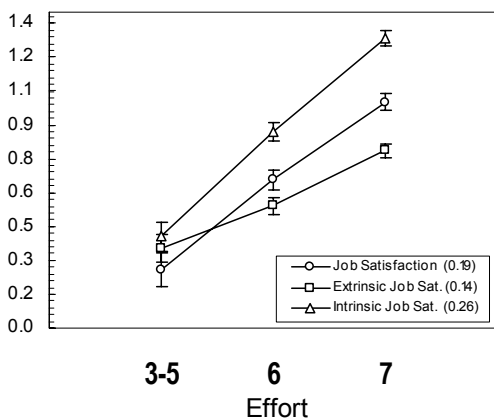


Figure 6. The ICIs for the average Rasch measures of job satisfaction vs the overall variables
(correlation ratio in parenthesis)

Figure 6 shows the ICIs, at the 95% nominal level of significance, computed on the workers who answered each response category of the overall satisfaction and effort items. The workers who got extreme Rasch measure were dropped from the analysis.

The means computed using the Rasch JS measures are positively correlated with all the overall variables. The CR values are high if the job and wage satisfaction are considered, whereas they are low with reference to the effort and the happiness. The correlation between the overall job satisfaction and the JS, extrinsic JS and intrinsic JS is significantly high ($CR > 0.5$); the mean level of the intrinsic JS is the highest but it affects the mean JS when the biggest response categories are taken into account. If the lowest response categories are taken into account, the mean JS is driven mostly by the extrinsic JS.

For high response categories of the wage satisfaction, the means of the three JS measures converge to the same level, whereas for the low response categories of the wage satisfaction, the role of the extrinsic component of JS in determining the mean JS is highlighted. For high response categories of the happiness, the effect of a higher satisfaction with intrinsic and relational aspects to compensate the lower level of satisfaction with the extrinsic aspects of the work, becomes evident.

The Rasch measures can also be used to evaluate the differences in the subjective quality of work due to worker (gender, age and education) and cooperative (type, dimension and geographic area) characteristics. Table 13 reports the frequency distributions of these characteristics.

Table 13

Frequency distributions for workers' characteristics

Organization characteristics	Number	Percentage	Worker characteristics	Number	Percentage
Typology			Gender		
Type A	3,234	78.2	Male	1,068	25.8
Type B	900	21.8	Female	3,066	74.2
Geographic area			Age (years)		
North West	1,663	40.2	≤ 30	882	21.3
North Est	902	21.8	31 – 39	1,498	36.2
Centre	902	21.8	40 – 49	1,230	29.8
South	667	16.2	≥ 50	524	12.7
N. of paid workers			Education (degree)		
≤ 15	1,053	25.5	Elementary	804	19.4
16 – 49	1,303	31.5	Diploma	2,120	51.3
≥ 50	1,778	43.0	University	1,210	29.3

Figure 7 and 8 show the ICIs, at the 95% nominal level of significance, computed taking into account worker and cooperative characteristics.

Considering the type of the organization, it can be noted that workers employed in social cooperatives of type B have mean level of ex-ante motivation higher than workers employed in social cooperatives of type A (0.35 vs 0.16). When the mean level of motivation is evaluated after the working experience, it increases and no remarkable difference between the workers shows up (1.82 vs 1.85). The mean distributive and procedural fairness are significantly higher for the employees in the cooperatives of type B (– 0.06 vs – 0.78 and 1.16 vs 0.83 respectively) while, from a statistical point of view, the mean interaction fairness is the same for the two groups of workers (2.13 and 2.18). Finally, the mean job satisfaction of the workers employed in a cooperative of type B is significantly greater (0.96 vs 0.87), nevertheless these employees on average are more satisfied with the extrinsic aspects of the work (0.88 vs 0.65) than the intrinsic and relational ones (1.07 vs 1.18).

Considering the geographic characteristic, employees of social cooperatives located in South Italy have a significantly higher mean motivation, satisfaction and fairness perceptions than their colleagues working in the other three areas of Italy. The mean ex-ante motivation is lower for the workers operating in the North and the mean ex-post motivation is lower for the workers located in the North-West. The mean JS and extrinsic JS is lower for the workers operating in the Centre.

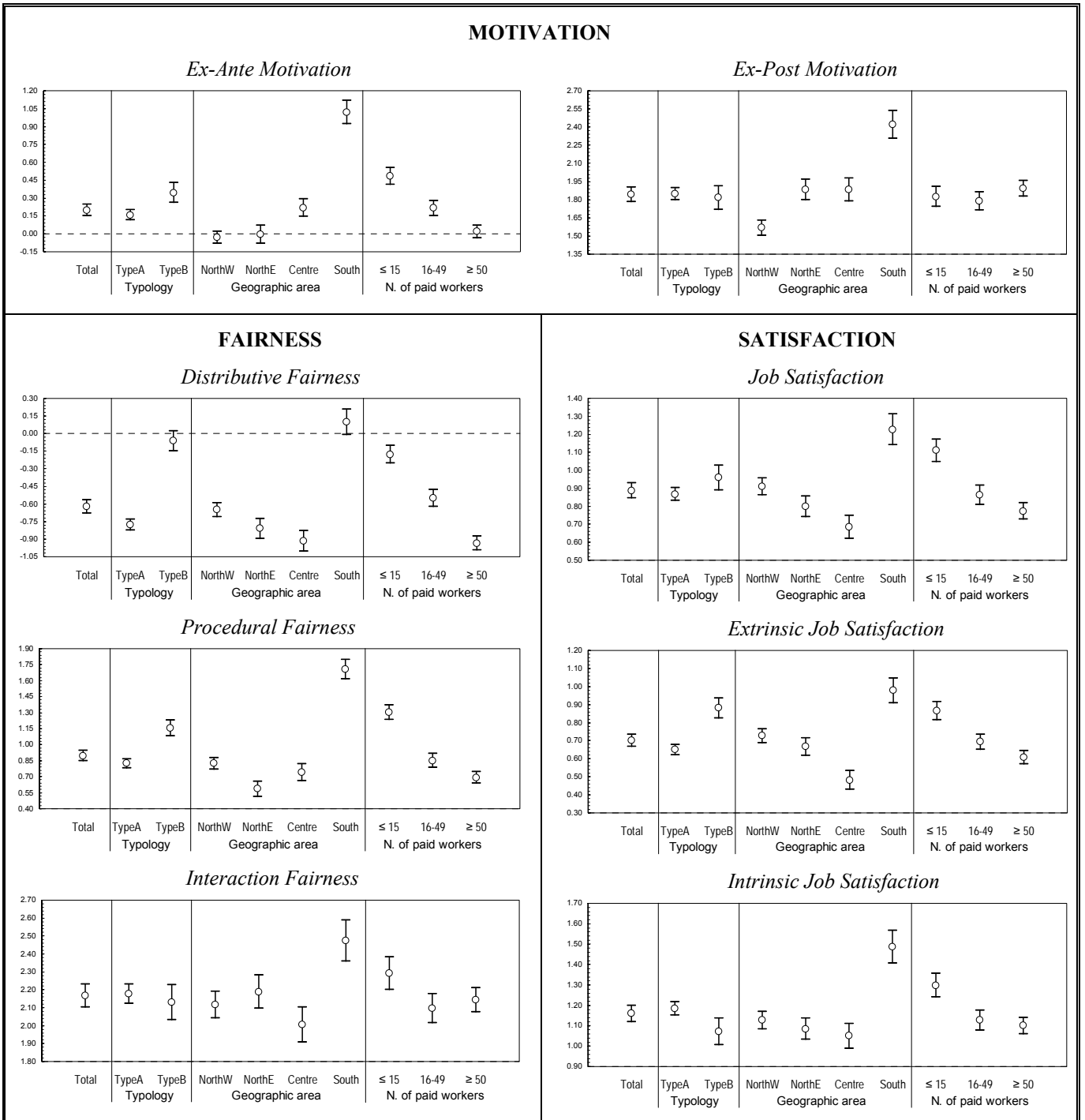


Figure 7. The ICIs for the Rasch Measures means of the quality of work - *Organization characteristics*

Looking at the dimension of the social cooperatives, defined as the number of paid workers involved, it can be noted that the employees in greatest organizations have a significantly lower mean level of ex-ante motivation but higher mean level of ex-post motivation; for these workers the perception of individual and social well being increase after the working experience much more. The employees in the small social cooperatives show a level of perceived fairness significantly higher than the fairness perceived by the employees of the others social cooperatives; the mean distributive and procedural fairness significantly decrease, increasing the dimension of the organization.

With reference to the gender characteristic, no differences are evident in the mean level of ex-ante motivation, whereas after the working experience the females are in mean much more motivated than the males. Males perceive an higher level of distributive fairness and a lower level of procedural and

interactional fairness than the females. Moreover females are much more satisfied with the intrinsic and relational aspects of their job than the males.

Older workers on average are more motivated than the younger ones, especially before the working experience, perceive an higher level of distributive and procedural fairness and are more satisfied with their job, considering the intrinsic and relational as well as the intrinsic aspects of their job.

Higher educated workers on average are less motivated before as well as after the working experience than the lower educated ones, perceive the lowest level of distributive and procedural fairness and are the less satisfied with the extrinsic aspects of their job.

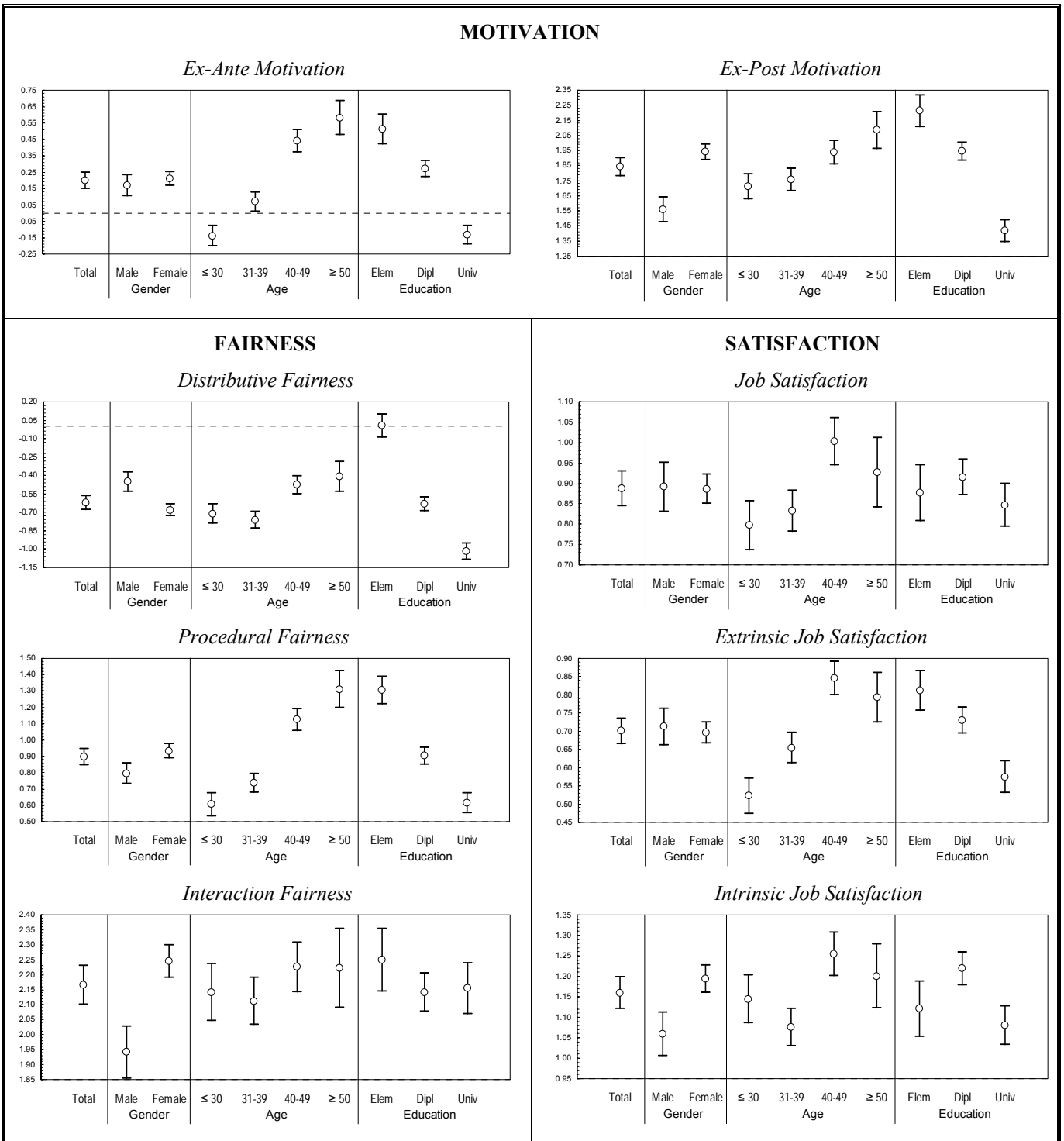


Figure 8. The ICIs for the Rasch Measures means of the quality of work - *Worker characteristics*

The Rasch measures can also be used to evaluate the differences in the worker JS due to work characteristics and incentives; Table 14 reports the frequency distributions of these characteristics and incentives.

Table 14

Frequency distributions of work characteristics and incentives
(Missing: num. 89; perc. 2.2)

<i>Work characteristics</i>	<i>Number</i>	<i>Percentage</i>	<i>Work incentives</i>	<i>Number</i>	<i>Percentage</i>
<i>Service area</i>			<i>Economic</i>		
<i>No</i>	1,757	43.4	<i>No</i>	2,925	72.3
<i>Yes</i>	2,288	56.6	<i>Yes</i>	1,120	27.7
<i>Member</i>			<i>Professional</i>		
<i>No</i>	989	24.4	<i>No</i>	455	11.2
<i>Yes</i>	3,056	75.6	<i>Yes</i>	3,590	88.8
<i>Time</i>			<i>Learning</i>		
<i>Part-time</i>	1,772	43.8	<i>No</i>	1,602	39.6
<i>Full-time</i>	2,273	56.2	<i>Yes</i>	2,443	60.4
<i>Contract</i>					
<i>Standard</i>	3,271	80.8			
<i>Dep-Atypical</i>	415	10.3			
<i>Self-Atypical</i>	359	8.9			

Figure 9 shows the ICIs, at the 95% nominal level of significance, computed taking into account work characteristics. The workers who got extreme Rasch measure were dropped from the analysis.

Even if the mean are significantly different (with the exception of the type of contract), the low CR values (with the exception of the member status) highlight a strong variability within the groups. Workers with strong interactions with end users (service area = yes) on average are less satisfied than the other workers, except for the mean intrinsic satisfaction which stay high (nevertheless the difference between the two means is not significant). Members as well as full-time workers on average are more satisfied than the other workers. Taking into account the type of contract, it can be noted that there is a strong variability within the groups which highlights the significantly lower extrinsic satisfaction of the self-atypical workers.

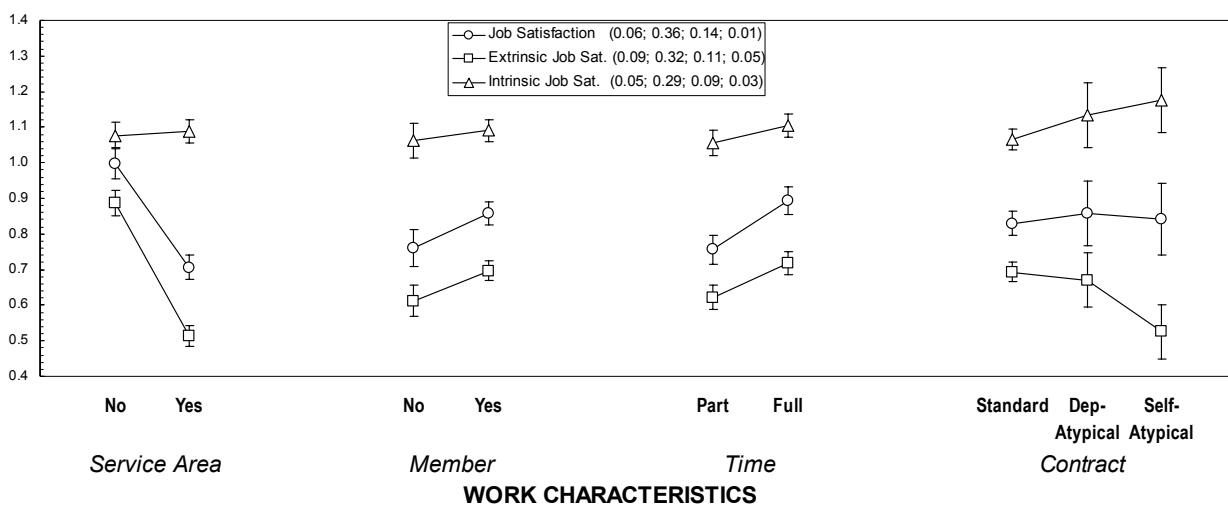


Figure 9. The ICIs for the Rasch Measures means of job satisfaction vs work characteristics (correlation ratio in parenthesis)

Figure 10 shows the ICIs, at the 95% nominal level of significance, computed taking into account work incentives. The workers who got extreme Rasch measure were dropped from the analysis.

Economic, professional and learning incentives increase the mean satisfaction, except for the intrinsic and relational JS which is not correlated with the monetary incentives. Moreover the presence of professional incentives contributes significantly to increase the JS.

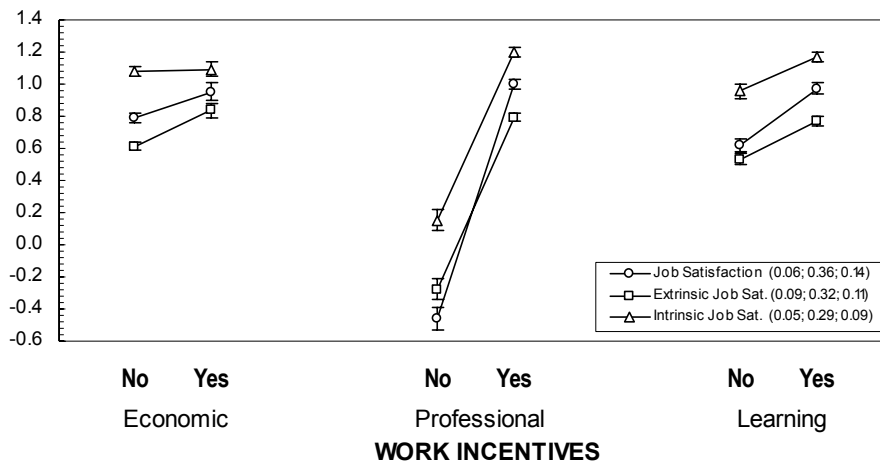


Figure 10. The ICIs for the Rasch Measures means of job satisfaction vs work incentives (correlation ratio in parenthesis)

Conclusions

Quality of work has within a short time become a major subject of study and discussion in labour economy. Its quantification is a challenging task because it implies the translation of various subjective perceptions into a single objective measure (composite indicator). The method used in the paper to address this task is the RSM which belongs to the family of Rasch models. Measures of level of motivation, perceived fairness and job satisfaction have been derived, tested with respect to some overall variables of the quality of work and then utilized to evaluate the differences in the perception of the quality of work due to worker (gender, age and education) and cooperative (type, dimension and geographic area) characteristics, work characteristics (service area, membership, time and type of contract) and work incentives (economic, professional and learning) making use of graphical pairwise comparisons based on the inferential confidence intervals. Differences in the perception of level of motivation, fairness and job satisfaction shown up with reference to all the variable listed above.

Future developments concern the use of these measures to estimate a multivariate regression model which allows to estimate the effects of the incentive mix on job satisfaction, divided into extrinsic and intrinsic one. In order to evaluate the specific effects of each organization on the job satisfaction of their workers, a multivariate regression model with multilevel effects could be applied.

References

- Andrich, D. (1978). A rating formulation for ordered response categories. *Psychometrika*, 43, 561-573.
- Andrich, D., de Jong, J.H.A.L., and Sheridan B.E. (1997). Diagnostic opportunities with the Rasch model for ordered response categories. In *Application of latent trait and latent class models in the social science*. Rost J. and Langeheine R. eds. Munster, Germany: Waxmann.
- Brentari, E., and Golia, S. (2008). Measuring Job Satisfaction in the Social Services Sector with the Rasch Model. *Journal of Applied Measurement*, 9 (1), 45-56.
- Bond, T.G., and Fox, C.M. (2007). *Applying the Rasch Model. Fundamental measurement in the human sciences*, 2nd Edition. Routledge.
- Borzaga, C., and Musella, M. (2003). *Produttività ed efficienza nelle organizzazioni non profit*, Borzaga C. and Musella M. eds., Edizioni 31, Trento.
- Carpita, M. (2006). On the inferential confidence intervals for pairwise comparisons. *Società Italiana di Statistica, Proceedings of the XLIII Scientific Meeting*, 563-566.
- Carpita, M. (2003). Metodi per la costruzione di indicatori della qualità del lavoro: un'applicazione al settore dei servizi sociali. *Statistica & Applicazioni*, I (2), 3-33.
- Carpita, M. (2007). L'indagine sulle Cooperative Sociali Italiane 2007 (ICSI 2007): organizzazione della ricerca e caratteristiche del campione. *Impresa Sociale*, 76 (3), 33-52.
- Carpita, M., and Manisera, M. (2007). Motivazioni, atteggiamenti ed incentivi non economici del lavoro nelle cooperative sociali. *Impresa Sociale*, 76 (3), 173-192.
- Carpita, M., and Manisera, M. (2006). Un'analisi delle relazioni tra equità, motivazione e soddisfazione per il lavoro. in *Valutare la qualità - I servizi di pubblica utilità alla persona*. Carpita M., D'Ambra L., Vichi M. and Vittadini G. eds. Guerini, Milano, 311-360.
- Goldstein, H., and Healy, M.J.R. (1995). The graphical presentation of a collections of means. *Journal of the Royal Statistical Society, Series A*, 158 (1), 175-177.
- Linacre, J.M. (2002). Optimizing rating scale category effectiveness. *Journal of Applied Measurement*, 3, 85-106.
- Linacre, J.M. (2006). *WINSTEPS Rasch measurement computer program*. Chicago: Winsteps.com
- Masters, G.N. (1982). A Rasch model for partial credit scoring. *Psychometrika*, 47, 149-174.
- Manisera, M., Van der Kooij, A.J., and Dusseldorp, E.M.L. (2007). Identifying the component structure of satisfaction scales by nonlinear Principal Components Analysis. To appear on *Quality Technology and Quantitative Management*.
- Rasch, G. (1960). Probabilistic models for some intelligence and attainment tests. Copenhagen: The Danish institute of Educational Research. (expanded edition 1980. Chicago: The University of Chicago Press).
- Solari, L. (2003). La relazione tra lavoratore e organizzazione nelle organizzazioni nonprofit: contratto psicologico ed equità. In *Produttività ed efficienza nelle organizzazioni non profit*, Borzaga C. and Musella M. eds., Edizioni 31, Trento, 323-349.
- Tyron, W.W. (2001). Evaluating statistical difference, equivalence, and indeterminacy using inferential confidence intervals: an integrated alternative method of conducting null hypothesis statistical test. *Psychological Methods*, 6 (4), 371-386.

Appendix

Table A.1

The items which describe the ex-ante level of motivation

Item	How much has each of the following factors initially drawn you towards the cooperative?
1 <i>Personal needs</i>	the opportunity to satisfy personal needs concerning pay and employment
2 <i>Help</i>	contributing to help people in trouble
3 <i>Fulfilment</i>	to find the chance of personal fulfilment
4 <i>Environment</i>	coming from an environment close to the cooperative
5 <i>Growth</i>	to produce growth and employment for the territory
6 <i>Job</i>	I was looking for a job and I had no choice
7 <i>Community needs</i>	the opportunity to satisfy community needs
8 <i>Ideals</i>	the sharing of cooperative ideals and values
9 <i>Clearness</i>	the clearness of the contract
10 <i>Taking part</i>	the opportunity to take part in the decisions
11 <i>Pay</i>	the pay and other economic benefits
12 <i>Social relations</i>	the opportunity to improve social relations
13 <i>Visibility</i>	the social visibility of the cooperative
14 <i>Projects</i>	the opportunity to work on projects with people who share the same ideological, cultural and political ideas

Table A.2

The items describing the ex-post level of motivation

Item	Compared with when you started to work for the cooperative, how do you think this experience has changed your interest toward the job as:
1 <i>Help others</i>	opportunity to help people
2 <i>Experience</i>	experience which enriches one as a human being
3 <i>Develop relations</i>	opportunity to develop new and deep human relations
4 <i>Moral duty</i>	moral duty of the citizens
5 <i>Self respect</i>	way to improve own self respect
6 <i>Professional satisfaction</i>	way to get professional satisfaction
7 <i>Source income</i>	source of income
8 <i>Necessary occupation</i>	a necessary activity that you would give up

Table A.3

The items describing the distributive fairness

Item	Do you think that your pay is fair compared with
1 <i>Degree</i>	your degree
2 <i>Training</i>	your training and specific experience
3 <i>Responsibility</i>	your responsibility and tasks
4 <i>Effort</i>	the effort required by your work
5 <i>Stress</i>	the stress and tensions involved
6 <i>Loyalty</i>	the loyalty to the cooperative
7 <i>Pay co-workers</i>	your co-workers' pay
8 <i>Pay similar workers</i>	the pay of similar workers employed in other cooperatives
9 <i>Pay superior</i>	your superiors' pay
10 <i>Resources</i>	the cooperative economic resources

Table A.4

The items describing the procedural fairness

Item		With regards to your working experience in the cooperative, how much do you agree with the following statements?
1	<i>Know criteria</i>	I know the criteria used by the cooperative to judge my work
2	<i>Share criteria</i>	I share the criteria used by the cooperative to judge my work
3	<i>Results</i>	The cooperative recognizes the quality and the results of my work
4	<i>Pay</i>	My pay depends on how well I work
5	<i>Effort</i>	Those who work harder are rewarded more
		How much do you agree with the following statements?
6	<i>Guidelines</i>	The cooperative supplies workers with advices and clear guidelines to work as best as one can
7	<i>Info job</i>	The cooperative properly and completely collects information about its workers' activities
8	<i>Equality</i>	The cooperative deals with all its workers in the same way
9	<i>Targets</i>	The cooperative has clear targets shared with its workers
10	<i>Reliability</i>	The cooperative keeps its word towards its workers

Table A.5

The items describing the interactional fairness

Item		Your superiors
1	<i>Availability</i>	are helpful and behave kindly and respectfully
2	<i>Personal needs</i>	are sensitive to your personal and domestic needs
3	<i>Working needs</i>	are sensitive to your working needs
4	<i>Listening</i>	pay attention to your ideas and discuss your proposals
5	<i>Advices</i>	give you advices and guidelines to work as best as you can
6	<i>Attention</i>	pay attention to the quality and the results of your work

Table A.6

The items which describe the job satisfaction with extrinsic aspects

Item		How satisfied are you with...
1	<i>Hours</i>	the working hours schedule?
2	<i>Flex</i>	the working hours flexibility?
3	<i>Stab</i>	the job stability?
4	<i>Envir</i>	the workplace environment?
5	<i>Welfare</i>	the social security protection and benefits?
6	<i>Pay</i>	your total pay (including possible fringe benefits)?
7	<i>Involv</i>	your involvement in the Cooperative decisions?
8	<i>Transp</i>	the transparency in your relation with the Cooperative?
9	<i>Growth</i>	your vocational training and professional growth?
10	<i>Indep</i>	your decisional and operative independence?
11	<i>Career</i>	your achieved and prospective career promotions?
12	<i>Consist</i>	the consistence with your education and vocational training?

Table A.7

The items which describe the job satisfaction with intrinsic and relational aspects

Item		How satisfied are you with...
1	<i>Coop-Recog</i>	the recognition by the cooperative of your work?
2	<i>Fulfil</i>	your personal fulfilment?
3	<i>Colleag</i>	the relations with your co-workers?
4	<i>Volunt</i>	the relations with the voluntary workers?
5	<i>Team</i>	the relations within the team?
6	<i>Super</i>	the relations with your superiors?
7	<i>Users</i>	your relation with end users and their families?
8	<i>Variety</i>	the variety and creativity of your work?
9	<i>Coll-Recog</i>	the recognition by co-workers of your work?
10	<i>Social-Recog</i>	the social recognition?
11	<i>User-Recog</i>	the end users recognition?
12	<i>Usefulness</i>	the usefulness of your work for end users and their families?
